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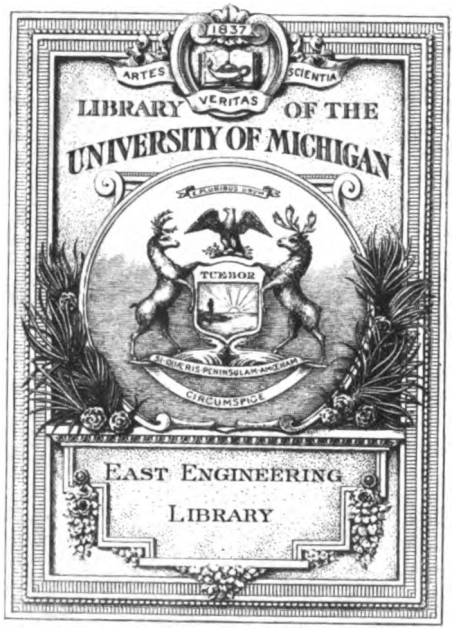

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JUL 26 1929

THE AEROPLANE

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. G. Grey

Vol. XXXVII. No. 1. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

"THE CAPTAINS AND THE KINGS DEPART."—(KIPLING—*Recessional.*)

MOBILITY:—Two Handley Page Hinaidis (Bristol Jupiter engines) at the Kabul aerodrome on December 29, 1928, during the operations in which Kings Amanullah and Inyatullah, and the inmates of sundry foreign legations, were rescued, with or without humble and contrite hearts, by the R.A.F.

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50 EGYPTIAN TOWNS SURVEYED ON AN AVIAN

From the Mediterranean seaboard to Assuan on Egypt's Southern frontier, the Air Survey Company have recently made extensive large scale surveys from the air.

One machine only was used for the survey. Its total flying time was 140 hours. It flew a total of 10,500 miles. It surveyed 50 towns, 1,400 "vertical" photographs were taken. Yet, despite adverse flying conditions at Heliopolis and heavy loads on many flights, the two months' survey was carried through without a single hitch.

The aeroplane used throughout was an Avro Avian.

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THE AEROPLANE

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ON THE SCHNEIDER COURSE.

Regular readers of this paper are probably aware by now that there are certain objections to the course over which the Racing Committee of the Royal Aero Club have chosen that the contest for the Schneider Trophy shall be flown. Briefly the chief objection is that the only long stretch of shore line from which the flying can conveniently be seen is the North East Coast of the Isle of Wight between Cowes and Seaview, and there seems no good reason why the millions of taxpayers who want to see the contest should be compelled to go to all the inconvenience and expense and waste of time of going to and fro an island which exists chiefly to keep the English Channel out of the Solent,—except when it provides luxurious leisure to a lot of idle people, who do not mind being the prey to rapacious hotel-keepers and pension-proprietors.

To make the whole business clear there is published herewith a map, drawn by Raynoil Ltd., of the whole Solent area. On it the course officially chosen by the Royal Aero Club is shown in full black lines. With it is shown in broken lines an alternative course of exactly the same length, which one suggests would be very much more desirable. And above that, in a dot-and-dash line is shown the Northern leg of another alternative course.

As may be seen, the Aero Club course approaches the mainland off Southsea, where there is a turning-point, and cuts over the land South of Gosport at Gilkicker Fort. And that is all the people on the mainland see of the flying, for the course then goes right away from the land into the middle of the Solent where, at the next turning point, the machines will be so far away as to be practically invisible from any of the three shore-lines.

From that point the course comes along the coast of the Isle of Wight, past Ryde, off which the Orient *S.S. Orford* will be anchored, and where the Club has placed the starting and finishing point, turns round a mark-boat off Seaview and goes out to sea to a mark-boat out in the Channel. After which there is the turn off Southsea again.

The Invisible Contest.

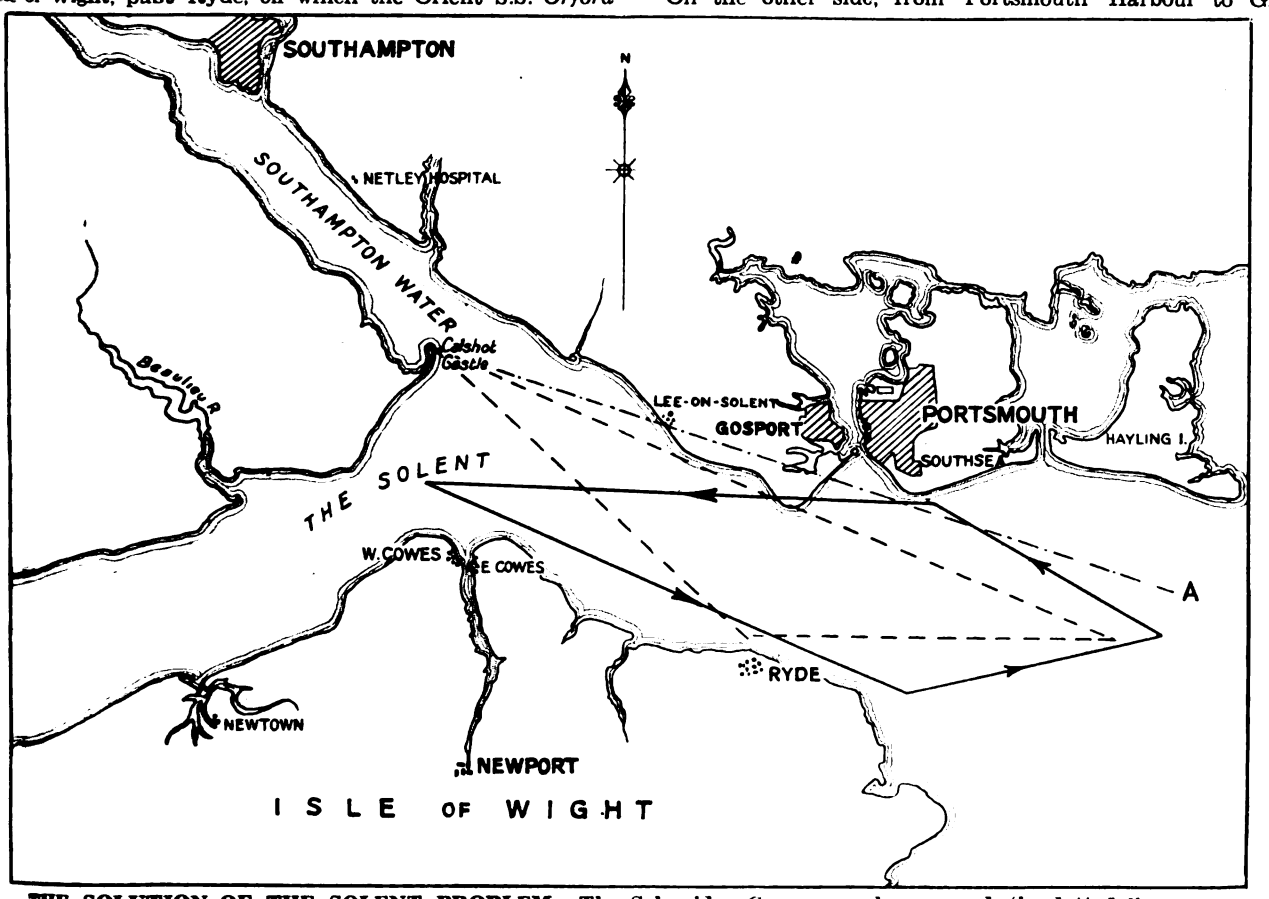
Thus all may see that the two sharp turning-points which always provide the most spectacular flying are so placed that the turns can only be seen by the privileged few who can afford to go in yachts, motor-boats or excursion steamers.

The best views from the land will be had, as already said, by the comparatively well-to-do or idle people who can afford the time and money to go and stay on the Isle of Wight. In this connection one hears already of gross profiteering by hotels and lodging-houses. They say that quite small houses in the vicinity of Ryde are being let for 100 guineas for the Schneider Week.

On the English side of the Solent the only points from which anything will be seen are Southsea Common and Pier, and Stokes Bay just to the West of Gilkicker Fort. From the mouth of Portsmouth Harbour to the open part of Southsea the shore-line consists of yards which have to do with shipping, or Admiralty premises of some sort, where there is practically no accommodation for the general public. So that hundreds of thousands of people will be herded together along the common, or parade, or whatever they call it, and on the pier at Southsea.

There is only one road into Portsmouth from the rest of England, and that road is going to be one solid jam of traffic. The publicans and profiteers of Southsea and Portsmouth may profit by the embarrassment of the public, but Aviation certainly will not.

On the other side, from Portsmouth Harbour to Gil-



THE SOLUTION OF THE SOLENT PROBLEM.—The Schneider Course as chosen, and (in dotted lines) as it should be, to give the taxpayer a run for his money.

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kicker, by the grounds of Haslar Hospital and by the Fort, there will be very little room for spectators.

Stokes Bay certainly will accommodate a good many thousands of people, but the roads to it are narrow and the car-jam will be awful. In fact, as has been said in this paper before, every thing possible seems to have been done to create difficult circumstances for the British public who are paying for the competition.

In addition the course chosen has four corners and so the difficulties for the pilots are increased.

A Preferable Course.

Now consider the three-cornered course as indicated by the dotted lines. In the first place it passes quite close to the long stretch of land between Gosport and Southampton Water,—which has both cliffs and a beach from which the flying could be watched.

There are plenty of roads leading to the shore so that there would be very much less congestion of motor-cars.

This stretch of coast can be reached easily from Southampton, Winchester and all the other towns in Hampshire, as well as from places to the east as far as Chichester and even Brighton,—so there would be plenty of accommodation to be had.

Furthermore, by making Calshot Castle the turning-point a first-class view of the turn can be given to tens of thousands of people along the shore of the mouth of Southampton Water and of the Solent to the West of Calshot.

The strip of shingle which connects the Calshot Air Station with the New Forest would alone accommodate at least as many people as could be got onto the promenade at Southsea.

This arrangement would have the further advantage of relieving the congestion on the roads between Southampton and Portsmouth by attracting a vast number of people to the New Forest side of Southampton Water, and those coming from a distance in the West Country would find good accommodation at Lyndhurst, Lymington, Beaulieu and even so far away as Bournemouth.

Seemingly one of the reasons for the course which has been chosen is that Portsmouth and Southsea (either the Municipalities or the Chambers of Commerce or some bodies of that sort) have promised to contribute handsome sums to the Royal Aero Club towards paying the expenses of the Contest. Probably they have been astute enough to reckon that as the people cannot stand along the seashore for multitude there will be room for them in the inns,—and a resultant profit.

This admittedly is a sound reason from the Aero Club's point of view. But one submits that it is not good enough to justify depriving many hundreds of thousands, and possibly millions, of people of a reasonable view of the flying. Surely there are *some* men with money in this country besides Sir Charles Wakefield. And surely some of them are, or can be, interested in the progress of British Aviation enough to put up sums which will cover the expenses of the Contest.

The Third Alternative.

If Southsea *must* be given a better view of the flying than is afforded by the dotted line, then the Eastern turning-point might be moved further to the North—approximately to the point marked "A," so as to bring the line between it and Calshot nearer to Southsea. This would then bring the course over the land, perhaps a mile or two inland, somewhere behind Fort Gosport, and it would come out over the water again just about at Lee-on-Solent.

There is in fact no particular objection to this. If an engine happened to cut out while the machine was flying over land, the machine would cover the distance to the water in not more than 12 seconds. And if something broke in the machine itself and put it out of control the result would be precisely the same whether it happened to be over land or water.

As a matter of fact, if a machine got out of control on the course at present chosen while flying from the Eastern turning-point towards Southsea, the chances are that it would crash bang in the middle of Portsmouth or Gosport.

Those who were at Venice will remember what happened when something went wrong with Captain Guazetti's engine when he was turning over the Mole. He was blinded by oil or steam just as he came round the turning-point and instead of following the course he shot straight across the Lido, missed the top of the Excelsior Hotel by only a few feet, and somehow got down into the Lagoon behind. A similar happening at the Southsea turning-point would put the pilot into the land somewhere beyond Portsmouth Harbour.

Actually, with aircraft flying at such appalling speeds as will be made in the Schneider Trophy Contest this year, a pilot is just as safe a couple of miles inland as he is over the water itself. If something goes wrong while he is over land he has a good chance of reaching the water. And if it happens while he is flying over the water he is just as likely to crash into the land.

Therefore there is no particular objection to moving the Eastern turning-point to approximately such a point as that marked "A," and bringing the course close to Southsea and actually over the Gosport area.

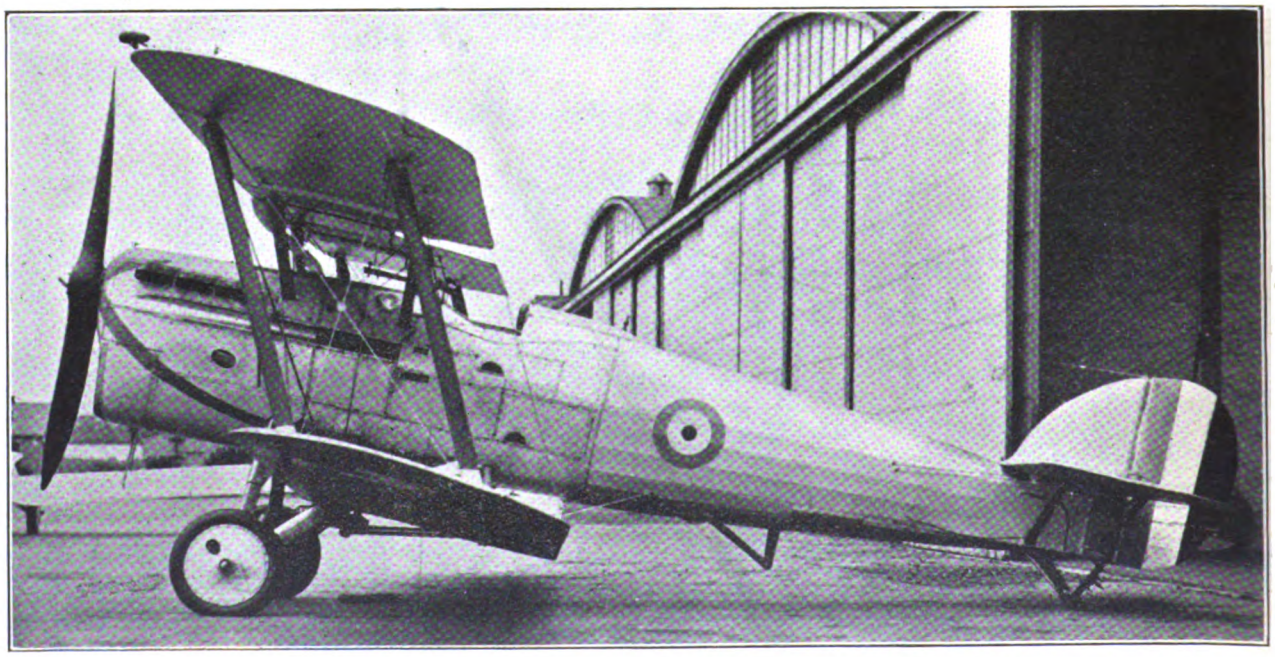
For the Benefit of the Press.

This alteration in the course, besides giving a chance of seeing the flying properly to some millions of people who cannot afford either the time or the money to go to the Isle of Wight, and are afraid of the necessarily appalling congestion at Gosport and Southsea, would also be a great convenience to all those whose duty calls them to watch the contest.

The good ship *Orford* could still be used as Headquarters, but instead of being anchored on the inaccessible Isle of Wight side of the Solent, she could be anchored either off Southsea or somewhere to the West of Lee-on-Solent.

From either place, whatever may be the congestion on the roads, access and egress would be easier than from anywhere on the Isle of Wight.

Also, from the press point of view there would be the ad-



FOR THE KING'S CUP.—The Vickers 141 single-seat biplane (Rolls-Royce "F" type engine) which will be flown in the race for the King's Cup by Flg. Off. Summers, the new test pilot for Vickers (Aviation) Ltd.

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THE same skilled workmanship, high-class materials and individual care employed in the manufacture of the Napier engines which have so successfully maintained British engineering prestige in the following achievements are used in every Napier engine produced.

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vantage that there is better telegraphic and telephonic communication from the mainland than there is from the island, and that if additional telephone lines have to be put down for the benefit of the press, that can be done at much less cost on the mainland than by laying extra cables under the Solent. Here one is quite disinterested, because, being a weekly paper THE AEROPLANE has no need of hustled history.

There is a minor advantage to the competing teams in having Calshot as the turning-point. If a machine should break down on the leg of the course towards Calshot it will be on its way home, seeing that all the machines of all the teams will be accommodated at Calshot. And if it should break down on the turn, then it can alight somewhere in that area and so can be got home more easily than if it broke down right away over by the Isle of Wight.

There is yet another, and quite an important, advantage in the second or third course which one has suggested. With the headquarters and the starting and finishing line at Ryde, when the machines are coming towards the line those who are watching them will have to look straight into the eye of the sun during the afternoon, if there should happen to be any sun. Consequently time-keepers, lap-scorers and other onlookers will find much more difficulty in identifying the machines.

With the finishing line on the North side of the Solent the machines would come to it from the East and so would be much easier to recognise before actually passing the line.

On every possible count the course which is suggested here seems immeasurably preferable to that which the Royal Aero Club has chosen. If any good arguments can be produced against altering the course as suggested one will be very pleased to publish them in THE AEROPLANE.

And, as the Royal Aero Club is supposed to exist for the purpose of propagating the Sport of Flying, and not merely to provide happy holidays in the Isle of Wight for the officials who are supposed to be organising the Schneider Contest, one suggests that a full explanation, both from the point of view of the practical aviator and that of the club financier, is due by right to the British Public, and equally to the competitors of other Nations in the contest, whose friends and helpers will be put to much unnecessary trouble and expense if the Royal Aero Club persists in sticking to what appears to be on the face of it an entirely wrong course.—C. G. G.

A NEW POWER IN THE LAND.

A new departure in British Civil Aviation which may have very far-reaching effects is indicated in a notice which was issued on June 28 by the British Aviation Insurance Group. This reads as follows:—

> The British Aviation Insurance Group beg to announce that they will in future, by special arrangement with the Air Ministry, undertake the inspection of Light Aircraft for renewal of certificates of airworthiness.
>
> Inspection work for this purpose will be undertaken in the first place under Air Ministry supervision and will be confined in the early stages to a limited number of privately owned Light Aircraft normally housed within the London area.
>
> The charge for this inspection and recommendation will be 5 guineas as heretofore, the fee being passed by the Air Ministry direct to the British Aviation Insurance Group, who will, as soon as circumstances permit, return a proportion of such fee to the owner.
>
> This fee will include the renewal of the certificate of airworthiness free of charge.
>
> This service is designed to meet the requirement of private owners and it is ultimately hoped to extend this service to other forms of civil aviation.
>
> A new Department of the Group is being formed to undertake this work and this Department will be housed in the offices of Lloyd's Register of Shipping, 71, Fenchurch Street,—the traditional home of the survey and classification of British shipping.
>
> The British Aviation Insurance Group is the only office devoted exclusively to the risks of civil aviation and it offers an unequalled world-wide service to its clients.

From the earliest days of Civil Aviation there has been an outcry against over-control of civil flying by the Air Ministry. People tried to make out that, being under the Air Ministry, Civil Aviation would be ruled with military ruthlessness. Suggestions were then made that instead of being submitted to the Aeronautical Inspection Department, who are accustomed to dealing with war machines, makers and owners of civil aircraft should be left to their own devices, but that Lloyd's, or some similar institution should, when requested by the maker or owner, issue Certificates of Airworthiness, which Certificates would in due course carry the same weight in the international market as do Lloyd's Certificates issued to sea-going ships.

The idea had much to recommend it. But if it had been adopted a great many uncertified machines with uncertified aviators would have crashed and would have earned a bad name for British Aviation. Under the wholly beneficent rule of our Department of Civil Aviation, and under the sympathetic inspection of the A.I.D., British civil aircraft already hold the reputation of being the most reliable in the World,—whatever their performances may be. And thanks to the Air Ministry and the A.I.D. we have already reached a position which might have taken many more years to reach under uncontrolled conditions.

This new step in handing over the work of the A.I.D. and of the Department of Civil Aviation to the British Aviation Insurance Group may conceivably be a step in advance. But it may also be regarded as a dangerous proceeding.

Knowing the British Aviation Insurance Group and those who run it, we can all rest assured that so long as these same people are in control the new arrangement will work for the good of everybody concerned. But conditions can be imagined under which it might do anything but good.

What the Air Ministry is doing is handing over to a commercial concern powers which should by rights only belong to a Government Department. That is to say, under the Air Navigation Act an aeroplane must be certified as airworthy, and if a pilot flies an uncertified machine he can be prosecuted for doing so. Consequently, whether he likes it or not, he must go to a certain insurance company to get the Certificate which gives him the legal right to fly.

Supposing that a pilot prefers to take his own risk on his machine and does not insure it, or supposing he wants to go and insure it with some friend who is an underwriter at Lloyd's but does not belong to the British Aviation Insurance Group, the idea is conceivable that a thoroughly bad insurance official might refuse to give his machine a certificate unless he insured it with the Group.

Such a thing could not possibly happen under the present insurance group but by creating this legal position the Air Ministry is opening up the possibility of malpractices in the future.

Either Civil Aviation ought to be entirely free, and people ought to be allowed to go and break their necks and do third party damage if they so please, or else the whole thing ought to be strictly under the control of Government officials and nobody else. Frankly, one is utterly ignorant of the customs of the shipping trade, but so far as one knows Board of Trade Certificates are issued to ships by the Board of Trade, and the rating of the individual ship at Lloyd's, whether as A1 or some inferior grading, is purely the affair of the owner of the ship. He cannot be prosecuted for putting to sea without a grading at Lloyd's.

In fact the Bureau Veritas, of Paris, runs an International Register of Shipping which does similar inspection and grading of ships, more especially of ships which are registered in foreign countries. And this same Bureau Veritas runs an International Aircraft Register whose interests may quite conceivably cut across those of the British Aviation Insurance Group.

The whole situation is in fact far more complicated than it might appear to be if one judged it solely on the entirely amiable announcement of the British Aviation Insurance Group. To put it briefly, Governmental Powers cannot lightly be handed over to a commercial concern nor can those who would humbly submit to the rulings of Government officials be expected to accept in the same spirit the *obiter dicta* of the employees of a business house.—C. G. G.

THE FINDING OF MAJOR FRANCO.

Major Franco, Major Gallarza, Captain Ruiz de Alda and mechanic Modisto Madriaga, who formed the crew of the Spanish Dornier flying-boat on which an attempt was being made to fly to New York via the Azores, were found by *H.M.S. Eagle* on the morning of June 29.

The Spanish aviators, who left the seaplane base of Los Alcazares on June 21 to fly to the Azores, as reported in THE AEROPLANE of June 26, had been missing for a week, and owing to bad weather all hope had been abandoned.

Major Franco reported that the flying-boat overshot the Azores in the dark. In trying to return thither against a strong head-wind they ran short of fuel and were forced to come down in the sea, where they remained derelict until found by the aircraft carrier. He also states that the aircraft and engines behaved magnificently.

The news of the aviators' safety has caused enormous enthusiasm in Spain and there have been public demonstrations of gratitude before the British Embassy in Madrid.

The Marqués de Estella, the Spanish Prime Minister, after consulting with his Cabinet, has announced that the Cross of Naval Merit will be awarded to the Captain and officers of the rescuing aircraft-carrier.

H.M.S. Eagle was due at Gibraltar on July 2 with the rescued aviators on board. The Dornier was salved and reports state the flying-boat has suffered little damage.

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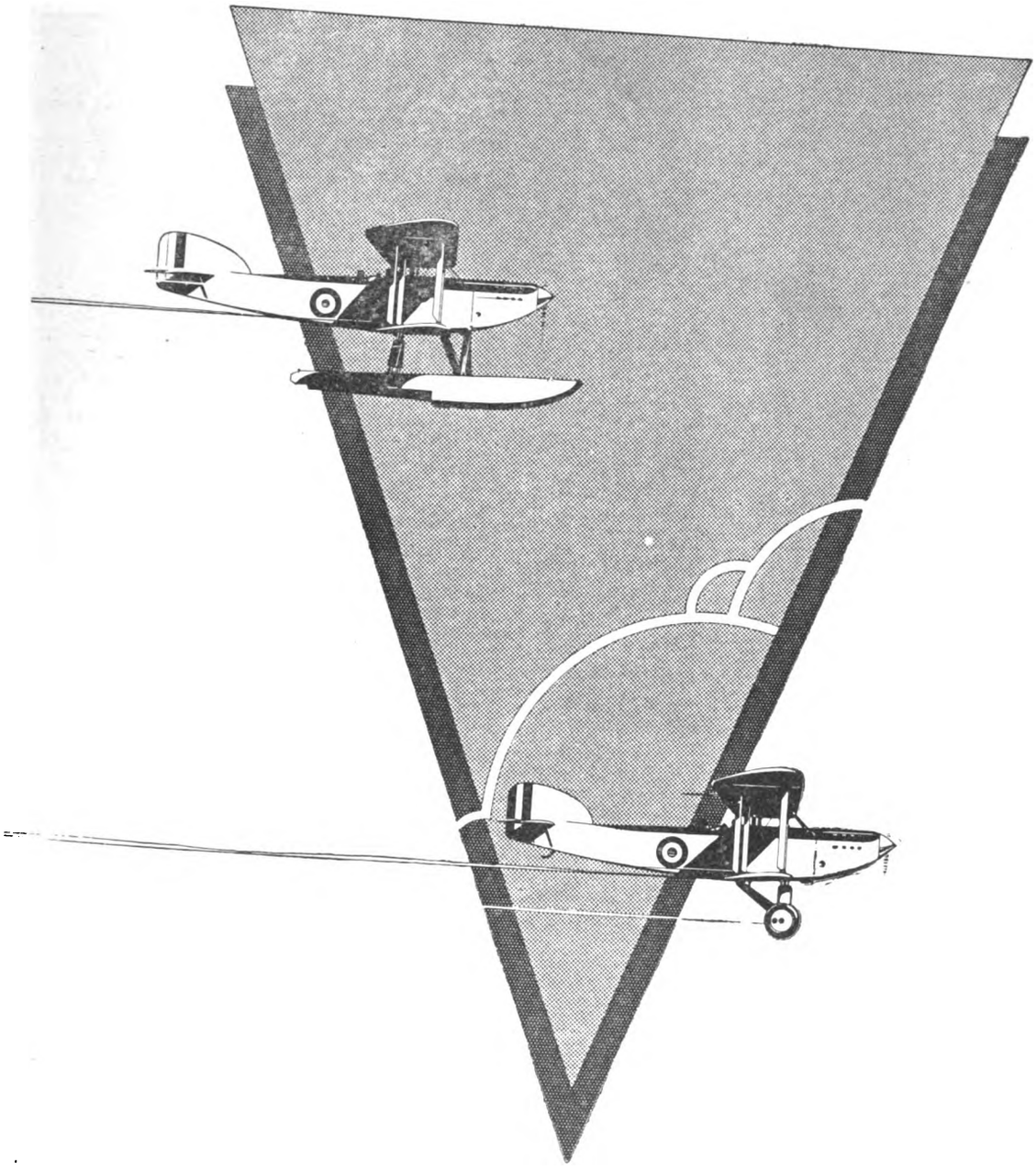

The R.A.F. Display
Hendon • July 13th • 1929
and Stand No. 110
International
Aero Exhibition
OLYMPIA
July 16th — July 27th
1929

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THE FAREWELL.—(1) Major Franco, (2) Major Gallarza, and (3) Capt. Ruiz de Alda bidding good-bye to (4) General Sanjurjo at Cartagena.

The first message issued by the Admiralty was the following report from *H.M.S. Eagle.*

"Dornier 16. Spanish aircraft has been found. Latitude 36.28 North, longitude 26.14 West. Aircraft has been hoisted on board H.M.S. *Eagle* with very little damage. Crew all well."

Later the Admiralty issued Major Franco's report wirelessed from the aircraft carrier as follows:—

We left Los Alcazares (Cartagena) at 17.00 hours, June 21, passing Cape St. Vincent at 21.00 hours. From the Cape we were forced to gain height owing to excessive air disturbances. From Cape St. Vincent to the Azores was an interrupted layer of cloud, above which we had to fly. Later another cloud layer formed above us.

The intended time of our arrival at the Azores was 09.00 G.M.T. on June 22, but a strong north-east wind which we were unable to foresee or check in flight caused us to pass over the Azores during the dark. At dawn we took our longitude by the sun, which showed that we were to the south-west of the Azores.

We therefore flew through the clouds and alighted to economise fuel and examine the situation more closely. We checked our position and took off, shaping a course to Fayal, but, owing to strong head-winds, ran out of petrol about 40 miles from that point.

Strong north-easterly winds drifted us to the south, and on the following day, June 23, we were about 100 miles from Fayal. The wind shifted to the south-west, reaching gale force, and drifted us to the island of Santa Maria.

From June 24 to 27 winds of varying force and direction drifted us about. On the morning of the 27th the situation was extremely dangerous on account of the wind and sea conditions.

At dawn on June 29 the aircraft-carrier *Eagle* found us in the vicinity of Santa Maria and took us on board. The behaviour of the aircraft and engines was magnificent.

THE DISSOLUTION HONOURS.

The Dissolution Honours List published in the *London Gazette* of June 28 contains the appointment to be a Privy Councillor of Sir Philip A. G. D. Sassoon, Bt., G.B.E., C.M.G., M.P., Under-Secretary of State for Air from November, 1924, to June, 1929.

THE S.B.A.C. AT OLYMPIA.

The Society of British Aircraft Constructors announce that the following arrangements have been made in connection with the International Aero Exhibition at Olympia.

On the opening day, July 16, there will be a private view by H.R.H. the Prince of Wales beginning at 12.00 hours. After the inaugural lunch, which follows, His Royal Highness will declare the Exhibition open and from 14.00 hours the public will be admitted.

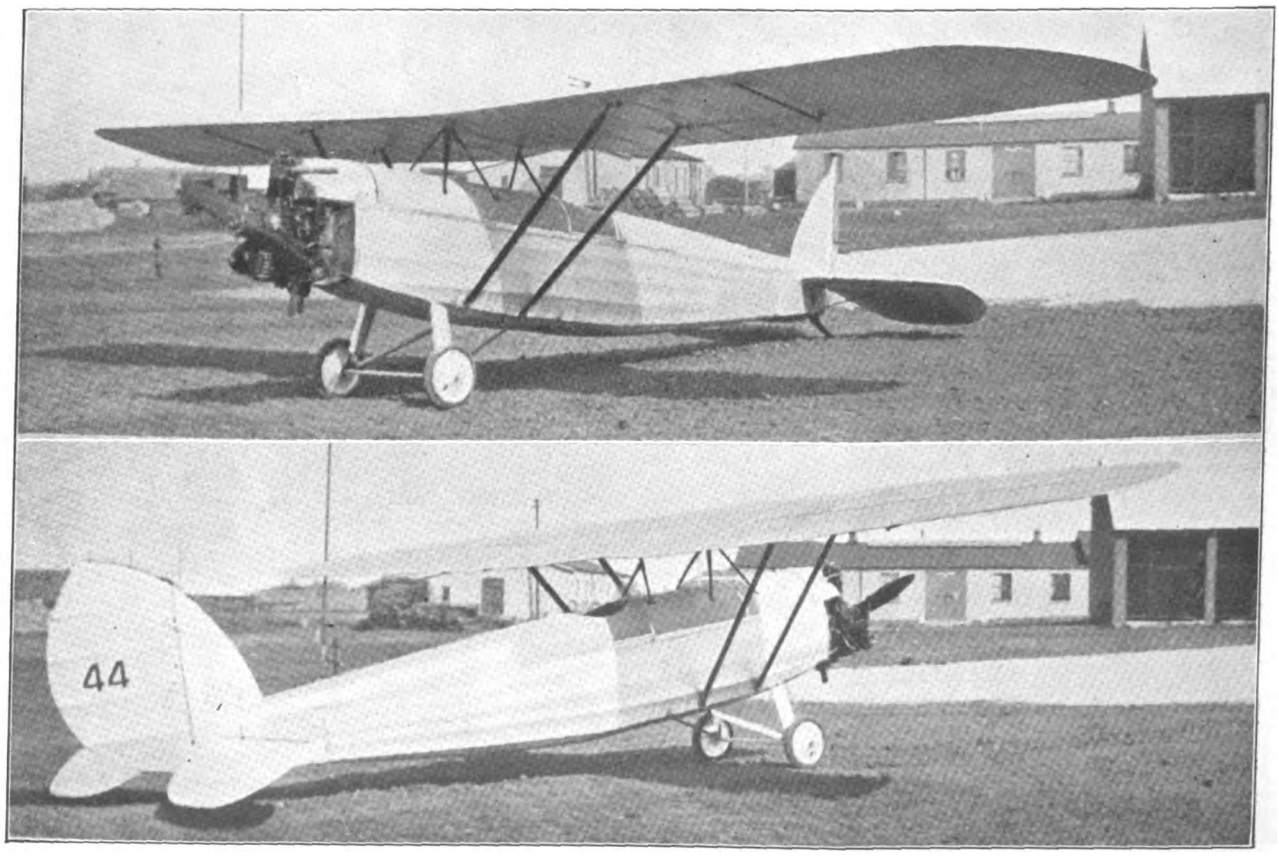
A banquet will be given by the Society to Foreign visitors on July 18. This Banquet is being given because the Society wish to extend the fullest hospitality to Foreign Visitors and find that it would be impracticable to accomodate everybody at the Opening Lunch.

The Civil Aviation Ball will be held on July 19.

On July 20 an Aerial Garden-Party will be held at Heston Aerodrome.

A Reception will be held by the Royal Aeronautical Society at the Science Museum, South Kensington, on July 25, which will be followed by the Wilbur Wright Memorial Lecture.

The Exhibition will close with a Banquet at the Savoy Hotel on July 27.



A KING'S CUP COMPETITOR.—The Clarke Cheetah (Blackburne Thrush engine), designed and built by Flg. Off. J. Clarke, No. 29 (Fighter) Squadron, North Weald. The Clarke Cheetah can be converted into a biplane, but will be flown in the King's Cup Race as a monoplane.

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There is yet another, and quite an important, advantage in the second or third course which one has suggested. With the headquarters and the starting and finishing line at Ryde, when the machines are coming towards the line those who are watching them will have to look straight into the eye of the sun during the afternoon, if there should happen to be any sun. Consequently time-keepers, lap-scorers and other onlookers will find much more difficulty in identifying the machines.

With the finishing line on the North side of the Solent the machines would come to it from the East and so would be much easier to recognise before actually passing the line.

On every possible count the course which is suggested here seems immeasurably preferable to that which the Royal Aero Club has chosen. If any good arguments can be produced against altering the course as suggested one will be very pleased to publish them in THE AEROPLANE.

And, as the Royal Aero Club is supposed to exist for the purpose of propagating the Sport of Flying, and not merely to provide happy holidays in the Isle of Wight for the officials who are supposed to be organising the Schneider Contest, one suggests that a full explanation, both from the point of view of the practical aviator and that of the club financier, is due by right to the British Public, and equally to the competitors of other Nations in the contest, whose friends and helpers will be put to much unnecessary trouble and expense if the Royal Aero Club persists in sticking to what appears to be on the face of it an entirely wrong course.—C. G. G.

A NEW POWER IN THE LAND.

A new departure in British Civil Aviation which may have very far-reaching effects is indicated in a notice which was issued on June 28 by the British Aviation Insurance Group. This reads as follows:—

> The British Aviation Insurance Group beg to announce that they will in future, by special arrangement with the Air Ministry, undertake the inspection of Light Aircraft for renewal of certificates of airworthiness.
>
> Inspection work for this purpose will be undertaken in the first place under Air Ministry supervision and will be confined in the early stages to a limited number of privately owned Light Aircraft normally housed within the London area.
>
> The charge for this inspection and recommendation will be 5 guineas as heretofore, the fee being passed by the Air Ministry direct to the British Aviation Insurance Group, who will, as soon as circumstances permit, return a proportion of such fee to the owner.
>
> This fee will include the renewal of the certificate of airworthiness free of charge.
>
> This service is designed to meet the requirement of private owners and it is ultimately hoped to extend this service to other forms of civil aviation.
>
> A new Department of the Group is being formed to undertake this work and this Department will be housed in the offices of Lloyd's Register of Shipping, 71, Fenchurch Street,—the traditional home of the survey and classification of British shipping.
>
> The British Aviation Insurance Group is the only office devoted exclusively to the risks of civil aviation and it offers an unequalled world-wide service to its clients.

From the earliest days of Civil Aviation there has been an outcry against over-control of civil flying by the Air Ministry. People tried to make out that, being under the Air Ministry, Civil Aviation would be ruled with military ruthlessness. Suggestions were then made that instead of being submitted to the Aeronautical Inspection Department, who are accustomed to dealing with war machines, makers and owners of civil aircraft should be left to their own devices, but that Lloyd's, or some similar institution should, when requested by the maker or owner, issue Certificates of Airworthiness, which Certificates would in due course carry the same weight in the international market as do Lloyd's Certificates issued to sea-going ships.

The idea had much to recommend it. But if it had been adopted a great many uncertified machines with uncertified aviators would have crashed and would have earned a bad name for British Aviation. Under the wholly beneficent rule of our Department of Civil Aviation, and under the sympathetic inspection of the A.I.D., British civil aircraft already hold the reputation of being the most reliable in the World,—whatever their performances may be. And thanks to the Air Ministry and the A.I.D. we have already reached a position which might have taken many more years to reach under uncontrolled conditions.

This new step in handing over the work of the A.I.D. and of the Department of Civil Aviation to the British Aviation Insurance Group may conceivably be a step in advance. But it may also be regarded as a dangerous proceeding.

Knowing the British Aviation Insurance Group and those who run it, we can all rest assured that so long as these same people are in control the new arrangement will work for the good of everybody concerned. But conditions can be imagined under which it might do anything but good.

What the Air Ministry is doing is handing over to a commercial concern powers which should by rights only belong to a Government Department. That is to say, under the Air Navigation Act an aeroplane must be certified as airworthy, and if a pilot flies an uncertified machine he can be prosecuted for doing so. Consequently, whether he likes it or not, he must go to a certain insurance company to get the Certificate which gives him the legal right to fly.

Supposing that a pilot prefers to take his own risk on his machine and does not insure it, or supposing he wants to go and insure it with some friend who is an underwriter at Lloyd's but does not belong to the British Aviation Insurance Group, the idea is conceivable that a thoroughly bad insurance official might refuse to give his machine a certificate unless he insured it with the Group.

Such a thing could not possibly happen under the present insurance group but by creating this legal position the Air Ministry is opening up the possibility of malpractices in the future.

Either Civil Aviation ought to be entirely free, and people ought to be allowed to go and break their necks and do third party damage if they so please, or else the whole thing ought to be strictly under the control of Government officials and nobody else. Frankly, one is utterly ignorant of the customs of the shipping trade, but so far as one knows Board of Trade Certificates are issued to ships by the Board of Trade, and the rating of the individual ship at Lloyd's whether as A1 or some inferior grading, is purely the affair of the owner of the ship. He cannot be prosecuted for putting to sea without a grading at Lloyd's.

In fact the Bureau Veritas, of Paris, runs an International Register of Shipping which does similar inspection and grading of ships, more especially of ships which are registered in foreign countries. And this same Bureau Veritas runs an International Aircraft Register whose interests may quite conceivably cut across those of the British Aviation Insurance Group.

The whole situation is in fact far more complicated than it might appear to be if one judged it solely on the entirely amiable announcement of the British Aviation Insurance Group. To put it briefly, Governmental Powers cannot lightly be handed over to a commercial concern nor can those who would humbly submit to the rulings of Government officials be expected to accept in the same spirit the *obiter dicta* of the employees of a business house.—C. G. G.

THE FINDING OF MAJOR FRANCO.

Major Franco, Major Gallarza, Captain Ruiz de Alda and mechanic Modisto Madriaga, who formed the crew of the Spanish Dornier flying-boat on which an attempt was being made to fly to New York via the Azores, were found by *H.M.S. Eagle* on the morning of June 29.

The Spanish aviators, who left the seaplane base of La Alcazares on June 21 to fly to the Azores, as reported in THE AEROPLANE of June 26, had been missing for a week, and owing to bad weather all hope had been abandoned.

Major Franco reported that the flying-boat overshot the Azores in the dark. In trying to return thither against a strong head-wind they ran short of fuel and were forced to come down in the sea, where they remained derelict until found by the aircraft carrier. He also states that the aircraft and engines behaved magnificently.

The news of the aviators' safety has caused enormous enthusiasm in Spain and there have been public demonstrations of gratitude before the British Embassy in Madrid.

The Marqués de Estella, the Spanish Prime Minister, after consulting with his Cabinet, has announced that the Cross of Naval Merit will be awarded to the Captain and officers of the rescuing aircraft-carrier.

H.M.S. Eagle was due at Gibraltar on July 2 with the rescued aviators on board. The Dornier was salved and reports state the flying-boat has suffered little damage.

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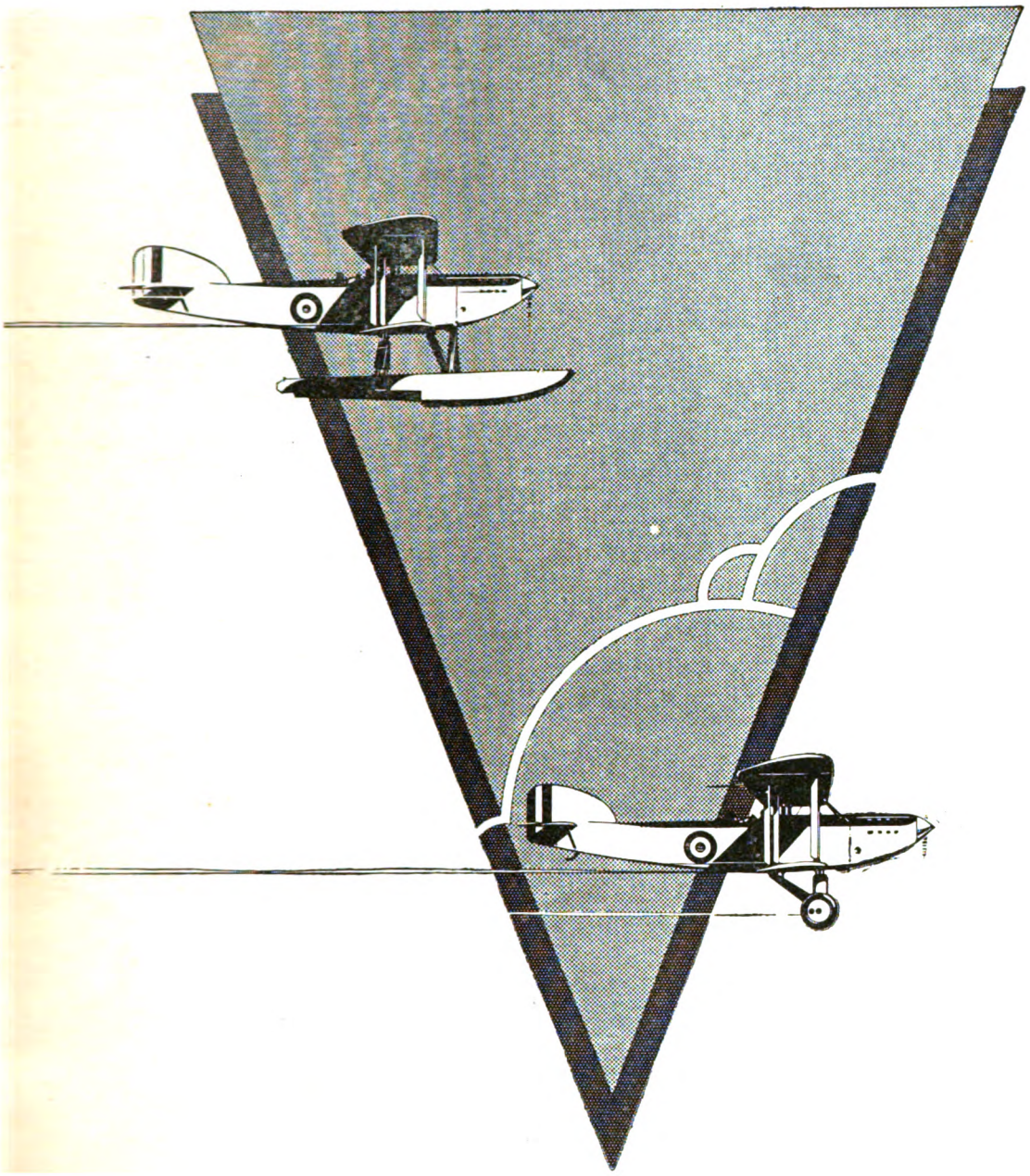

The R. A. F. Display
Hendon • July 13th • 1929
and Stand No. 110
International
Aero Exhibition
OLYMPIA
July 16th — July 27th
1929

FAIREY
AIRCRAFT

THE FAIREY AVIATION COMPANY LTD. • HAYES MIDDLESEX.

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THE FAREWELL.—(1) Major Franco, (2) Major Gallarza, and (3) Capt. Ruiz de Alda bidding good-bye to (4) General Sanjurjo at Cartagena.

The first message issued by the Admiralty was the following report from *H.M.S. Eagle*.

"Dornier 16. Spanish aircraft has been found. Latitude 36.28 North, longitude 26.14 West. Aircraft has been hoisted on board H.M.S. *Eagle* with very little damage. Crew all well."

Later the Admiralty issued Major Franco's report wirelessed from the aircraft carrier as follows:—

We left Los Alcazares (Cartagena) at 17.00 hours, June 21, passing Cape St. Vincent at 21.00 hours. From the Cape we were forced to gain height owing to excessive air disturbances. From Cape St. Vincent to the Azores was an interrupted layer of cloud, above which we had to fly. Later another cloud layer formed above us.

The intended time of our arrival at the Azores was 09.00 G.M.T. on June 22, but a strong north-east wind which we were unable to fore see or check in flight caused us to pass over the Azores during th dark. At dawn we took our longitude by the sun, which showed tha we were to the south-west of the Azores.

We therefore flew through the clouds and alighted to economise fue and examine the situation more closely. We checked our positio and took off, shaping a course to Fayal, but, owing to strong heac winds, ran out of petrol about 40 miles from that point.

Strong north-easterly winds drifted us to the south, and on th following day, June 23, we were about 100 miles from Fayal. Th wind shifted to the south-west, reaching gale force, and drifted u to the island of Santa Maria.

From June 24 to 27 winds of varying force and direction drifted u about. On the morning of the 27th the situation was extreme dangerous on account of the wind and sea conditions.

At dawn on June 29 the aircraft-carrier *Eagle* found us in tl vicinity of Santa Maria and took us on board. The behaviour of tl aircraft and engines was magnificent.

THE DISSOLUTION HONOURS.

The Dissolution Honours List published in the *Londo Gazette* of June 28 contains the appointment to be a Priv Councillor of Sir Philip A. G. D. Sassoon, Bt., G.B.E., C.M.G M.P., Under-Secretary of State for Air from November, 192 to June, 1929.

THE S.B.A.C. AT OLYMPIA.

The Society of British Aircraft Constructors announce th the following arrangements have been made in connectic with the International Aero Exhibition at Olympia.

On the opening day, July 16, there will be a private vie by H.R.H. the Prince of Wales beginning at 12.00 hou After the inaugural lunch, which follows, His Royal Highne will declare the Exhibition open and from 14.00 hours t public will be admitted.

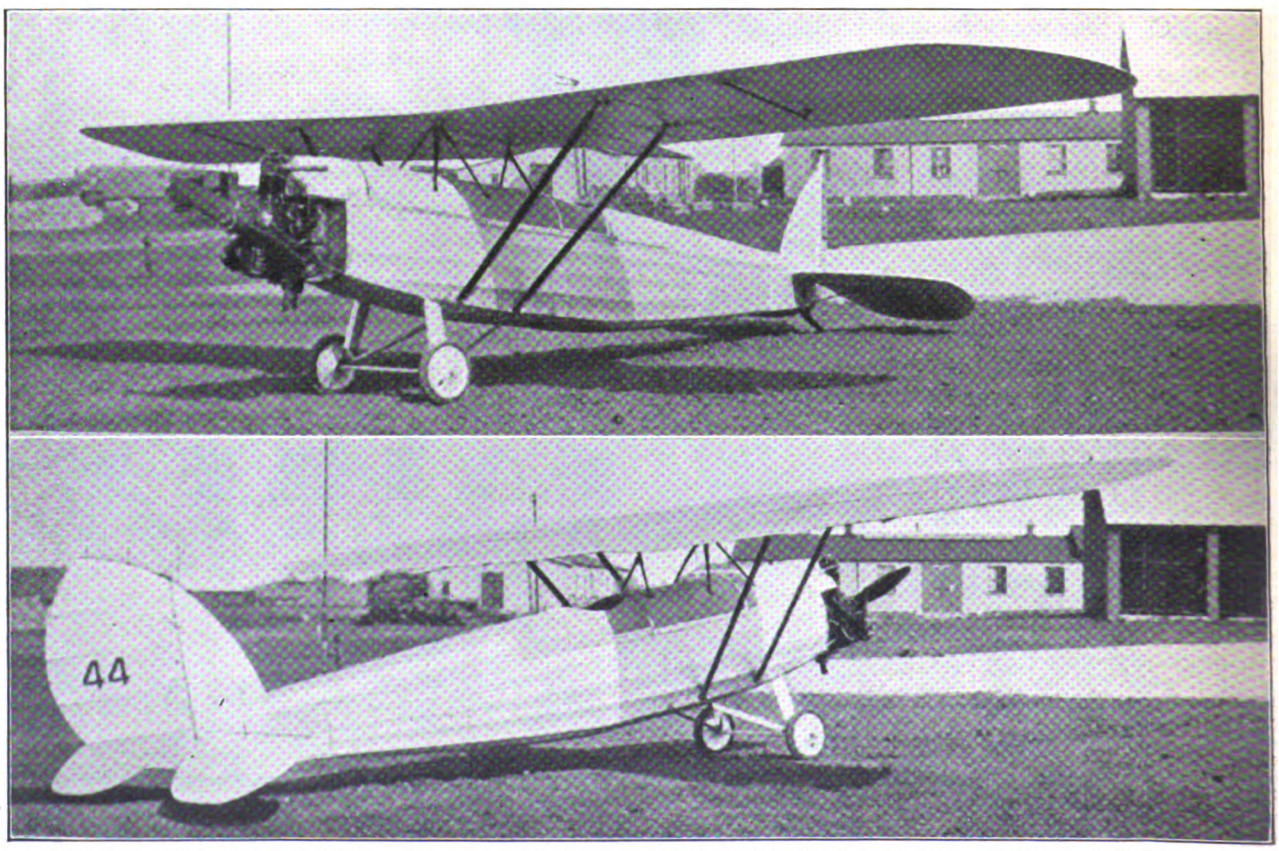
A banquet will be given by the Society to Foreign visitc on July 18. This Banquet is being given because t Society wish to extend the fullest hospitality to Forei Visitors and find that it would be impracticable to accom date everybody at the Opening Lunch.

The Civil Aviation Ball will be held on July 19.

On July 20 an Aerial Garden-Party will be held at Hest Aerodrome.

A Reception will be held by the Royal Aeronautical Socie at the Science Museum, South Kensington, on July 25, whi will be followed by the Wilbur Wright Memorial Lecture.

The Exhibition will close with a Banquet at the Sav Hotel on July 27.



A KING'S CUP COMPETITOR.—The Clarke Cheetah (Blackburne Thrush engine), designed and built by Fig. Off. J. Clarke, No. 29 (Fighter) Squadron, North Weald. The Clarke Cheetah can be converted into a biplane, but will be flown in the King's Cup Race as a monoplane.

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Announcing the Cirrus Hermes.

The new 105/115 4-Cyl.-in-Line Aircooled Engine.

CIRRUS HERMES

OLYMPIA
STAND 99

¶ The "CIRRUS HERMES" engine, following the precedent created by the Mark I, II and III "CIRRUS" engines, successfully passed the AIR MINISTRY TYPE TEST at the first attempt.

¶ The "CIRRUS HERMES" can be installed on the same engine bearers as the "CIRRUS" and when fitted in Light Aircraft provides a large reserve of power.

¶ The "CIRRUS HERMES" is specially suitable for Service Training purposes, for small flying boats, for twin and triple engined aircraft, and for Light Aircraft (especially seaplanes) operating in hot climates or at high altitudes.

¶ The "CIRRUS HERMES" will be shown on our Stand at the International Aero Exhibition at Olympia, and will also be installed in Aircraft of new design exhibited by various British Manufacturers.

Side View of "CIRRUS HERMES."

Cirrus Hermes Engines are already being fitted in 19 Different types of British and Foreign Aircraft.

Designers and Manufacturers :

CIRRUS AERO ENGINES LTD.,

Regent House,

Telephone: Holborn 4076. **89, KINGSWAY, LONDON, W.C.2.** Cables: "Ocirruso, London."

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THE KING'S CUP RACE.

The Race for the King's Cup will start from the Heston Air Park on Friday morning next.

The first machine will leave at 08.00 hrs. but the next does not start till 08.40 and the next not till about 09.30. After that machines will be starting every few seconds till 12.00 hrs.

There were about 60 entries. But a number of machines were not built in time. Others did not get their airworthiness certificates. Others were so altered as to invalidate their certificates. So there are only about 45 machines on the programme. And of these, another half dozen or so will probably not start.

Of those whose entries gave trouble, owing to irregularities, or to insufficient information, or wrong filling-up of forms, and so forth, nearly all belonged to the Trade. Private owners showed a much higher degree of intelligence in filling in their entry-forms and in complying with regulations.

The race, as such, ought to be quite good fun. The competitors will spend Friday night at Blackpool and the first home should reach the Heston Air-Park any time after 15.30 hrs. on Saturday.

THE WEEK-END AT BLACKPOOL.

Private owners and Clubs are reminded that on July 5 and 6 The Lancashire Aero Club is holding an informal Flying Meeting at Blackpool in connection with the visit of the King's Cup competitors for the night.

Competitive events such as balloon-bursting, taxi-ing competitions, obstacle races and aerial golf will be held from 2.0 to 5.0 p.m. each day. Visiting pilots will as far as time permits be allowed to enter on arrival and will be made welcome.

The Lancashire Club request that aerial visitors will avoid arriving at Squire's Gate between 17.00 hrs. and 20.00 hrs. on Friday on account of the arrival of the King's Cup Competitors between these hours.

FLYING TO THE ANNOYANCE OF THE PUBLIC.

The following notice was issued by the Air Ministry on June 17:—

(1) In view of complaints recently made to the Air Ministry regarding the low flying of civil aircraft over the Epsom Race Course during the Derby meeting, the attention of all pilots and owners of aircraft is again directed to the general safety provisions contained in Article 9 (2) of the Air Navigation (Consolidation) Order, 1923, which reads as follows:—

"An aircraft in or over Great Britain and Northern Ireland shall not:—

(a) be used to carry out any trick flying or exhibition flying over any city or town area or populous district; or

(b) be used to carry out any trick flying or exhibition flying over any regatta, race meeting or meeting for public games or sports, except where specially arranged for in writing by the promoters of such regatta or meeting; or

(c) be flown in such circumstances as, by reason of low altitude or proximity to persons or dwellings or for any other reason, to cause unnecessary danger to any person or property on land or water."

The notice *requested* pilots to refrain from flying over Ascot at less than 1,500 ft. An *order* not to fly over the course at less than 3,000 ft. would have been more adequate. An aeroplane howling only 500 yards from a bunch of highly-strung horses is not conducive to true form.—C. G. G.

NIGHT FLYING.

Aircraft of the R.A.F. will be night-flying without navigation lights in co-operation with air defence formations as follows:—

(i) Between 21.00 hours and 01.00 hours on July 10, 17, 24 and 31 and Aug. 7 at 1,000 ft. or above on the line Lingfield to Banstead.

(ii) Between sunset and sunrise from July 1 to Aug. 11 at any height above 2,000 ft. in the area Chessington, Addington, Holmwood and Cowden.

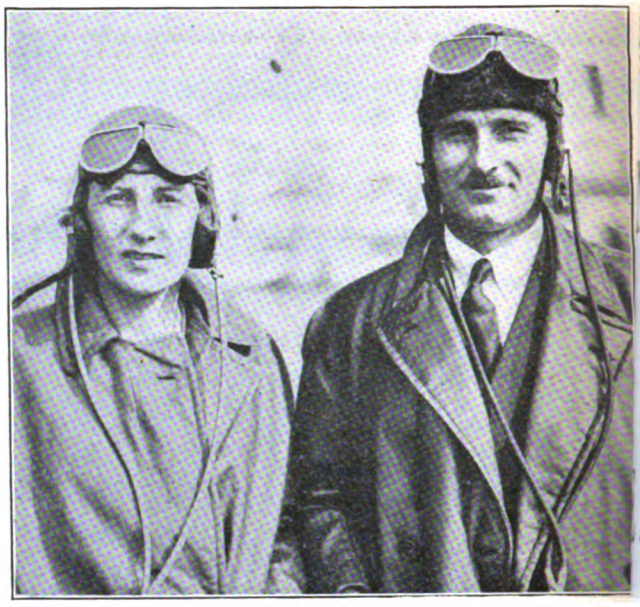
Aircraft taking part in these exercises will switch on their navigation lights if they see any other aeroplanes in their immediate vicinity.

THE G.A.P.A.N.

The Guild of Air Pilots and Navigators of the British Empire came formally into being at a meeting on July 1. Air Vice-Marshal Sir Sefton Brancker, K.B.B., A.F.C., Director of Civil Aviation, was elected first Master, and Sir Alan Cobham was admitted as a member.

As has already been made clear in THE AEROPLANE, the object of the Guild is to uphold the status and prestige of air pilots who are qualified as air navigators and of air navigators who may not happen to be pilots. Such a Guild is certainly necessary otherwise there would be no distinct line of demarkation between air navigators and ordinary "B" licence pilots who may be allowed to fly for hire or reward on the strength of having spent so many hours in the air, but without any serious qualifications as cross-country pilots.

Members of the Guild must be British subjects and must have been for not less than five years holders of a Class "B" licence, a first-class Airship Pilot's licence, or a Certificate of Competency as a first-class navigator of commercial aircraft. Apart from this the object of the Guild is to give consideration to all questions affecting aviation and to protect and advance the interests of its members and the business of commercial aviation.



RIVALS.—Mr. and Mrs. Alan Butler (of the De Havilland Co.), who are competing against one another in the King's Cup Race.

At the meeting on July 1 a resolution was passed indicating the Guild's willingness to participate in the arrangement which already exists between the Royal Aeronautic Society, the Royal Aero Club, the Society of British Aircraft Instructors and the Air League by which each Society supports the other and does not trespass on the activities of the other. Mr. Lawrence Wingfield was elected Secretary and communications should be sent to him at Wingfield, Halse and Trustram, 61, Cheapside, E.C.2.

One of the minor problems of the Guild is the acquisition of adequate armorial bearings, such as those which are borne by the great City Companies on which the Guild is modelled. If any artistic readers of THE AEROPLANE have ideas on this subject the Guild would be glad to see them suggestions. But one would remind them that a certain knowledge of heraldry is probably advisable.

All communications from pilots desirous of joining the brotherhood of air navigators should be made to Sq. Ldr. E. L. Johnston, O.B.E., A.F.C., Harrowden House, Harrowden, Beds.

THE CHANNEL ACCIDENT.

The official Court of Inquiry into the accident to the Imperial Airways air liner *City of Ottawa* opened at the Law Courts on June 25, and continued on June 26, 27 and 28, when it was adjourned until July 2.

A report of the evidence and findings of the Court will appear in THE AEROPLANE when the Inquiry is finished.

THE NEXT PARIS AERO SHOW.

The Committee of the *Chambre Syndicale des Industries Aéronautiques* met recently under its President, M. Lioré. It has decided that the next *Salon de l'Aéronautique* in Paris shall be held next year in 1930 from Nov. 27 to Dec. 7 at the Grand Palais.

The principle of a *Salon de l'Aéronautique* every two years has been confirmed by the Committee of the *Chambre Syndicale*.

This is a very sound idea. If all goes well we may hope that having another Aero Show in 1931 is worth while, and if a British Show and a French Show can be held alternately, with a Show at Berlin say every two years in the Summer, European Aviation ought to benefit thereby.

But one has grave doubts whether a show in the Summer is the right thing. One hears on all sides of orders being held up so that buyers can see whether there is anything new at the Show, when normally they would have bought machines a month or two ago. So that, although in the long run the Show will,—we all hope,—promote trade, it has been definitely a restraint on trade for a time.

On the other hand, a Show in the Winter would still interest just at the slackest time, and the new machines which would be ordered then would be brought out by the proud owners at the first sign of fine weather. Thus work in the factories would be kept more nearly level, instead of progressing in a series of rushes.—C. G. G.

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INTERNATIONAL AERO EXHIBITION

OLYMPIA

July 16-27, 1929

Come and inspect at close quarters all the latest aircraft.

A vast array of machines and engines —British, French, German, etc.— are on exhibition.

You can view at leisure, land 'planes, seaplanes and flying boats.

Engines ranging from 1,000 H.P. to 60 H.P.

Aeroplanes from the small private machine to the great triple-engined passenger-carrying craft—from the single-seat fighter to the giant bombing machine.

Many new aircraft secret machines, just released by the Air Ministry, will be displayed for the first time at this exhibition.

The greatest and most up-to-date display of aircraft ever assembled under one roof.

Don't forget the R.A.F. Display at Hendon, Sat., July 13th, 3 days before the opening of Olympia.

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THE ROYAL AIR FORCE.

The London Gazette.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—The following are granted perm. comns. as Plt. Offs. on probation with effect from and with seniority of June 17:—335914 Sjt. L. R. S. Freestone; 335297 Sjt. E. Coleman; 362512 Sjt. H. E. Dicken.

Lt. the Hon. J. M. Southwell, R.N., is re-attached to the R.A.F. as a Flg. Off. with effect from June 16, and with seniority of June 16, 1924; Flt. Lt. A. T. Laing continues on half-pay, scale B, during the period June 20, 1929, to Oct. 19, 1929, inclusive; Flt. Lt. L. C. Wynne-Tyson is placed on the retired list at his own request (June 18); Flg. Off. W. G. Wainwright Fahey relinquishes his S.S. comn. on account of ill-health (June 26); Lt. S. C. Woolley, R.M., Flg. Off., R.A.F., ceases to be attached to the R.A.F. on return to Corps duty (June 15); Flg. Off. E. T. St. Maur Brett is removed from the R.A.F. (June 17).

STORES BRANCH.—Flt. Lt. A. Jukes, M.B.E., is placed on the retired list (June 24).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—R. D. Bednell is granted a comn. in Class AA (ii) as a Flg. Off. on probation (June 12); F. W. Winterbotham is granted a comn. in Class C as Flg. Off. (June 25); Plt. Off. on probation R. Harston is confirmed in rank (June 25).

The following officers are transferred from Class A to Class C:—Sq. Ldr. C. H. R. Johnston (May 8); Flg. Off. H. T. Messenger (June 24). Flg. Off. P. J. Waller is transferred from Class C to Class A (June 6). The following relinquish their comns. on completion of service:—Flt. Lt. H. G. Travers, D.S.C. (June 22); Flg. Off. J. Mitchell, D.S.O., D.F.C. (June 5); Flg. Off. B. S. Wilcox, D.F.C. (June 19).

PRINCESS MARY'S R.A.F. NURSING SERVICE.

Sister Mrs. G. M. Ruttledge resigns her appointment (June 20).

Appointments.

Week ending July 2.

GENERAL DUTIES BRANCH.—Squadron Leaders S. R. Watkins, A.F.C., to Home Aircraft Depot, Henlow, 14/6. J. Noakes, A.F.C., M.M., to C.F.S., Wittering, 1/6. A. S. Ellerton, O.B.E., No. 58 Sqdn., Worthy Down, 24/6.

Flight Lieutenants R. Grice, D.F.C., to No. 26 Sqdn., Catterick, 18/6. W. E. James, to R.A.F. College, Cranwell, 15/6. N. W. F. Mason, to No. 503 Sqdn., Waddington, 13/6. G. V. Howard, D.F.C., to No. 6 Sqdn., 'Iraq, 1/6. B. A. S. Lewin, to H.M.S. *Eagle*, Mediterranean, 1/6. F. J. Fressanges, to Aircraft Park, India, 27/5. J. Bussey, to No. 22 Group H.Q., S. Farnborough, 19/6. G. T. Richardson, to R.A.F. Depot, Uxbridge, 1/7. R. D. Starley, M.C., to R.A.F. M.T. Depot, Shrewsbury, 20/6.

Flying Officers R. R. Bennett, to No. 4 Sqdn., S. Farnborough, 19/6. J. G. Franks, to Station H.Q., Hal Far, Mediterranean, 1/4. V. G. A. Hatcher, to Station H.Q., Hal Far, Mediterranean, 1/4. K. E. Parker, to No. 460 (F.T.) Flight, Mediterranean, 1/6. R. J. O. Bartlett, to No. 5 Sqdn., India, 25/5. B. C. Mason, to No. 600 Sqdn., Hendon, 17/6. J. A. T. Ryde, to No. 406 (Fleet Fighter) Flight, Donibristle, 18/6. G. D. Harvey, to H.Q., Wessex Bombing Area, Andover, 7/6.

Pilot Officers A. C. R. S. Upton, to School of Naval Co-operation, Lee-on-Solent, 17/6. J. E. Allen, to No. 450 (Fleet Spotter Reconnaissance) Flight, H.M.S. *Argus*, 16/6. E. R. White, to R.A.F. Depot, Uxbridge, 1/7. R. L. Bennet and J. H. Brown, to No. 2 Sqdn., Manston, 15/6. J. M. Israel and J. D. Robertson, to No. 4 Sqdn., S. Farnborough, 15/6. G. W. J. Jarrett, to No. 13 Sqdn., Andover, 15/6. B. F. Cox and L. V. G. Barrow, to No. 16 Sqdn., Old Sarum, 15/6. A. K. H. Binney, to No. 58 Sqdn., Worthy Down, 15/6. F. C. E. Hayter, to No. 99 Sqdn., Upper Heyford, 15/6. I. M. Smith, to No. 101 Sqdn., Bircham Newton, 15/6. W. G. Stevenson and N. W. A. Cullum, to R.A.F. Base, Gosport, 15/6. J. C. L. Claxton, D. L. Ironmonger and G. R. O'C. Lempriere, to No. 9 Sqdn., Manston, 15/6. C. N. McLoughlin, to No. 12 Sqdn., Andover, 15/6. R. J. C. Hunt and R. C. W. Ellison, to No. 26 Sqdn., Catterick, 15/6. S. A. Davis, to No. 33 Sqdn., Netheravon, 15/6. K. G. Vandyck, to No. 35 Sqdn., Bircham Newton, 15/6. J. R. Ayling and H. E. Sales, to No. 100 Sqdn., Bicester, 15/6. F. K. Wood, to R.A.F. Base, Calshot, 15/6.

MEDICAL BRANCH.—Flight Lieutenant C. J. S. O'Malley, to Station H.Q., Heliopolis, 1/6.

Flying Officers A. R. French, to Station H.Q., Hal Far, 1/4. A. P. Atkins, to R.A.F. Training Base, Leuchars, 22/6. A. C. Lysaght, to Medical Training Depot, Halton, on appointment to a S.S. Comn., 11/6.

STORES BRANCH.—Flying Officer M. F. Tomkins to M.A.E.E., Felixstowe, 1/7.

Fatal Accidents.

The Air Ministry regrets to announce that as the result of an accident near Luqait, Iraq, to a Wapiti machine of No. 30 (Bomber) Sqdn. Hinaidi, on June 27, Flt. Lt. Christopher George Halliday, the pilot of the aircraft, was killed and No. 358535 AC.1. John Laverty was slightly injured.

The Air Ministry regrets to announce that as the resul of an accident at Hendon to a Siskin machine of No. 56 (Fighter) Sqdn., North Weald, on June 27, Flg. Off. Vickers Osborne Eyre, the pilot and sole occupant of the aircraft, diec of injuries.

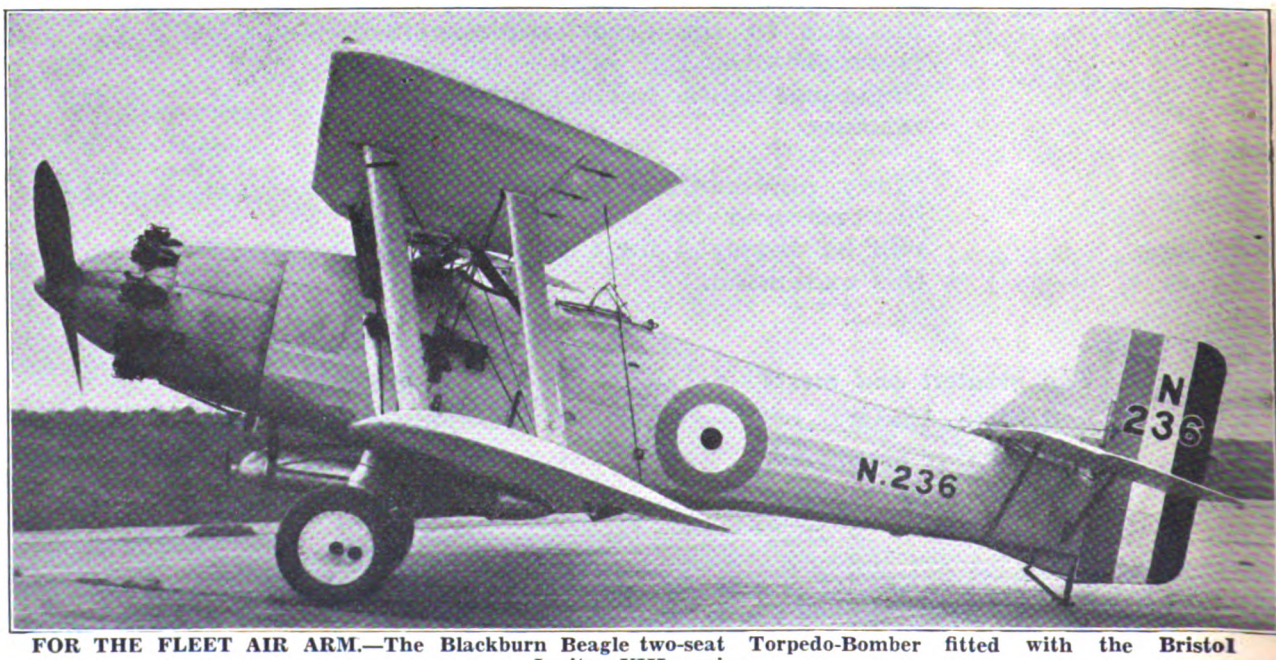
At the inquest on Mr. Eyre, which was held at Hendon on July 1 Flt. Lt. J. I. T. Jones said that the machines were flying in "V formation at 11,000 ft. Eyre had to pretend that he was shot dow and go into a spinning nose dive. He went down to 300 ft. and trie to right the machine, but he left it a little too late and just a the machine was beginning to right itself it struck the ground.

The R.A.F. Display.

Preparations at Hendon for the R.A.F. Display on July 1 are now well advanced. Rehearsals by the Units takin part are being held every day and the various evolution formations and combats are improving in precision and effec tiveness. Vast new stands are rising in every enclosure an the railings are being put into place. Additional space wi be provided for spectators by the omission, this year, of th New-and-Experimental-Type Park.

Perhaps this will be allotted to the 10s. enclosure and wit out any boxes in front of it. A frequent cause of mild com plaint in the last few years has been the fact that nowhe in the 10s. enclosure can the spectators get up to the fro railings as is possible in the lower-priced enclosures. The are either two rows of boxes or else the Parliamentary an Public Schools' enclosures in between. And even buyers 10s. tickets sometimes want to have a look-see at t machines landing and taking off, not to mention the resu of bomb-dropping, etc.

On the far side of the aerodrome a dock complete wit trooper lying alongside, sundry dockyard buildings, a ligh house and a concrete gun emplacement, has grown out the grass. Only a few additional details are needed for t set piece to be ready for the evening of July 13.



FOR THE FLEET AIR ARM.—The Blackburn Beagle two-seat Torpedo-Bomber fitted with the Bristol Jupiter VIII engine.

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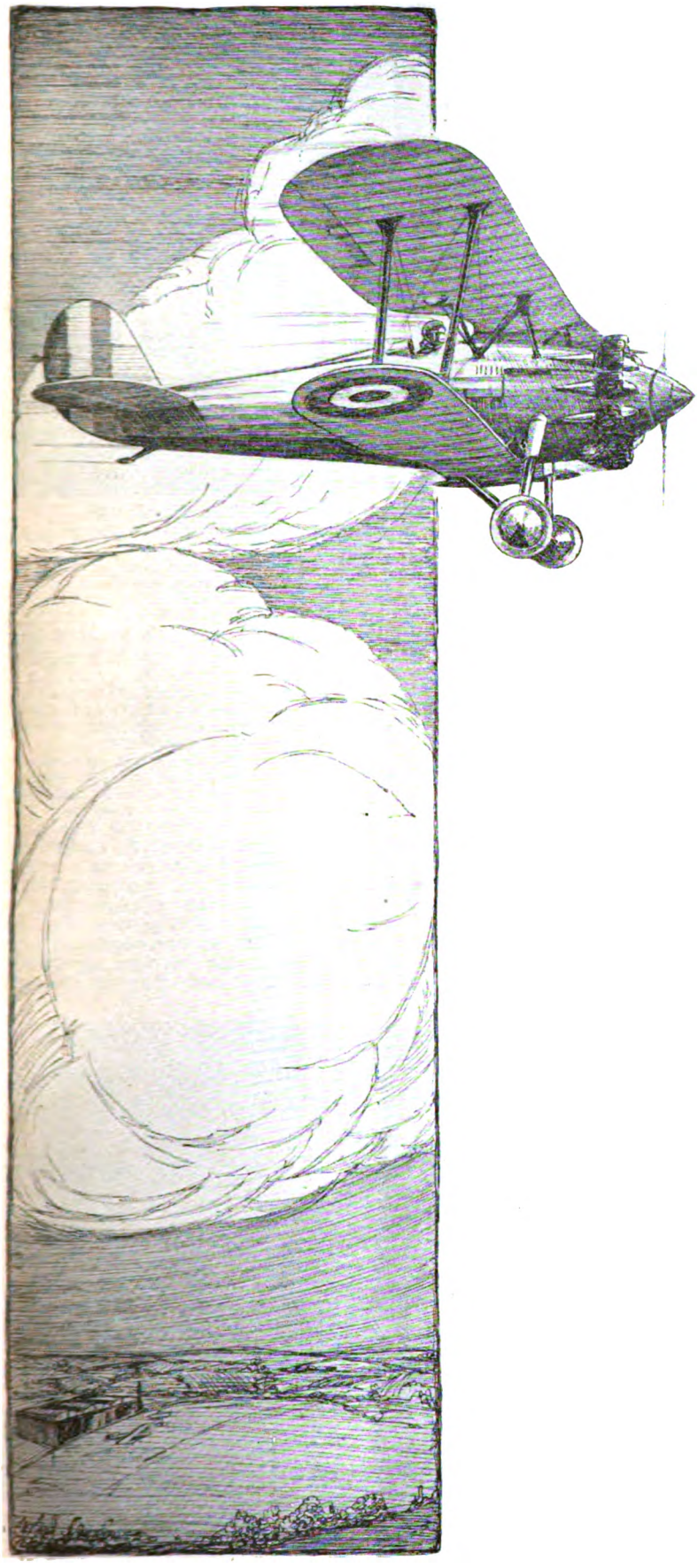

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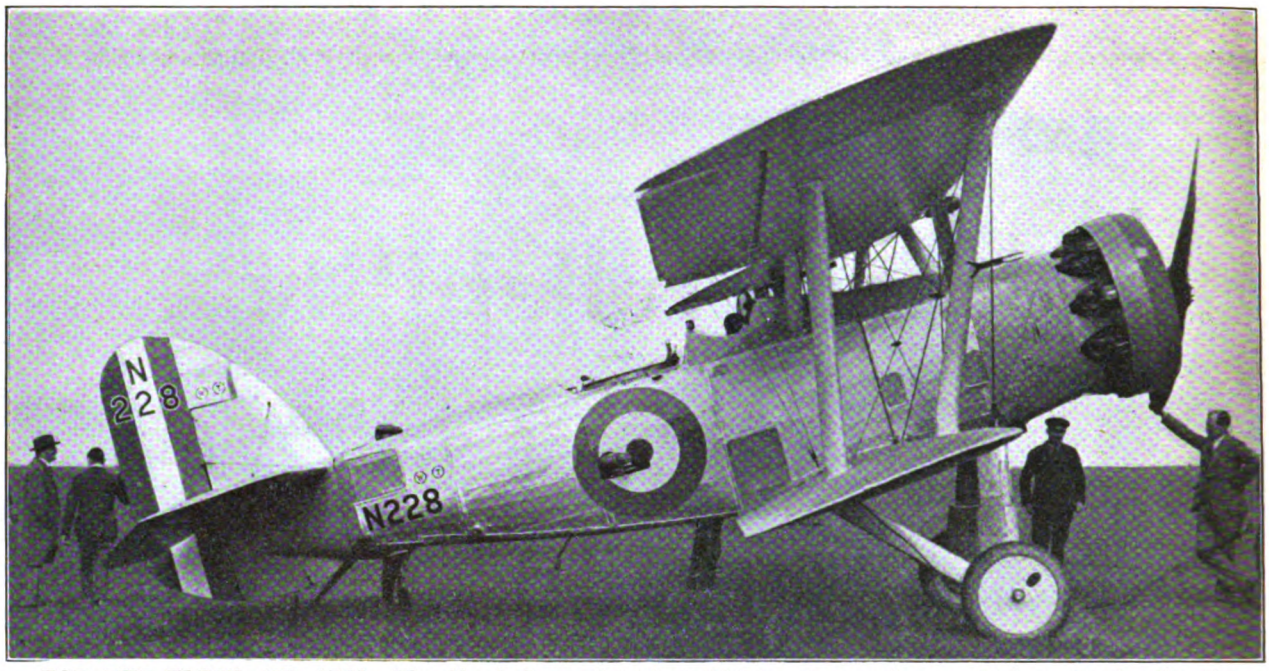


FOR THE FLEET AIR ARM.—The Short Gurnard I Fleet Fighter Reconnaissance biplane fitted with the Bristol Mercury engine and Townend cowling ring. The wheel undercarriage is interchangeable with floats.

Squadron Leader A. H. Peck.

Sq. Ldr. A. H. Peck, D.S.O., M.C., whose appointment to the Department of the Air Member for Supply and Research, Air Ministry, is dated June 10, was born at Monufferpore, Bengal, in 1889, and was educated at Clifton and at Christ's College, Cambridge. He served in the Devon Yeomanry before the War and in December, 1914, was gazetted Second Lieutenant in the Devonshire Regiment. He was seconded to the R.F.C. in August, 1916, and appointed Flg. Off. in October of that year.

In October, 1917, he was awarded the Military Cross for conspicuous gallantry and devotion to duty. The *London Gazette* (18.1.18) adds—

He engaged single-handed three enemy aeroplanes though they had superior height. He drove them back over their lines and prevented them carrying out their reconnaissance.

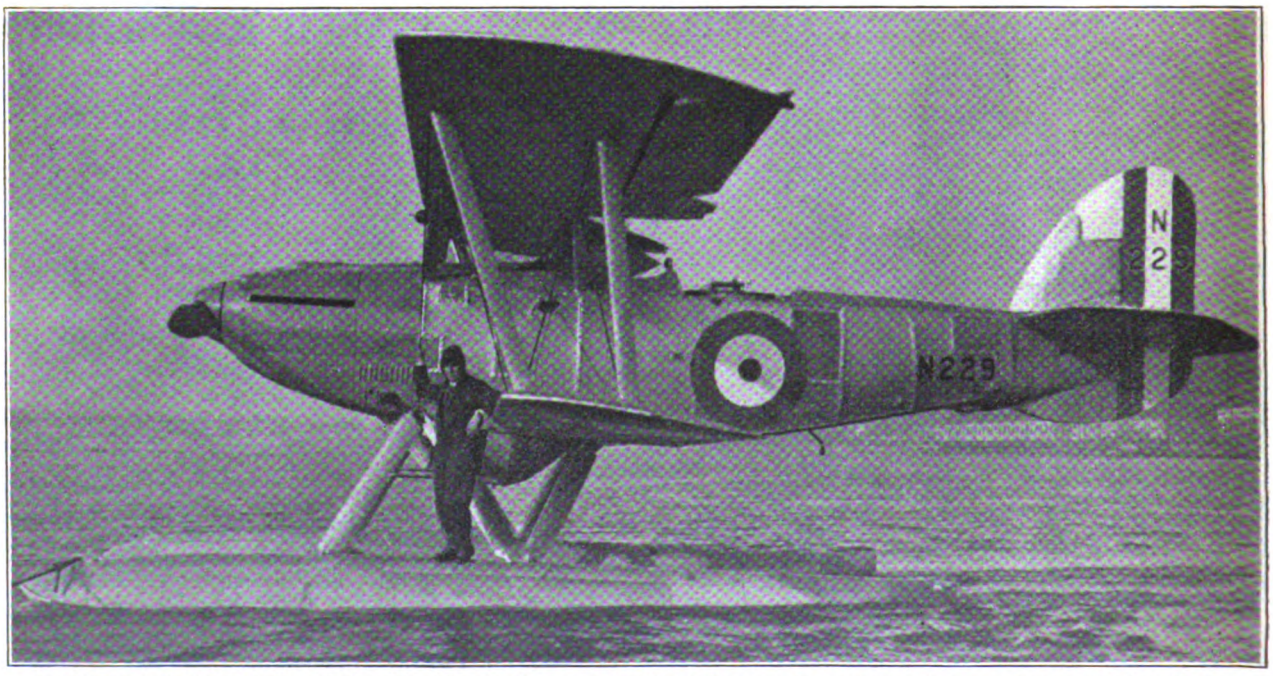
In November, 1917, he was posted to No. 111 Squadron in Palestine. In March, 1918, he was appointed a Companion of the Distinguished Service Order. The *London Gazette* states:—

For conspicuous gallantry and devotion to duty. During two months' aerial fighting he has never hesitated to attack the enemy when they were in superior numbers. On one occasion when piloting a scout, he engaged a hostile formation consisting of four scouts and two two-seaters, completely dispersing them and driving one down out of control. His dash, resourcefulness and skill have been most remarked.

In April, 1918, he was appointed to command No. 144 Squadron in Palestine with the temporary rank of Major. In July, 1918, he was awarded a Bar to the Military Cross. The *London Gazette* states:—

For conspicuous gallantry and devotion to duty. While patrolling at a height of 14,000 ft. he observed a formation of five enemy aircraft attempting a reconnaissance. He attacked the top machine, a scout, and drove it down out of control. He then attacked the second scout, which he also drove down out of control. He finally attacked a two-seater and so quickly that he got to close quarters and opened fire with both guns. That too he sent down out of control. His performance was a splendid one besides being costly to the enemy.

After the Armistice he was placed on the Unemployed List for six months and was then posted to Farnborough. In October, 1919, he was awarded a permanent commission with the rank of Flight Lieutenant. In April, 1920, he was posted to No. 4 (Army Co-operation) Squadron. In January, 1921, he was posted to No. 2 Flying Training School as an Instructor. In January, 1923, he was promoted Squadron Leader and the following month he was appointed to command No. 25 Squadron, then operating at Constanti-



FOR THE FLEET AIR ARM.—The Short Gurnard II Fleet Fighter Reconnaissance seaplane with the Rolls-Royce "F" type engine.

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sheer reliability

■ The Gipsy Engine, in a Tiger Moth, holds the World's Speed Record for Single Seater Light Aeroplanes.

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■ In a Moth it won the King's Cup Air Race, 1928.

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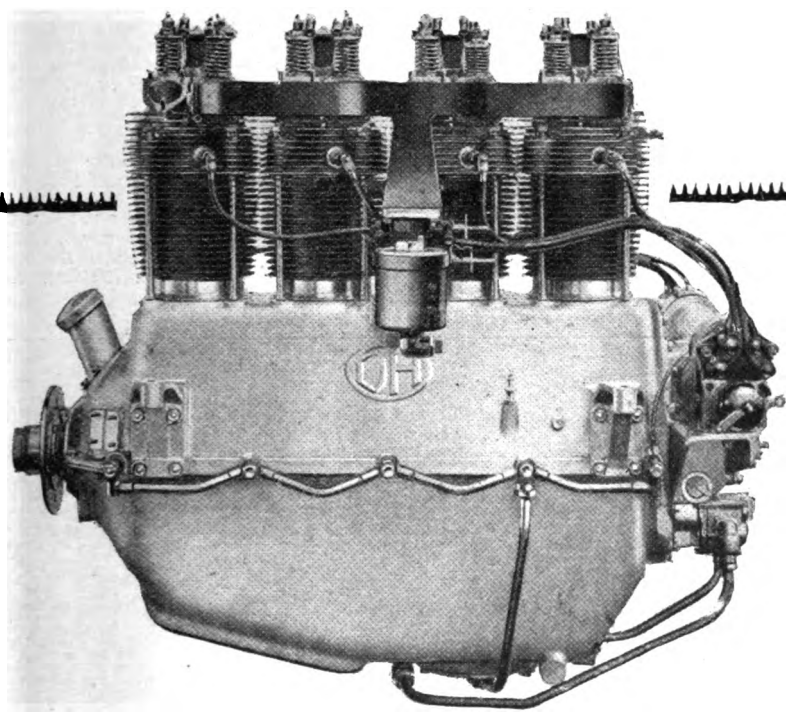

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nople, and subsequently commanded the Squadron at Hawkinge.

In January, 1927, he went to 'Iraq to command No. 6 Armoured Car Company and in April, 1927, he became Officer Commanding the Armoured Car Wing, 'Iraq. In April, 1928, he was appointed to command No. 55 (Bomber) Squadron, 'Iraq.

Central Flying School Categories.

The following officers and airmen have been re-categoried as under from the dates stated against their names:—

A2 to A1:—Flt. Lt. R. S. Greenslade, 16.3.29; Flt. Lt. L. Darvell, M.C., 15.5.29; Flg. Off. C. Clarkson, 6.5.29; No. 87076 F-S. J. E. Brown, 15.5.29.

B1 to A2.—Flg. Off. G. J. C. Mahony, 28.5.29; Flg. Off. E. H. Newman, 4.6.29.

Courts Martial.

Orders, decorations and medals are in future to be worn by all officers and airmen when attending general and district courts martial in any capacity. K.R. (para. 230) and A.C.I. will be amended accordingly.

The R.A.F. Memorial Fund.

The Executive Committee of the R.A.F. Memorial Fund held its third meeting of the current year at the offices of the Fund on June 26. Sir Charles McLeod, Bart., Chairman and Honorary Treasurer, was in the Chair.

The proceedings were almost entirely concerned with the financial position of the Fund, which was found to be satisfactory in all respects.

The Chairman informed the Committee that the trusteeship rendered vacant by the recent death of Lord Revelstoke, had been accepted, to the great satisfaction of the Committee, by the Right Hon. the Lord Weir of Eastwood, P.C.

The Committee approved of the issue by the Grants Sub-Committee and the Secretary of Grants, amounting in all to £1,904 16s. 8d., which had been issued from the Fund between May 1 and June 25.

It was announced to the Committee that two fresh grants had been made out of the "Salting Benefaction Fund" (which has been administered by the Committee since 1920) and also two grants were reported to the Committee as having been made out of the recently instituted Educational Fund which is known as the "Anonymous Education Fund."

The Committee adjourned for the Summer vacation and will hold their next meeting on Oct. 9, at three o'clock.

The Royal Air Force Club.

Notice is hereby given that an extraordinary general meeting of the above-named Club will be held at the Royal Air Force Club, 128, Piccadilly, London, W.1, on Friday, July 12, at five o'clock (*not 6 o'clock, as previously notified*) in the afternoon for the purpose of considering, and if thought fit, passing the subjoined resolution in manner required for the passing of Extraordinary Resolutions:—

To authorise certain alterations to Rules XXIV, XXV (a) and XXVII.

Dated this 28th day of June, 1929.

A. T. WYNYARD-WRIGHT, Captain-Secretary.

Polo.

The polo match between the Royal Navy and the R.A.F. to be played at Ranelagh has been postponed until July 11.

Inter-Services Athletics.

The Inter-Services Athletic Championships will be held at Uxbridge on Aug. 31.

The R.A.F. Athletic Championships.

The R.A.F. Athletic Championships were held at Uxbridge on June 26, 27 and 29.

The King's Cup for the Unit scoring the greatest number of points in the Senior Open competition was won by Henlow with 52 points. Halton were second for 43, Uxbridge third with 41, Cranwell fourth with 36, Flowerdown fifth with 14, Manston sixth with 10, and Andover seventh with 9.

The Air Council Cup for the Unit scoring the greatest number of points in the junior competition was won by Gosport with 40 points. Sealand were second with 30, Tangmere third with 20, Duxford fourth with 15, Upavon fifth with 13. Martlesham Heath and Grantham each scored 12. Digby came next with 11, Shrewsbury with 10, Old Sarum 9, Calshot 7, Wittering 6, Netheravon and Farnborough 5 each, Ruislip 4, Donibristle 3 and Eastchurch 1.

The Air Defence of Great Britain Cup for the Unit in that Command scoring the greatest number of points, was won by Tangmere, whose 20 points for so small a Unit was a highly creditable performance.

Marshal of the Royal Air Force Sir Hugh Trenchard took the salute at the march-past of athletes by Stations on the final day. The parade was headed by the R.A.F. Ensign carried by Cpl. S. Ferris, Marathon Champion of Great Britain, 1925-6-7-8-9.

The best individual performance of the Meeting was the new R.A.F. record for the Half-mile, put up by AC. R. Thomas of Henlow, whose time of 1 min. 53.3-5 secs., beat the existing record put up by Sjt. (now Flg. Off.) Snaith by 7.1-5 secs. It is interesting to note that the London Athletic Club's time for this distance at Stamford Bridge on June 29 was 2 min. 1.3-5 secs.

In the 120 yards Hurdles, individual championship, AC. D. O. Finlay of Tangmere actually beat the R.A.F. Record for this event, put up by himself as an Aircraft Apprentice by 2-5 sec., but had the misfortune to knock over a hurdle.

There were no new R.A.F. Records in the Team and Relay events but the times were better than last year in the Two Miles Relay (Open) and the 360 yards Hurdles Relay (Junior), and the distances were better than last year in Putting-the-Shot (Open) and Long Jump (Open and Junior).

The results in detail were:—

INDIVIDUAL CHAMPIONSHIPS.

100 *yards*:—1. L-AC. T. W. Elliott (Cranwell). 2. S. M. M. Maw (Halton). 3. AC. A. Trower (Grantham). Time 10 secs.

220 *yards*:—1. L-AC. T. W. Elliott (Cranwell). 2. AC. A. Trower (Grantham). 3. Cpl. T. Tillman (Henlow). Time 23 secs.

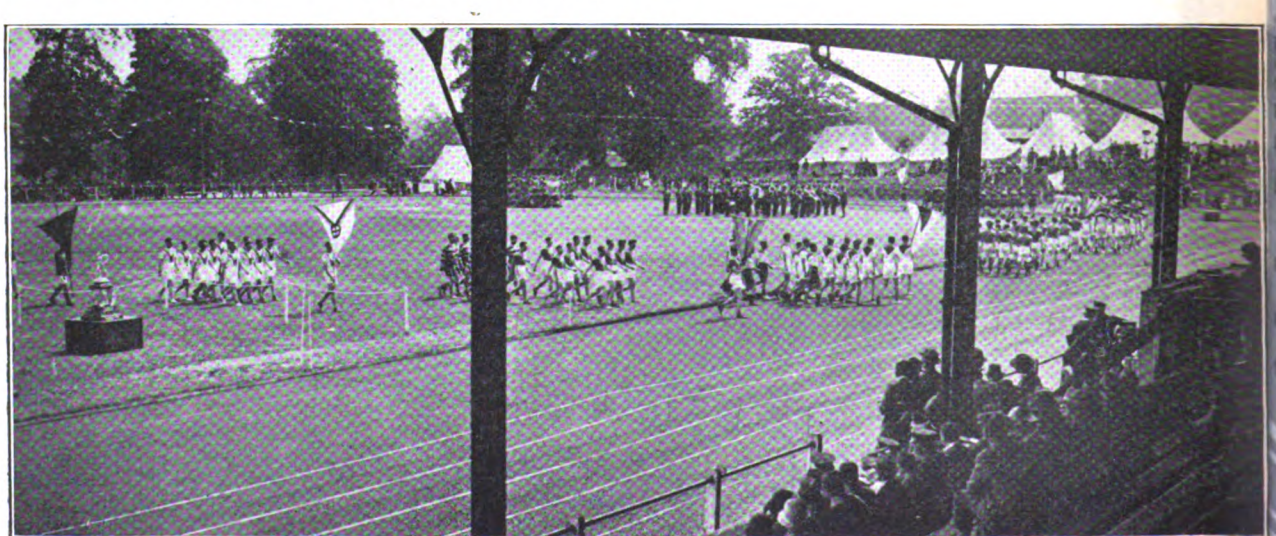
440 *yards*:—1. L-AC. J. D. Rose (Netheravon). 2. Cpl. W. Hen (Henlow). 3. AC. L. Evans (Martlesham Heath). Time 53.3-5 secs.

880 *yards*:—1. AC. R. Thomas (Henlow). 2. L-AC. H. Hester (U bridge). 3. AC. G. Brown (Martlesham Heath). Time 1 min. 56. secs.

One Mile:—1. AC. R. Thomas (Henlow). 2. Cpl. W. Tym (Mart sham Heath). 3. AC. F. W. Turner (Uxbridge). Time 4 min. 20. secs.

Three Miles:—1. Cpl. S. Ferris (Uxbridge). 2. AC. G. Moore (U bridge). 3. AC. Laing (Upavon). Time 14 min. 59.1-5 secs.

120 *yards Hurdles*:—1. AC. D. Finlay (Tangmere). 2. L-AC. Vernon (Halton). 3. Flt. Lt. G. A. Hadley (H.Q., C.A.). Time 15. secs.



MARCHING OFF.—The Parade of Athletes by Stations marching off the Stadium on the third day of the R.A.F. Athletic Championship Meeting at Uxbridge on June 29. —(*"Aeroplane" photograph.*)

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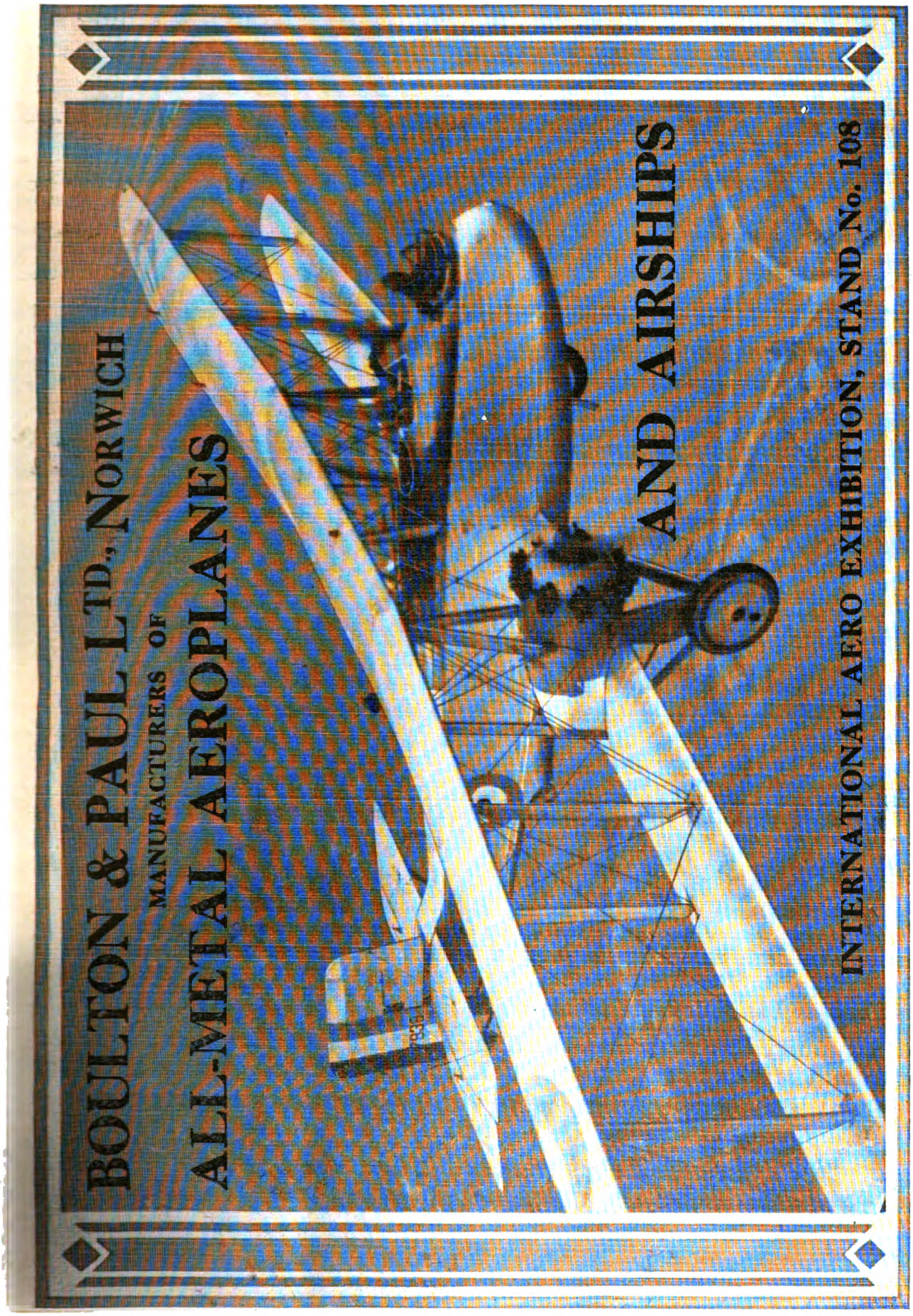

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Throwing the Javelin:—1. Cpl. R. Eyles (Henlow). 2. AC. N. Matthews (Wittering). 3. AC. P. Neale (Gosport). 161 ft. 2¾ ins.

Pole Jump:—1. AC. C. Boyd (Flowerdown). 2. Plt. Off. R. Cotton (Duxford). 3. AC. H. Oram (Calshot). 10 ft. 8 in.

Two Miles Walk:—1. AC. W. Golightly (Henlow). 2. L-AC. L. T. Castle (Halton). 3. AC. W. Reeves (Uxbridge). Time 15 min. 36.4-5 secs.

Long Jump:—1. Cpl. T. Tillman (Henlow). 2. Cpl. R. H. Allan (Halton). 3. Flg. Off. F. W. Cannon (Henlow). 21 ft. 5¾ ins.

Putting the Shot:—1. S-M.1. F. Parker (Halton). 2. Plt. Off. R. Cotton (Duxford). 3. Cpl. R. Eyles (Henlow). 36 ft. 11¼ ins.

High Jump:—1. Flg. Off. F. E. Nuttall (Duxford). 2. AC. D. Finlay (Tangmere). 3. Cpl. R. H. Allan (Halton). 5 ft. 10 ins.

TEAM CHAMPIONSHIPS.

Long Jump:—(Open) 1. Halton (62 ft. 7¼ ins.), 2. Cranwell. 3. Henlow. (Junior): 1. Gosport (41 ft. 9½ ins.), 2. Tangmere, 3. Calshot.

440 *yards Relay*:—(Open): 1. Henlow (46.3-5 secs.), 2. Halton, 3. Uxbridge. (Junior): 1. Martlesham Heath (47 secs.), 2. Grantham, 3. Gosport.

Putting the Shot:—(Open): 1. Henlow (100 ft. 5¼ ins.), 2. Halton, 3. Cranwell. (Junior): 1. Gosport (65 ft. 11¼ ins.), 2. Sealand, 3. Ruislip.

One Mile:—(Open): 1. Uxbridge, 2. Henlow, 3. Cranwell. First three home, AC. R. Thomas (Henlow) 4 min. 23 secs., AC. R. Turner (Henlow), L-AC. Hester (Uxbridge). (Junior): 1. Sealand, 2. Shrewsbury, 3. Old Sarum. First three home, L-AC Plank (Shrewsbury) 4 min. 41.4-5 secs., AC. Swift (Sealand), Plt. Off. Chambers (Sealand).

High Jump:—(Open): 1. Halton (16 ft. 2 ins.), 2. Uxbridge, 3. Cranwell. (Junior): 1. Duxford (10 ft. 11¼ in.), 2. Farnborough, 3. Grantham.

Two Miles Relay:—(Open): 1. Uxbridge (8 min. 20.3-5 secs.), 2. Henlow, 3. Halton. (Junior): 1. Martlesham Heath (8 min. 38.2-5 secs.), 2. Sealand, 3. Duxford.

360 *yards Hurdle Relay*:—(Open): 1. Halton (54.1-5 secs.), 2. Henlow, 3. Flowerdown. (Junior): 1. Tangmere (50.4-5 secs.), 2. Wittering, 3. Gosport.

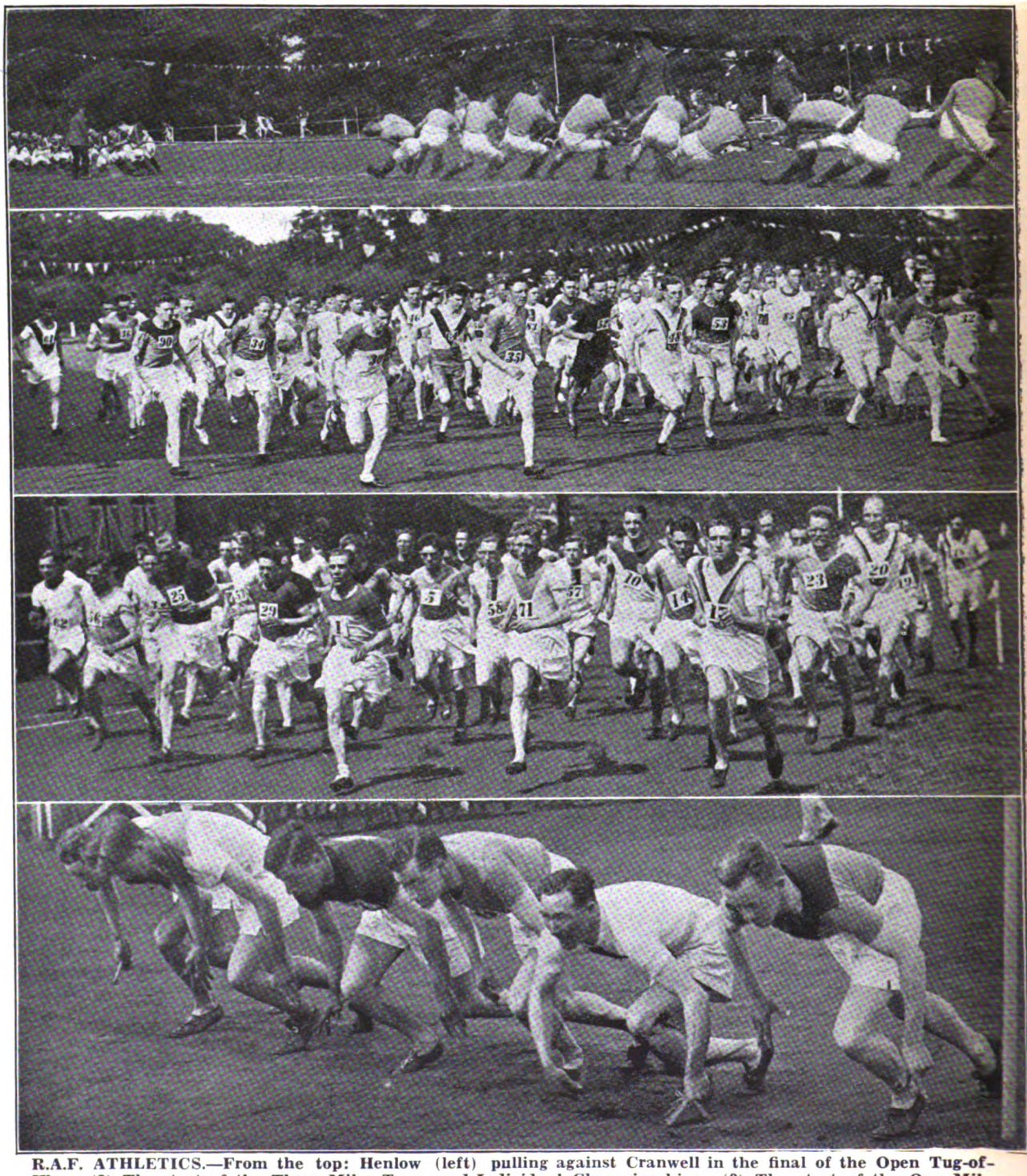
One Mile Relay:—(Open): 1. Henlow (3 min. 38 secs.), 2. Halton, 3. Uxbridge. (Junior): 1. Sealand (3 min. 35.4-5 secs.), 2. Netheravon, 3. Gosport.

Three Miles:—(Open): 1. Uxbridge, 2. Henlow. (Junior): 1. Gosport, 2. Upavon.

Tug-of-War:—(Open team of 10—110 stone): Henlow beat Cranwell by 2 pulls to 1 in the Final. (Junior team of 8—88 stone): Gosport beat Digby by 2 pulls to nil.

At the end of the final day Lady Trenchard presented the Trophies, Cup and Medals, to the winners, and accepted a bouquet from the Captain of the Henlow Team.

C. M. MCA.



R.A.F. ATHLETICS.—From the top: Henlow (left) pulling against Cranwell in the final of the Open Tug-of-War. (2) The start of the Three Miles Team and Individual Championships. (3) The start of the One Mile Individual Championship, and (4) the start of the One Mile Junior Relay.—("Aeroplane" photographs.)

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AIR SURVEY AND THE EMPIRE.

There have been occasions when the peculiar form of mental laziness known as "muddling-through" was regarded as a British virtue. Lately people have come to realise that perhaps after all muddling-through is more of a vice and that such a policy may entail enormous waste.

The linked aggregation of Powers, Dominions, Nations and Territories, painted pink on the map of the World and representing the sum of English acquisition since the inception of the race, was gained in no ordered scheme and in the most haphazard way.

The finest stories lie hidden round our Empire's beginnings and await the story-teller of imagination. Learning, however, has her history books and the Rising Generation bored with dates and the like, turns to Fiction for tales of thrills and adventures.

Anyway, to revert to the Empire, it may be that the haphazard ways of its origin account for the fact that the surveyor follows long after the colonist and town-builder, the prospector and mine operator, have followed in the footsteps of the pioneer. An even more potent reason for the delays in obtaining good maps is that survey work takes time and lifetimes may be spent in mapping new territory.

Air survey has altered all this and country can be mapped from the air long before it is really opened up. Naturally aerial survey work appears expensive, but when the decreased time-factor is taken into account this consideration disappears. Also maps for each department of the Government are obtained from the start and with no increased labour. Information for the makers of Roads and Railways, Builders of Towns, the Forestry people, the Geologists, the Agriculturists and so on is all on the photographs.

Mention of light aeroplanes is frequently made, the Light Aeroplane Clubs figure in many speeches, air-lines and airships are all familiar topics. But somehow, probably because those responsible are too busy to talk much, there is not much mention of survey work.

There is in this country a growing organisation devoted to aerial survey-work, young and healthy, backed by no government aid and progressing to such a degree that it has now on order a machine built to its own specification. This machine will be shown at the Aero Show at Olympia and will attract attention because it is the first of its kind.

Five years ago the Aircraft Operating Company Ltd., as this growing organisation is called, consisted of three directors and a part-time secretary-typist, to-day there are six directors and a staff of 150 persons. The Chairman is Mr. Alan S. Butler, to whom the de Havilland Aircraft Company Ltd. owe so much. Mr. Butler's belief in aerial survey, which he very liberally backed, is now being justified; and further as a result of the extensive experience gained by the Company in Great Britain, Africa, Asia and South America Mr. Butler feels justified in authorising the expenditure of considerable sums of money on experimental work in the Aircraft Operating Company's premises at Hendon.

The new survey machine being built by the Gloster Company is also part of the experimental programme. This machine, which will fly or climb on either of its two engines, has been designed entirely to the Aircraft Operating Company's specification.

The Aircraft Operating Company believes that their new machine is going to revolutionise the possibilities of air survey in that it will extend the field of operation and will very much accelerate the rate of working.

The company has two expeditions abroad at the present time, one in South Africa and one in Rio de Janeiro where a staff of nearly one hundred persons is being employed in the production of a large-scale map of the city and its surroundings for town-planning and development purposes. The accompanying pictures, brought home by Major H. Hemming, Managing Director of the firm, give a good idea of this work.

In 1927 the Company sent out an expedition consisting of two aeroplanes and eight European personnel to Northern Rhodesia to make a photographic survey of some mineral concessions for Rhodesian Congo Border Concessions Ltd. This particular survey afforded a good example of the economy of the method, as the geologists received the photographs on the spot and used them right away. The same photographs were used by the Aircraft Operating Company to prepare a reconnaisance survey of 12,000 square miles for the Northern Rhodesian Government.

A strip survey of the Zambesi River and its two principal tributaries the Kabompo and the Lungwebungu was made for the same Government. The survey is being prepared on a scale of 4 in. to a mile and is to ascertain the possibilities of navigation on the Zambesi.

In Northern Rhodesia the Company photographed areas of approximately 100 sq. miles round each of the principal towns in Northern Rhodesia. From these photographs maps are being prepared which will be used for town-planning and allocating land for agricultural purposes.

During 1927-28 the Anglo-Belgian Boundary Commission, which had been endeavouring to locate the water-shed between the Zambesi and Congo basins, was working on an area neighbouring the country over which the Company was actually taking photographs, and advantage was taken of this to ask the Company to photograph the watershed as nearly as could be judged from the air.

Small-scale photographs taken from a high altitude were used. The watershed was extremely difficult to find, as it was low and in places swampy, but the photographs showed clearly the trend of the watersheds. Also the source and general direction of any drainage system could be clearly seen.

Working from the ground, such systems are difficult to trace and the work is very arduous and lengthy, as drainage systems, even when found, have to be followed for some way before the basin into which they are running can be determined.

During 1928 a photographic survey of 1,000 sq. miles on both banks of the Tigris above and below Baghdad was made, as the 'Iraq Government was interested in a proposal to irrigate this area. The work in connection with the final mapping from these photographs is at present being undertaken at Hendon, where the Company's Headquarters' drawing office is situated.

The 'Irak Survey Department will receive a photographic mosaic of the area, and conventional line maps are being prepared on a scale of 1/10,000. The mosaic and line map are being made on identical sheets covering 3 mins. (60 minutes = 1°) to the side so the two may be easily compared.

The particular survey found that the traces of ancient civilisation show up quite clearly under the desert sands. All over the area ruins of large cities and ancient irrigation canals of amazing straightness may be followed quite easily. One can see that very large areas of the Mesopotamian desert bordering the two Rivers were at one time densely cultivated—hence the *Arabia Felix* of the ancients. This name was not given in sarcasm as may be sometimes thought by those who know the country now-a-days.

RIO FROM ABOVE.—A vertical view of the Avenida Rio Branco, which is seen obliquely on the opposite page.

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As a result of an investigation made by Mr. R. Bourne, Lecturer at the Imperial Forestry Institute, Oxford, who was making a tour of inspection in Northern Rhodesia at the same time as the Company's expedition was working in that area, the geological survey of an area may be carried out from aerial photos. A close study of the ecology of the area, i.e. of the relation between the soils and the vegetation thereon, is first necessary, then a careful study of the aerial photographs will disclose the necessary information.

Enough has been said to enable the reader to realise the work that can be, and has been, done by air survey. When one realises that the area of the British Empire is 14,000,000 sq. miles and that only 20% has been adequately surveyed, when one considers that on all sides there are calls to develop the Empire, when one finds that, in spite of the fact that Industry is employing 300,000 more persons than in 1913 there is an increase in unemployment with a decreased emigration rate, one begins to feel that those who call for development should first call for maps.

With these the areas to be opened up could be chosen and developed. Emigrants could be then sent to territories where development was certain and not to places where it was all a terrific gamble.

There is obviously a heap of work waiting to be done by aerial survey. And one hopes that those in authority will see that it gets done.

Aerial survey has been developed by the British, and there is no doubt that to-day we lead the world in this particular enterprise. The upholders of subsidies may be interested to see that we lead, as we have always led, in an industry developed by private enterprise.—T. J.

AN ECHO OF THE "ITALIA" DISASTER.

A report in *The Times* states that the Italian Government, which had conferred posthumously on the Swedish Professor Malmgren the gold medal for Civil Valour, has assigned to his mother a yearly pension of £110, and has further sent her all the relevant documents of the commission of inquiry into the loss of the airship *Italia* off Spitsbergen last year.

AN APPRECIATION.

A regular reader of THE AEROPLANE who has spent many years as a business man and a politician writes:—

One reads your paper not merely for the news but for the occasional lifting aside of the curtain that hides the future. Being interested in the political aspect rather than the mere commercial side, I find this of no small value—so please accept this modest compliment from a twenty-year air propagandist.

ON THE FRINGE OF THE BLACK COUNTRY.

On Friday last one paid a very interesting visit to the works of Rubery Owen and Co. at Darlaston, and those of Accles and Pollock Ltd. at Oldbury.

The rail service to Birmingham from London must be one which will hold its own against any form of aerial transport for many years to come. The total journey takes only two hours by the best trains, and then lands one in the heart of the City, so it will take a lot of beating by aircraft which have to use landing grounds that may be four or or five miles outside and cannot cruise more than 90/95 miles per hour, and at that are dependent on the weather.

However aircraft business is very definitely on the increase, despite its limitations on such main line journeys. This fact was brought forcibly home when one found that both these famous firms have large extensions in course of construction to cope with their rapidly increasing trade in aircraft material.

At Rubery Owen's one saw evidence of great activity in the large shop which is laid out for the production of all types of nuts, bolts, pins, turnbuckles, thimbles, shackles, etc.

This department is, naturally, run in accordance with the A.I.D. inspection principles which govern the manufacture of all aircraft components. All material, from the time it enters the factory store to the final packing of the finished article, is subjected to the most rigid inspection.

The store for the aircraft material is separate from the motor car material store and every bar has its code colour.

The shops are well laid out and one saw a plant consisting of about 100 capstan lathes, 20 milling machines, 50 automatics, 10 drills, 15 screwing machines, 6 tapping machines and 20 nut facing machines working on aircraft components and all in full swing.

Orders are in hand for nearly all the Aircraft firms in England besides many for those firms who redistribute the various goods to firms who do not buy direct from Rubery Owen.

All the components which are made here, be they nuts, bolts, or turnbuckles, are subjected to the same rigid inspection system. And all except the small sizes are stamped, and one can safely say that the standard which has helped to give British aircraft the name it has is fully maintained.

After inspection all parts except those of stainless steel or light alloys are dipped in hot oil and vaseline and when drained are packed in grease-proof paper ready for dispatch.

The firm of Rubery Owen is well known in many other

RIO FROM ABOVE.—The Avenida Rio Branco seen obliquely. Comparison of this picture with that on the opposite page is peculiarly interesting, as showing how small the most imposing buildings may be in plan.

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spheres besides that of aircraft components, and during one's tour one saw many of the large motor-car parts, such as chassis frames, wheels, axle housings, etc.; also metal tanks, bridges and buildings and other lines with which the firm deals.

Mr. Owen told one quite an amusing yarn about why he started manufacturing such a varied assortment of things. He was at a well-known motor-car works—more years ago than he cares to remember!—quoting for the erection of a steel-framed workshop. His quotation was turned down for a cheaper one, in wood, and rather than be done completely, he said, "Look here, is there any other thing I can make for you, what about those bent angle-irons?" (these were the rear part of the chassis). "Can you do things like that quickly?" asked the motor-car man. "I'll let you have a sample the day after to-morrow," replied Mr. Owen. So he got an order. That sample was delivered the following afternoon! And since then he has always gone forward starting any particular line for which he could see a demand, and never being deterred because he had so far not done anything of the kind.

The manufacture of aircraft components was started about 20 years ago and has been growing steadily until now, as already mentioned, considerable developments are under way for housing further plant for this side of the business.

Nearly 2,000 men and girls are employed at present, of whom some 800 are on the aircraft work.

After a most cheery lunch we left for Oldbury and the works of Accles and Pollock Ltd. Here one imagined one would see the tube mills most in evidence and just a certain amount of parts made from the resulting tubes, but again the varied products appear to be the most important.

One certainly saw tubes of all shapes and sizes being drawn from the "blooms." These "blooms" are the comparatively thick and short lengths of tube from which the real tubes are drawn cold, and are made at an allied firm of Accles and Pollock called Tubes Ltd., whose mills are in another part of the adjacent country. But the volume of the business done with the finished tubes was an eye-opener.

There seems to be no end to the articles now made from tube and it would be impossible to mention more than a few which one saw.

Apart from aircraft parts one only had the chance to notice things casually as time was getting short. But one saw such varied things as tables (hospital trolleys), chairs, golf club shafts, parts of motor-cycles and pedal-cycles, spanners of all shapes and sizes, motor-car parts and so on.

On the aircraft side the firm does a very large trade in stock lengths of tube of various sections and specifications with aircraft manufacturers, but many of these firms let Accles and Pollock bend and weld up the tube into various components for them, and one saw every conceivable part from engine exhaust stubs to tail-skids.

It was a revelation, and a most gratifying one at that, to learn of the size of the export business done by this firm with American aircraft manufacturing firms. Tubes of many special sections as well as specific components, chiefly in chrome-molybdenum steel, are being exported in large quantities, and one was told that at present some 150,000 feet per week are being sent over. Golf-club shafts are another product which goes to that country, these are tapered steel tubes and are astonishingly flexible. Many parts are also made for the Ford Works at Manchester.

All the aircraft tubing is subjected to the most rigid inspection and tests, and tubes are supplied conforming to all the usual B.E.S.A. and D.T.D. specifications.

At present the firm does not draw light alloy tubes, their work with this material being confined to a few special orders for manipulation.

One would have liked a whole day at each of these factories because the more one sees of such things the more one realises how little one knows of the manufacture of much which is so commonplace as an article. And where aircraft are concerned, one cannot help being reassured at seeing the growth of this side of such business. However the train had to be caught at "Brum" and one was hurried off to travel back in company with prosperous manufacturers smoking cigars whose size almost made one think they had originated from the factory of Accles and Pollock.— C. N. C.

A NEW AERODROME AT FRIEDRICHSHAFEN.

A report in *The Times* states that a new aerodrome has been built at Friedrichshafen at a cost of 350,000m [£17,500], of which 100,000m. has been subscribed by the Dornier Aviation Construction Works, and 50,000m. by Friedrichshafen, the balance having been contributed by the German Reich, the State of Württemberg, and the town of Stuttgart. There will be a regular mail and passenger service between Friedrichshafen and Stuttgart.

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

THE ROTTERDAM MEETING.

Away back in 1826 George Canning wrote: "In matters of Commerce the fault of the Dutch, Is offering too little and asking too much." That was something over a hundred years ago. And anyhow it is true of any keen business man whether he be a Netherlander, a Yorkshireman or a Scotsman.

Those of us who have been to the Meeting of the Rotterdam Aero Club, which took place from June 27 to June 30 inclusive, are fully convinced that in matters of hospitality and sport the fault of the Dutch is offering too much and asking nothing whatever in return. The Dutch of little old New York must have been the people from whom the modern American learned his ideas of hospitality and of "throwing a party."

Exigencies of the Press, preparations for the Aero Show, and the growing boom in aviation generally, compelled one to miss the first day of the Meeting. But on Friday, June 28, by courtesy of the Koninklijke Luchtvaart Maatschappij, commonly known as the K.L.M., certain of us were wafted to Rotterdam in a Fokker monoplane, with two French Jupiter engines, piloted by Mr. Fryns,—or Frijns, if you prefer proper Nederlands spelling.

Leaving Croydon at about 18.00 hours we landed on the Waalhaven Aerodrome at Rotterdam at about 20.15 hours. Mr. Fryns has been to Batavia and back twice by air and what he does not know about over-water flying and cross-country flying cannot be worth much. The way he handled the Fokker was a lesson in what air-line flying ought to be. He kept steadily between 1,500 and 2,000 feet, cruising nicely with his engines doing 1,600 r.p.m. and his speed varying between about 90 miles an hour climbing when he was making out towards the coast, and a little over 100 m.p.hr. on the level.

He took off across the Channel right over Dover and when he was ready to turn North-East along the French coast he had the nose of the machine dead on Calais Harbour within gliding distance of the beach. After that, with the wind blowing on-shore, instead of flying over the sea so as to avoid the bumps and save himself trouble, he flew just so far inland that if both his engines had stopped at once he would have had a straight glide head-to-wind onto the beach, which is the only place where a landing is possible all the way up the Belgian coast. And though plenty of bumps could be felt hitting the machine it hardly so much as wavered, thanks to his excellent handling. His landing was more like sitting down on a cushion than hitting the hard earth,—there was none of that plunging which generally happens after even quite a good landing. Altogether his performance was a perfect example of what air-line flying should be.

We in this country pride ourselves on the skill of our air-line and air-taxi pilots, and certainly our best are not beaten by the pilots of any other nation. But good as they may be they certainly cannot beat these K.L.M. pilots. And careful as we are in the maintenance of our aircraft there are no better kept machines in the World than those of the K.L.M., as is shown by the fact that they carry on throughout the busy part of the year with something very like 100% efficiency and without a single machine in reserve. Mr. Plesman, the Chief of the K.L.M., Mr. Martin, the Business Manager and Mr. Guillemard, the Chief Engineer, are certainly masters of their professions.

ARRIVALS AT ROTTERDAM.

Officially the Rotterdam Meeting was called the Tweede Internationaal Concours voor Sportvliegtuigen, otherwise the Second International Meeting for Sport-Flying-Machines. And if ever there was sport-flying, that was it.

The show began on Thursday with the "coming of the part-takers," otherwise the arrival of the competitors. It was run on the lines of what has now become generally known as a Rallye, and the winner was Lord Carbery on his new Moth G-AAHT. The second was Mr. H. R. Law on Moth G-EBYJ, that good sportsman Mr. R. G. Cazalet in his Widgeon was third, and there was a special award to Mr. K. K. Brown, the instructor of the Cinque Ports Club.

Quite the most sensational arrival was Mr. A. J. Richardson of the Norwich Club. Mr. Richardson learned to fly about a year ago, and he is now 67 years of age. Having had about 80 hours' dual instruction he suddenly developed into quite a good pilot in that curious way that slow learners very often do. Then he bought himself a Klemm monoplane with a Salmson engine and has been doing quite a good deal of flying since.

Having made up his mind to come to Rotterdam he argued that going all the way round by Lympne was foolish and that he might as well go in a straight line. That meant leaving the coast of Norfolk somewhere about Cromer and doing something like 120 miles of open-sea flying, most

AT WAALHAVEN.—Captain Versteeg's Army Formation getting off over the Club-House.—(*K.L.M. photograph.*)

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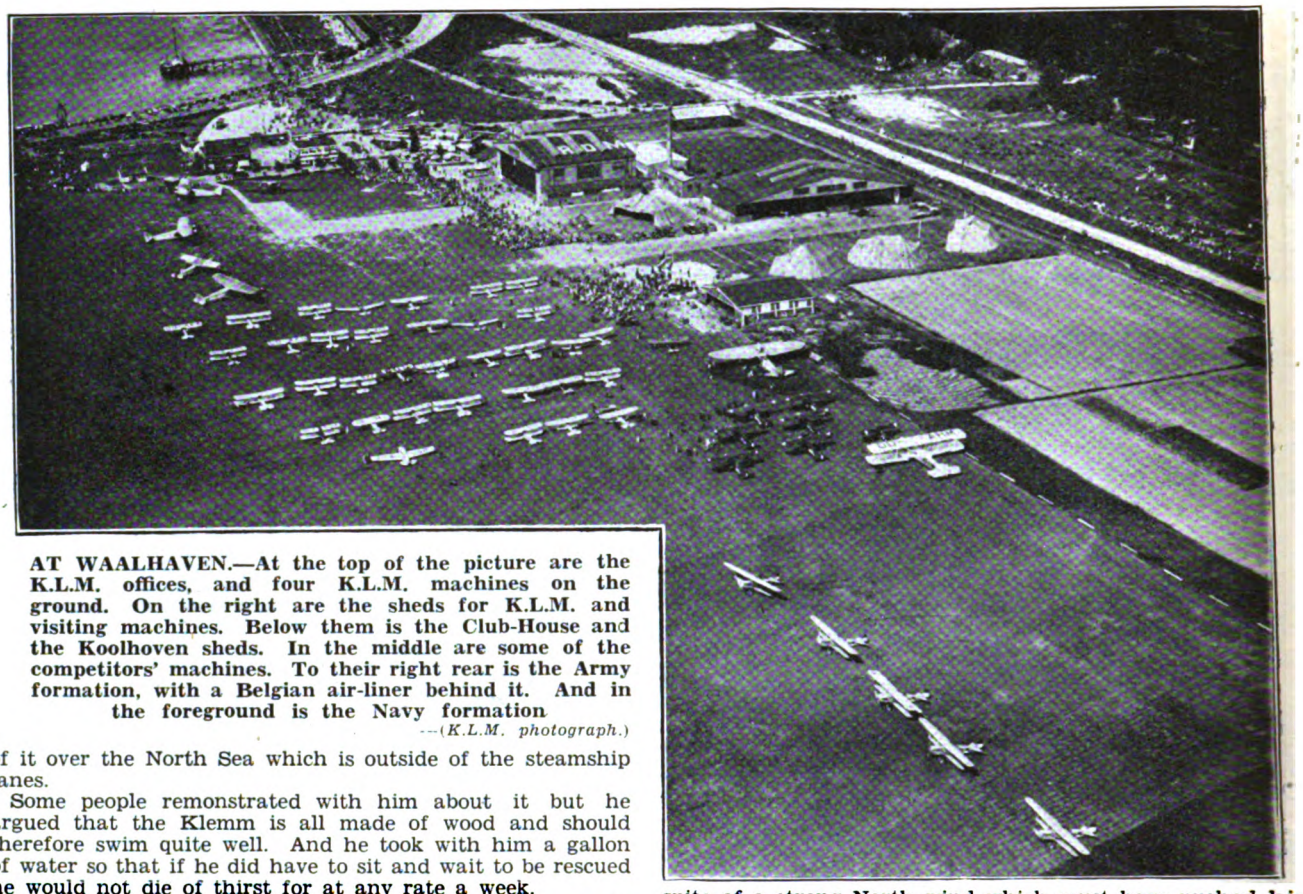

AT WAALHAVEN.—At the top of the picture are the K.L.M. offices, and four K.L.M. machines on the ground. On the right are the sheds for K.L.M. and visiting machines. Below them is the Club-House and the Koolhoven sheds. In the middle are some of the competitors' machines. To their right rear is the Army formation, with a Belgian air-liner behind it. And in the foreground is the Navy formation

—(K.L.M. photograph.)

of it over the North Sea which is outside of the steamship lanes.

Some people remonstrated with him about it but he argued that the Klemm is all made of wood and should therefore swim quite well. And he took with him a gallon of water so that if he did have to sit and wait to be rescued he would not die of thirst for at any rate a week.

Having done many hours of flying the revolutions of his engine were down a bit, and somebody wanted to tune it up for him. But he argued that it was a French engine and ought to have a French mechanic to tune it up, and said that even if he were a few revs. short he would merely fly rather more slowly.

So somehow he got special Customs clearance at Norwich and pushed straight off across the sea for Rotterdam, arriving, like the "Old Superb," more or less with the others, in spite of a strong North wind which must have pushed him considerably off his course. Of course he was given a wonderful reception by our hosts in Holland.

A SAD TALE.

Incidentally their hospitality shows itself in all kinds of different ways. One British pilot on the night of arrival went off with a party to Scheveningen, the Brighton of the Netherlands, and somehow became separated from his friends, who, thinking that he had gone home early, went

THE NEW KULLYBUS.—Mr. Frederick Koolhoven and the FK 42 (Hermes engine).

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back to Rotterdam without him. Feeling very tired he sat on a doorstep to reflect and went to sleep. There he was found by a friendly policeman and taken to the local lock-up where he slept peacefully till the morning. When he woke they gave him tea and hot shaving-water and sent him back to his anxious friends. And the Rotterdam Club fixed things all right about the fine which he was due to pay.

The official entertainment that evening was a dinner at the Yacht Club in Rotterdam, which began somewhere about 20.00 hours and went on till about 23.00 hours, followed by a dance which went on well after dawn.

ROUND HOLLAND.

On Friday there was a Height Flying Competition in the morning, and in the afternoon there was a flight round Holland. The competitors left at 14.00 hours, flew round a stated course and landed at 15.00 hours at Soesterberg, which is the great aerodrome of the Netherlands Army, and quite one of the best organised institutions of its kind in the World.

It began well under its first Commanding Officer, Colonel Walaardt Sacré, and it goes on steadily growing in quantity and quality under its present Commanding Officer, Colonel J. H. Hardenberg. Here the pilots were entertained to tea and excellently looked after in the short time they were there.

At 16.00 hours they arrived at the Schiphol Aerodrome, Amsterdam, where again they were quickly but efficiently entertained. And at 18.00 hours they arrived at Waalhaven. Everybody enjoyed the trip thoroughly.

That evening the Rotterdam Aero Club itself gave a party at the "Gâité," which is what on the Continent is called "a dancing," otherwise what we, contrariwise, call a Palais de Danse, which was closed some few weeks ago for the Summer season,—all the business people being away on holidays or going sporting in the evening. It was reopened for that one evening's party. There was a first-class band and there were liquid refreshments of the best, and there was a good floor.

The birthday of Mr. Kolff, the President of the Club, happened thereabouts,—whether before or after midnight was not quite clear,—so hosts and guests combined to signify their approval in the usual manner. The dignified Mr. Kolff was transported round the room shoulder high, and thereafter was installed in the middle while the party danced round him in rings.

Some people went home from the party as early as 02.00 hours next day, and some did not. But nearly everybody turned up bright and smiling for the first competition at 10.00 hours the following morning,—such is the excellence of the climate and the alcohol of Holland.

REAL ENTERTAINMENT.

The competitors were housed and fed, entirely at the expense of the Rotterdam Club, at the Hotel Weimar. None of the visiting competitors was allowed to pay for anything, either there or at the aerodrome. And the Hotel Weimar is just about as good as any hotel you can find in London, besides being beautifully situated on the banks of two rivers, or canals,—whichever they happen to be.

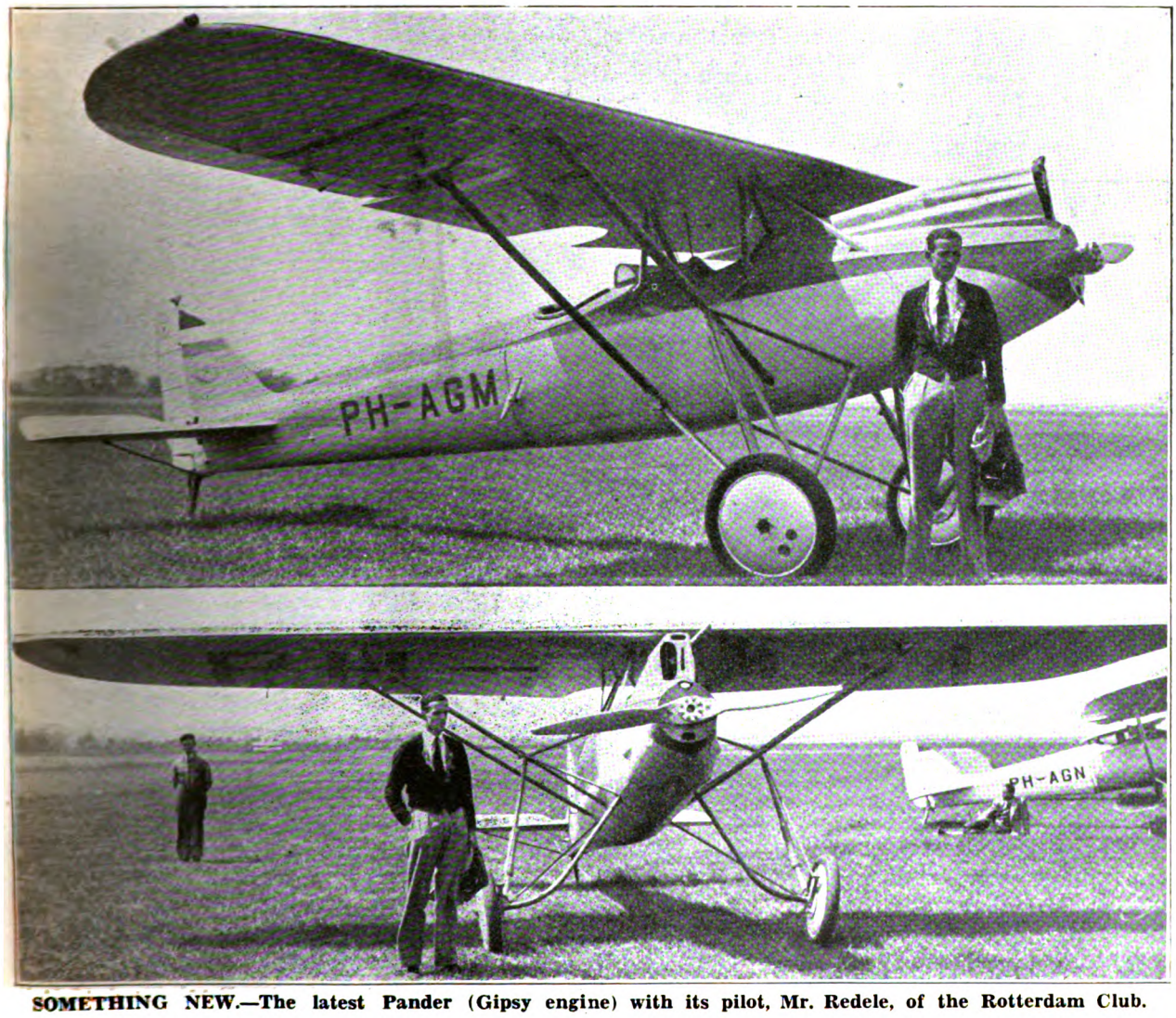
Anybody who suffered at all from sleeplessness might consider it noisy. As one of the competitors put it, all the swing bridges in Rotterdam are close to it and at dawn, when the bridges are opened for the barges to go through, the motor-cars line up waiting for the bridges to close, and "every chauffeur presses the button of his hooter as if he had just bought it." Then the bridge closes and the motors go across and then all the barges whistle till the bridge is opened again.

None of us worried about it, because those who went to bed slept the sleep of the unjust,—and the others did not care.

Over and above all this free board and lodging the Club had a whole fleet of motor-cars which were always at the disposal of any of the visitors to run backwards and forwards between the hotel and the aerodrome. And at the aerodrome itself, where there is an excellent club-house much prettier and more cheery than anything which we have in this country, there was the same unlimited hospitality as at the hotel.

The organisation of the whole thing by the Committee, and the untiring energy shown by the Secretary, Mr. de Niet, in carrying out all the schemes for the welfare of the visitors was above all praise.

Of course all this has nothing to do with flying as such,



SOMETHING NEW.—The latest Pander (Gipsy engine) with its pilot, Mr. Redele, of the Rotterdam Club.

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but it has to be set down faithfully because sometimes aviators from other nations visit us here, and distinctly are *not* entertained on the same scale. So one hopes that some day we may discover somebody in this country who will enable us to give a similarly open-handed sport-flying party to our friends from other countries.

SATURDAY'S SHOW.

Saturday, June 29, being a day when a crowd can be collected, the events were mostly confined to the aerodrome itself. Flying began with a landing competition. Unfortunately, owing to the direction of the wind, the landings had to be made right away at the far side of the aerodrome where the crowd could see nothing of them. Even the special enclosure for honoured guests was at precisely the wrong side of the aerodrome.

As a matter of fact, Waalhaven being a commercial aerodrome, and the K.L.M. station being naturally next to the road, there would be considerable difficulty in so arranging competitions that the public could see anything of them without the competitors' interfering seriously with the incoming and outgoing traffic. And as there seemed to be air-line machines arriving and departing about every ten minutes all through the day the difficulty is all the greater.

Just about lunch-time, when the mere aeroplanes were all on the ground, a stork, or a heron, or one of those very large birds, chose to come along and give quite a good exhibition of gliding over the aerodrome. We came to the conclusion that although he was more efficient aerodynamically than any of the aeroplanes, he was not half as good a pilot as human beings are. His turns were horribly flat and he never made an attempt to loop or spin.

Writing of lunch recalls the one really bad thing at Waalhaven,—some of us, who were not competitors but only onlookers, wishing to avoid being a dead charge on our hospitable friends of the Club, went to the Aerodrome Restaurant to get lunch, and failed. Although there were not many people there at the time, no service could be got. The waiters were insolent and rough. And one or two people who did have food there said it was poor and dear. So we went back and had to beg some sandwiches at the Club House.

After lunch there was a Relay Race, which caused the usual attacks of neo-apoplexy. But nobody actually died.

AEROBATICS.

While the Relay Race was going on a formation of five Fokker bombing machines (with Lorraine Dietrich engines) belonging to the Netherlands Navy came over and did some extremely pretty formation flying. The day was hot and sunny with a strongish wind and consequently desperately bumpy, but the formation was excellent. Although these

AT WAALHAVEN.—The Prince-Consort at the table with Sir Sefton Brancker. Mr. Plesman, of K.L.M., is on the left.

are big-span bombers, the reliable 450 Lorraines seemed to give them ample power for anything.

After that there was a general demonstration of aerobatics by anybody who cared to go up and do it. The pilots of the Rotterdam Club in their little Pander 1½-planes were very neat and agile. And one or two of our Moths put up quite a good show, but unfortunately none of our real star aerobatic pilots happened to be there.

A WORTH-WHILE STUNT.

At 15.30 hrs. we had a show of towed gliding which was quite interesting. This is a stunt which might very well be made a first-class entertainment. Herr Espenlaub, the famous German gliding expert, had brought two machines, one a monoplane glider of his original type, and the other a thing very like it with a very small two-cylinder engine in it.

The little machine with the engine towed the glider laboriously to a height of about 1,000 feet. At that height

AT WAALHAVEN.—The Rotterdam Club-House, and some of the guests,—with the Royal Standard in the middle.

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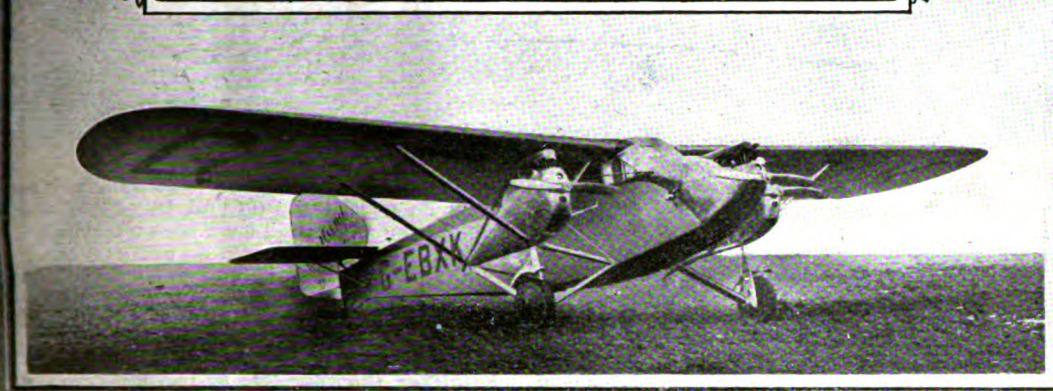
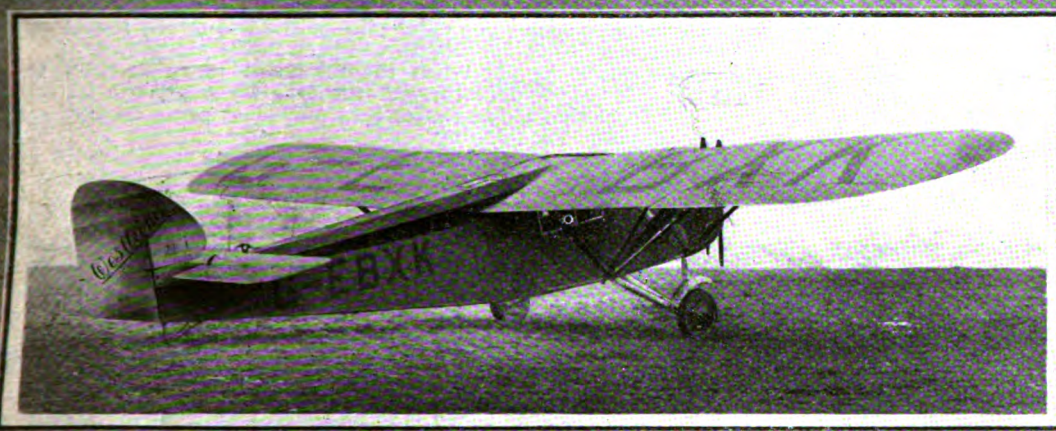
WESTLAND





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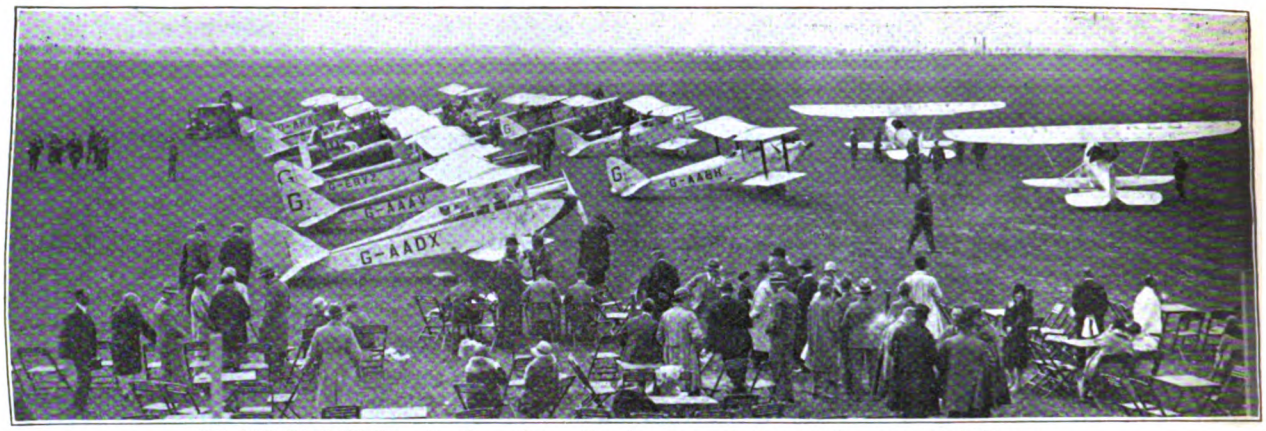


AT WAALHAVEN.—A view from the terrace of the Rotterdam Club-House.

the pilot of the glider slipped the wire, which was about 200 feet long, and he took about a minute and a half or two minutes to glide down again, doing circles round the aerodrome and landing quite prettily close to the crowd.

A better-made and stronger glider, which would stand throwing about, towed to a height of 3,000 feet or so by a fairly high-speed aeroplane, and then brought down in a series of loops and spins and rolls, would be very effective. To the untutored crowd it would be more exciting than a parachute drop, for they would think that without an engine the pilot would be in imminent danger, and *must* fall.

It would in fact be very much safer, besides being genuinely educative to serious aviators. And it is to be commended to the notice of organisers of flying meetings in the future.

FIRST-CLASS FORMATION.

At 16.00 hrs. or thereabouts we had one of the finest shows of formation flying that one has ever seen. Captain Versteeg, of the Flying Corps of the Netherlands Army, brought over a formation from Soesterberg. These machines are Fokker C Vs with 600 h.p. Hispano-Suiza engines. They are big two-seaters carrying wireless and guns, and they are about the last things which one would expect to see handled as if they were single-seat fighters.

But nothing seems to come amiss to these Netherlands Army pilots. And on top of that there is the fact that these C Vs are evidently very light on their controls, and that the great 600 h.p. engines answer their throttles with all the amiability of motor-cycle engines.

The formation took off with only four machines, because unfortunately one engine had set fire to its carburetter when about to start, owing to over-doping,—of the engine not the pilot.

The formation manœuvred very prettily in a diamond of four machines. Then the fifth machine, having recovere from its dope, came up and joined them. And the flyin which they did would have been a credit to our best at th R.A.F. Display.

The pilots did not indulge in anything in the way of com bined aerobatics, but in spite of the bumpy weather thei formation was quite perfect. Once when passing over th club-house, where the Prince-Consort of the Queen of th Netherlands was sitting on the terrace with Sir Sefto Brancker, the wing-tips of two machines touched, and f a moment there seemed a possibility of an accident. B the outer pilot of the two merely swerved away and with a minute was back in his old position.

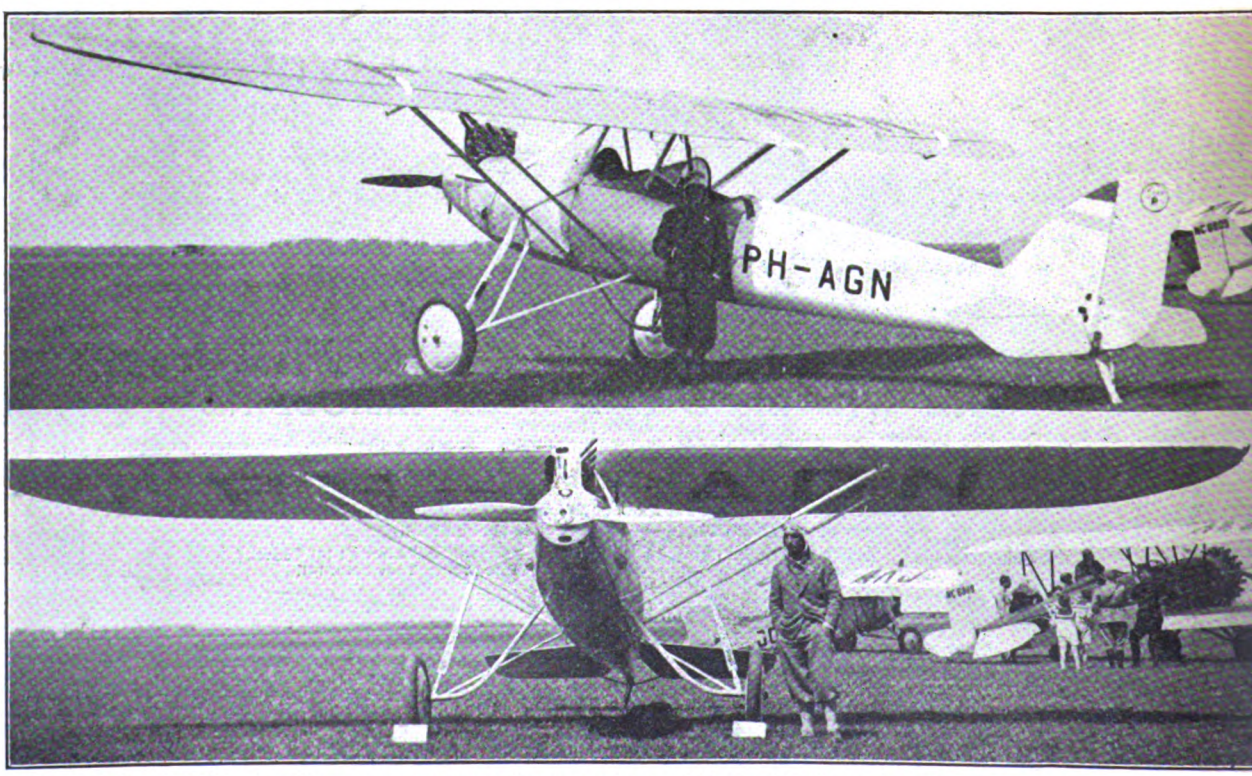
When the formation broke up it did so in a perfe feather, of the type identified with the Prince of Wal and after that individual pilots did give us some aerobat flying.

One particular pilot, one fancies that it must have be Captain Versteeg himself, did the smallest loops and t quickest spins one has ever seen done with a big machi And, here be it said, the 600 h.p. Hispano-Suiza is a ve fine engine. When these machines were diving past formation they were as thrilling as were the Fairey Fox with the Curtiss D.12 engines at the R.A.F. Display.

Captain Versteeg is one of the quite early pilots of t Netherlands, and he must be all of 40 years of age. But flies with all the dash of quite a young pilot, plus th beautiful accuracy and soundness which is hardly ever fou except in a pilot of middle age. The Netherlands Army c tainly is to be congratulated on the quality of its men a machines.

COMIC RELIEF.

Later in the day we were treated to a new version



AT WAALHAVEN.—Another new Pander (Cirrus engine), with the "Hollywood" Stearman in the background.

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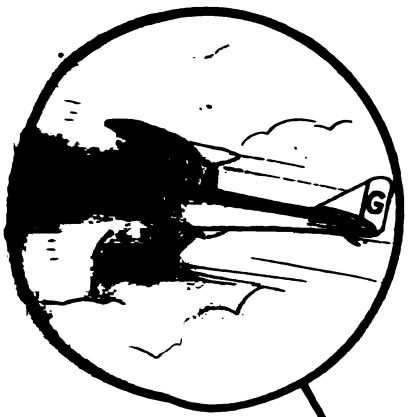

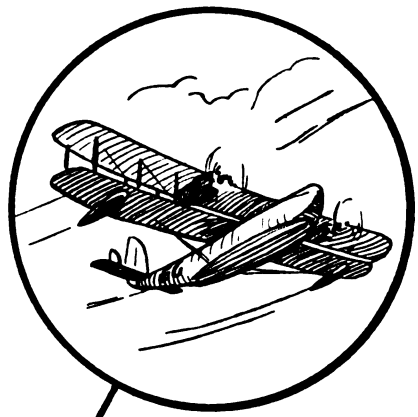

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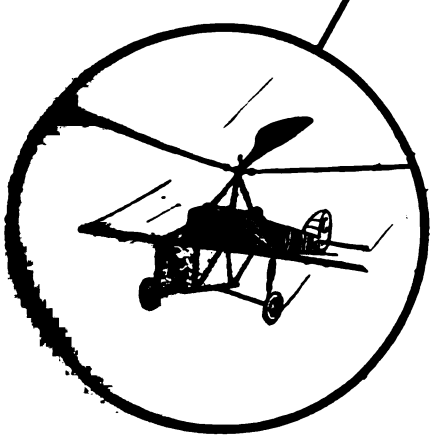

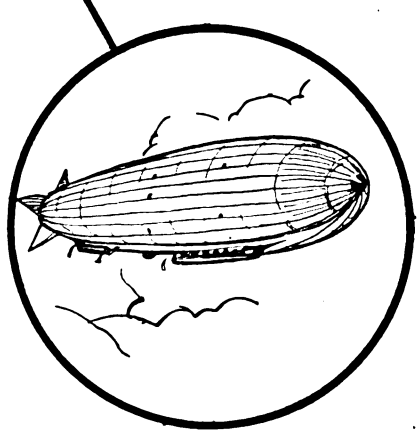

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"bombing the baby." A good hefty youth in a little frock, and with a cardboard baby's head on his shoulders, rode forth onto the aerodrome on a singularly disreputable mule, which apparently took no interest in the proceedings whatever. To tell the truth the bombing was exceedingly bad, so there was nothing to excite the mule. Possibly a flour bag on his nose or tail might have produced perceptible movement.

After that some of us went back to Weimar in a K.L.M. 'bus, by courtesy of the management—the Club cars being all away. Here we had the fun of meeting the juvenile members of the Plesman family,—or the little Plespeople, as somebody called them. It was a very entertaining voyage. We came back later because that night, instead of a dance-party, there was a demonstration of night-flying.

This was really very fine indeed. Lieutenant Schmidt-Crans, the Rotterdam Club Instructor, until recently one of the Netherlands Navy's best pilots, and Lieutenant Sandberg, one of Captain Versteeg's formation pilots, went up on the Club's Panders and played about in the beams of three or four searchlights. The little silver Panders looping and rolling and spinning in the beams looked just like misguided moths round a candle. The flying was extremely pretty and very skilful.

Also one of the K.L.M. twin-engined Fokkers made several night flights, landing chiefly by the light of a motor-car headlight built into the nose of the machine. Lady Bailey went up in one of these flights and said that from the machine the lights of practically the whole of Holland could be seen.

One of the Club officials said later that there were about 30,000 people in the aerodrome during the day, not counting many more tens of thousands of "hedge-guests" outside the palisading. After the flying there were fire-works and that also entertained the crowd hugely.

Following this came a joyous ride home in a 12-seater motor-'bus with about eighteen people in it, conducted, as one Trench remarked, by a chauffeur with a fierce clutch and ginger hair. The road runs along canals and across railway lines and at one or two places there is circulating traffic round what looks like a large concrete plate,—banked the wrong way, presumably to enforce reduced speed. We seemed to take one of these on two wheels —one of them the spare.

At one cross-road a late-going street 'bus cut across us, our brakes worked admirably, and everybody nose-dived into the front of the 'bus. When we were somewhat disentangled the voice of that same Trench continued explaining,—"they run these things to schedule, and that chap was a bit late."

Still, we missed his tail-lamp by a good half-inch and arrived home quite happily. And regretfully one left a deep Anglo-Dutch argument on Service flying and the equipment of army co-operation machines while the sky was still more or less dark.

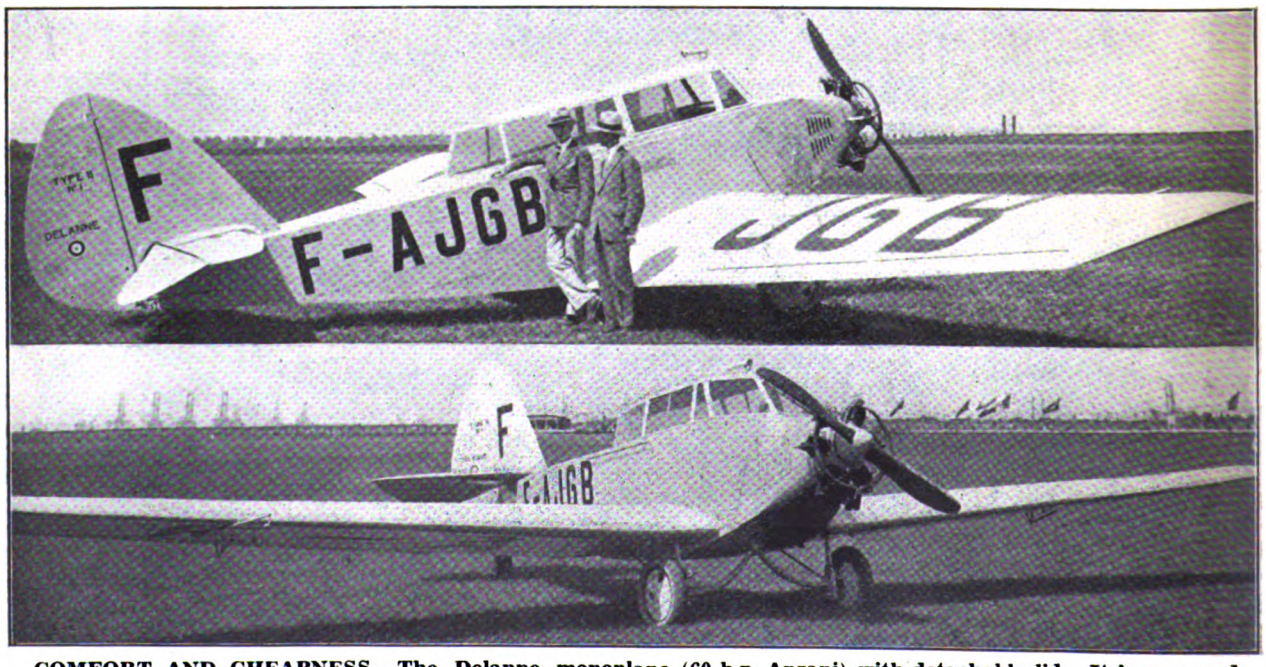
SUNDAY'S FLYING.

Sunday's flying was mostly kept within the aerodrome. There was a Get-Off competition, and there was the final of the relay-race, and there was Espenlaub's glider performance, there was some balloon bursting, and there was also a Speed Race.

AT WAALHAVEN.—The Hon. Lady Bailey (right) and Mrs. Walter Longton, who flew with her from England and accompanied her in the competitions. This was the only feminine crew in the Meeting,—and, so far as can be remembered, is the first feminine crew to compete right through a flying meeting.

This speed race was run over a course well outside the aerodrome, and for a while there was some anxiety because two of the pilots who had gone out over the course did not come back. Eventually they were found to have landed safely, though the country round that part of Holland, consisting of big rivers or of tiny fields cut up by dykes, is about as bad as it can be for forced landings.

An interesting thing about this race was that the new Koolhoven monoplane with a A.D.C. Cirrus-Hermes engine made its first appearance piloted by Lieut. Schmidt-Crans. It was certainly faster than anything else in the air except



COMFORT AND CHEAPNESS.—The Delanne monoplane (60 h.p. Anzani) with detachable lid. It is supposed to be sold at £400. But it is badly under-powered.

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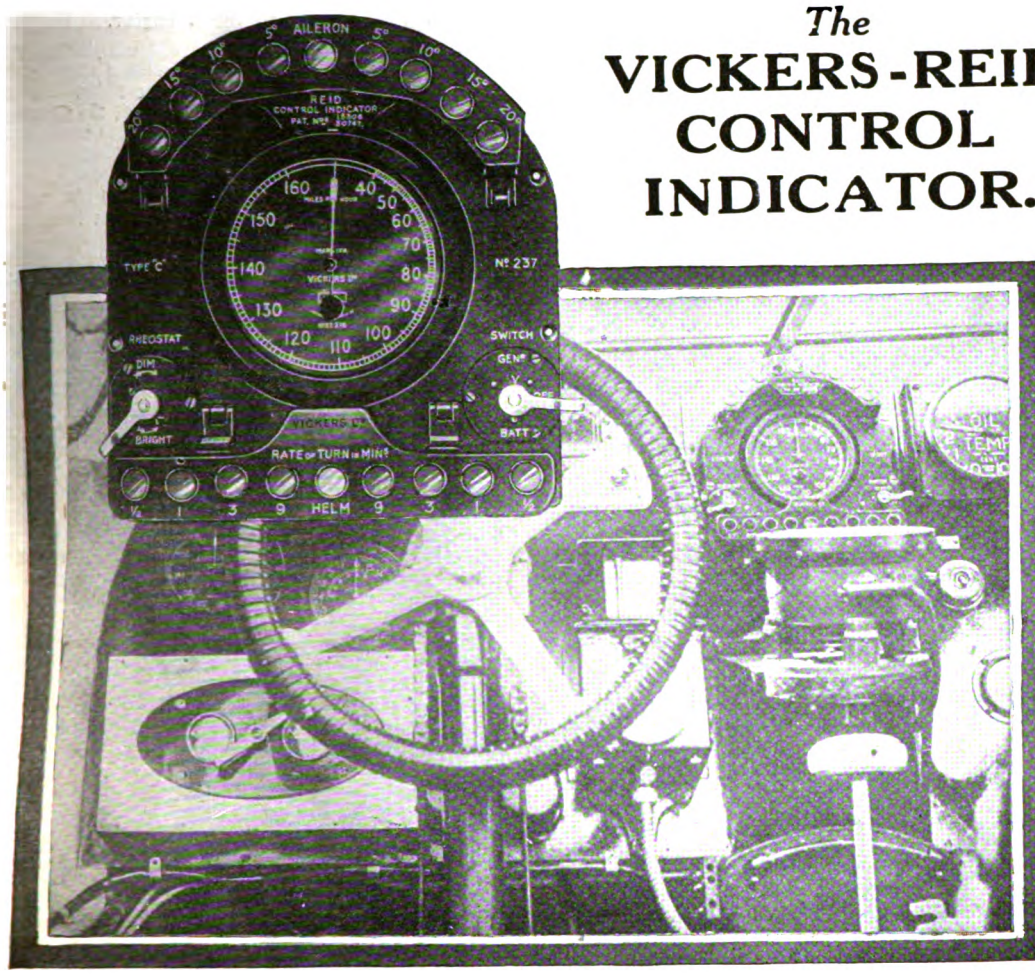

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See The Royal Air Force Display, Hendon, 13th July.

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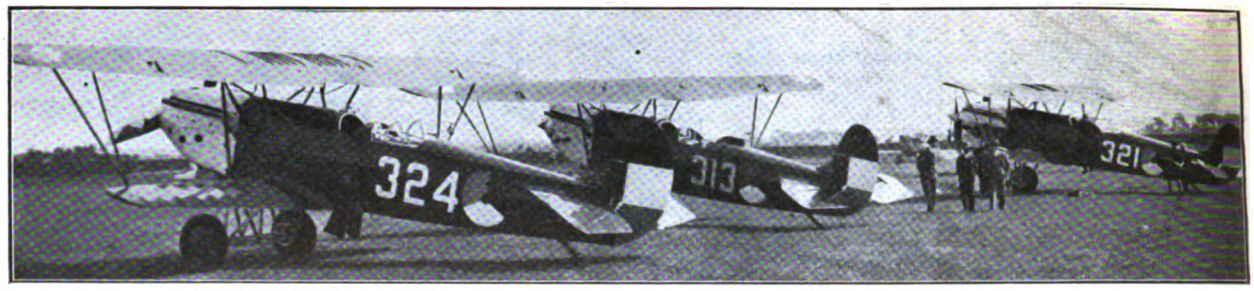

THE ARMY'S LATEST.—The CV Fokker, with 600 h.p. Hispano Suisa engine.

perhaps the Gipsy-engined Pander with the clipped wings. And it obviously handled excellently.

The race was actually won by Lady Bailey because the Koolhoven machine was flying *hors concours*. Mr. Frederick Koolhoven did not expect it to be finished in time, so he had not entered it for any races. But it created a very good impression.

Just after the Speed Race Flt. Lt. Shaw, late R.A.F., and now of National Flying Services Ltd., took up somebody else's Moth and did some very pretty flying with it. Also he took up the Koolhoven Coupé monoplane, with the Siemens radial engine in it of only 60 h.p., and showed what an astonishingly good get-off it has for so small an engine. He expressed his surprise at its unstallability coupled with its controllability.

A Problem in Acoustics.

All through the Meeting the K.L.M. twin-engined Fokkers had been taking up joy-ride passengers as hard as they could. Their performance impressed on one the accuracy of Air Vice-Marshal Sir Sefton Brancker's remark at a Royal Aeronautical Society meeting a good many months ago.

Some of our high-browed scientists had been discussing, with their usual lack of practical sense, the question of noise in aircraft, and Sir Sefton, always practical, tried to persuade them that the noise which an aeroplane makes when heard from the ground had nothing whatever to do with the noisiness of the same machine's cabin.

Coming over in the twin-engined Fokker one was struck by its comparative quietness. Polite conversation would have been difficult, but remarks about places along the way were quite easy. But when those machines were getting off, as they passed the enclosure at a distance of perhaps 400 yards, for a matter of five or six seconds while they were actually passing, the engines made a shattering noise just about as loud as that of the diving Foxes at the R.A.F. Display, and even when shouting the human voice was inaudible.

At the meeting aforementioned Sir Sefton had commented on this phenomenon and said that the noise on the ground was caused by the reflection of the sound from the monoplane wings. The amount of noise is all the more remarkable because the engines have exhaust-rings and are not firing into the open. Of all sciences the Science of Acoustics seems to be the least understood, but the Mediæval architects knew something about sounding-boards which our aircraft designers do not.

The Close of the Meeting.

After the flying was over at about 18.00 hours General Schneiders, still as active as need be in mind and body at the age of 76, proceeded to present the prizes.

General Schneiders commanded the Netherlands Army when flying first began and did everything possible to encourage military aviation in Holland when other countries were only thinking about Service flying. During the War 1914-18 when the Flying Services of the Queen of Holland were mobilised to protect the country against invasion (by Germany from the land and by England from the sea) General Schneiders was Commander-in-Chief of the combined sea and land Services and did his work most ably. Though now a civilian he takes the keenest interest in flying.

He made a very graceful speech in perfect English, saying how pleased the Netherlanders were to see so many visitors and said, that while congratulating Lady Bailey on the prizes which she had won, they could hardly add to the laurels which she had acquired by her great flight round Africa.

He then presented the prizes for the Arrival Competition the first prize to Lord Carbery, the second to Mr. Law, and the third to Mr. Cazalet. Mr. Brown was not there to receive his special prize, as he had gone back to the Cinque Ports Club to work on Friday.

The prizes for the the Relay Race went to Lady Bailey Mr. Jackaman and Mr. L. Richardson (not he of the Klemm). The magnificent Cup which was given for the principal competition, the Flight Round Holland, and the best all-round performance, was won by Mr. Jackaman, with Mr. "Harold Brooklyn" second, Lord Carbery third, and Lady Bailey fourth.

The first prize in the Landing Competition went to Mr. Jackaman, and a special consolation prize was awarded to Miss Winifred Brown.

Thereafter Mr. Kolff returned thanks to General Schneiders. And the British contingent, which was very strong numerically and vocally, gave three rousing cheers for our hosts.

Everybody went back to the Weimar early, because there was going to be an official closing banquet. Because of the demands of The Aeroplane, which meant getting this article and the accompanying photographs, into black and white on Monday or not at all, one had to tear oneself away from what looked like being the grand climax of the whole show. In the words of one of the guests, these people of the Rotterdam Club certainly can "push out a good boat."

A Lesson in Air Transport.

After that one had a lesson in the benefits of air transport. At the Hook of Holland one was stowed away in a 24-year-old boat with turbines which were built in the dark ages of the form of machinery, among a pentecostal crew of aliens obviously affluent and all loud-voiced. The boat was gross overcrowded and was consequently late in leaving.

Apparently it could not make up lost time by running

THE STANDARD TRAINING MACHINE.—One of the Club Panders (Walter engine).

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full throttle, so it was nearly an hour late at Harwich. There was more delay getting masses of baggage out of the boat onto the train, or through the Customs, so we sat in that wretched train, which should have left at about 06.30 hours, till something much nearer 08.30 hours, and arrived at Liverpool Street as many hours overdue as would have allowed a K.L.M. machine to travel all the way from Rotterdam to Croydon.

Apparently our beautiful London and North Eastern Railway, which is built up of several competing lines amalgamated to promote efficiency with the result that they have merely lost the spur of competition, thinks less about being a couple of hours late on a little run like that than Imperial Airways would think about the Air Mail being late from Karachi to Croydon. So much for our highly organised rail and water transport.

If only somebody with really big money behind them would start in and organise air transport properly, and advertise it as lavishly as the railways advertise, air transport would very soon be a better paying business than railway transport.

By the time one has paid for taxies and tipped porters and stewards and waiters, and paid for meals on a boat and paid for meals on a train, and taken in the value of time wasted and energy uselessly expended, and moral and intellectual damage generally, there is no doubt that rail-and-boat transport costs the passenger more in the end than does air transport.

Anyhow, in spite of the L. and N.E.R., the photographs and the writer of these notes did ultimately arrive in London and here are the results.

A RECORD OF THOSE PRESENT.

For historical purposes the expenditure of the necessary space in which to record what machines were at the Meeting seems justified. To begin with there were the five Fokkers of the Army formation, and there were the five Fokkers of the Navy formation. Then there were two Fokkers belonging to K.L.M., which were continually taking up joy-riders during the Meeting.

The other Netherlands machines were:—PH-AGO, the new Koolhoven open tandem two-seater with the Hermes engine; PH-AER, the Koolhoven Coupé with the Siemens engine; PH-AEV, a new Pander of the old type with a Walter engine; PH-ADV, PH-ADW and PH-AEJ, all old-type Panders belonging to the Club, PH-AGM, one of the new speed-model Panders with a Gipsy engine; and PH-AGN, one of the new model with a Cirrus. Also there was a Pander labelled in large letters "Sopla," evidently used only for flying within Holland for advertisement purposes. That made 21 Netherlands machines in all.

Of Belgian machines there were:—OO-AKJ, a side-by-side thick-wing full-cantilever monoplane with a 5-cylinder Renault; OO-AGH and OO-AJG, two-bay biplanes with Renard engines; OO-AJJ, a two-bay biplane with a 10-cylinder Anzani belonging to the Antwerp Club; OO-AJU, a single-bay biplane with a 5-cylinder Anzani; OO-AJP, another two-bay biplane; OO-ABI, a little thick wing monoplane, the St. Hubert, which one last saw when only the fuselage had been built by the S.A.B.C.A. engineer, Mr. Joseph Goudentops; and OO-AKG, a monoplane very like a Widgeon. (Eight in all.)

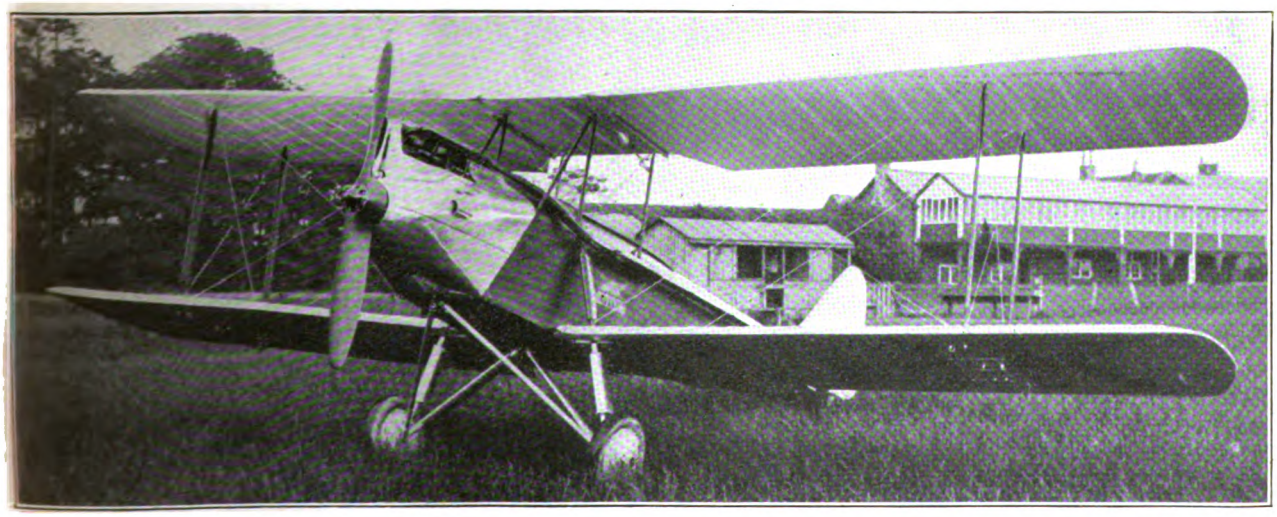
Sad to say there was only one-and-a-half German machines, namely, Mr. Espenlaub's tiny machine, labelled "Dapolin," also as an advertisement, and his glider, which can only be counted as a half.

There was one French machine, FA-JGB, a queer little low-wing monoplane built by M. Delanne. It looks very like a wooden Junkers and it certainly has a great deal to recommend it. On top of the fuselage is a sort of conservatory in which pilot and passenger sit side-by-side. The machine is fitted with a fire-extinguisher, a compressed-air starter, a turn-indicator, which must mop up a good deal of air power in its working, and two parachutes. The engine is an Anzani of problematical power. If the engine disintegrates, or if the fire-extinguisher does not work, then you pull one bolt, and the whole conservatory comes off the top and you climb out with your parachute. To ensure ease and comfort in getting over the side M. Lalanne has thoughtfully provided a hand-rail along the outside of the fuselage.

There was one American, NC8809, a Stearman biplane with a Wright Whirlwind and two open cockpits in tandem. It was painted blue and red and yellow with an arrow all along the fuselage to show it which way to go, and the name "Hollywood" in large letters on the arrow. Its crew consisted of two quaint Americans known respectively as "Chet" and "Ross." One knows that, because each had his name painted on the side of his own cockpit, apparently in case either might get into the wrong hole. Rumour said that those were only the first syllables of their first names and that they have proper surnames as well. One is long and thin, the other short and thick, and their clothes are as alarming as the colour-scheme of their biplane. Chet (or Ross), the long one, wears brown and white shoes and startling black and white stockings. Ross (or Chet), the short one, wears the most paralysing jumper and stockings to match of a black and red and yellow tartan apparently designed by a cinematographic Scot. And Sunday being cold he wore on top of this a kind of Zouave jacket of black monkey fur. They threaten to come to England for the R.A.F. Display. Unfortunately none but Service machines are allowed in the arena, or they would be a great success with the crowd.

The list of British visitors is long and varied. It is given just as one jotted down the numbers and not in any kind of order. G-EBYJ, Mr. H. R. Law's Cirrus-Moth; G-AAHE, Avian (Cirrus) belonging to Mr. Cubitt of the Norfolk Club; G-EBQX, the Norfolk Club Moth presented by Messrs. Holmes and Hardy, and flown by Messrs. Moore and Brett; G-EBXE, a Norfolk Avian flown by Messrs. Gough and Surtees; G-EBGS, Mr. Tyzack's Moth with Flt. Lt. Shaw; G-EBRM, Mr. Cazalet's famous Widgeon; G-EBVZ, Miss Brown's Avian with Mr. Adam; G-AAAG, Moth; G-EBUR, Moth, Mr. and Mrs. Ivor McClure; G-EBST, single-seat Moth, Mr. Downes-Shaw; G-AABH, Moth; G-AAHT, Moth, Lord Carbery; G-EBRQ, Widgeon, Mr. "Harold Brooklyn"; G-AAEE, Moth, Lady Bailey and Mrs. Longton; G-AABX, Moth, Mr. Jackaman; G-EBPQ, a black and white Moth, Mr. L. Richardson (?); G-AAAV, Moth, Mr. Cooper; G-EBRI, the Cinque Ports Club Moth, Mr. Brown; and there was Mr. A. J. Richardson's little Klemm. (19 in all.)

The pity is that even more British pilots did not go to Rotterdam. Our friends in Holland would have been delighted to entertain them, and nowhere can a better time be had than in Holland. But, as one has said in the beginning, there is really no way of getting back on our hosts in Holland, so, unless we can raise something by way of retaliation before this time next year, no decent British aviator will have the face to go to Holland again.—C. G. G.



FOR THE KING'S CUP.—An Avro Avian IV (D.H Gipsy engine) with a wooden fuselage, which will be competing in the race for the King's Cup.

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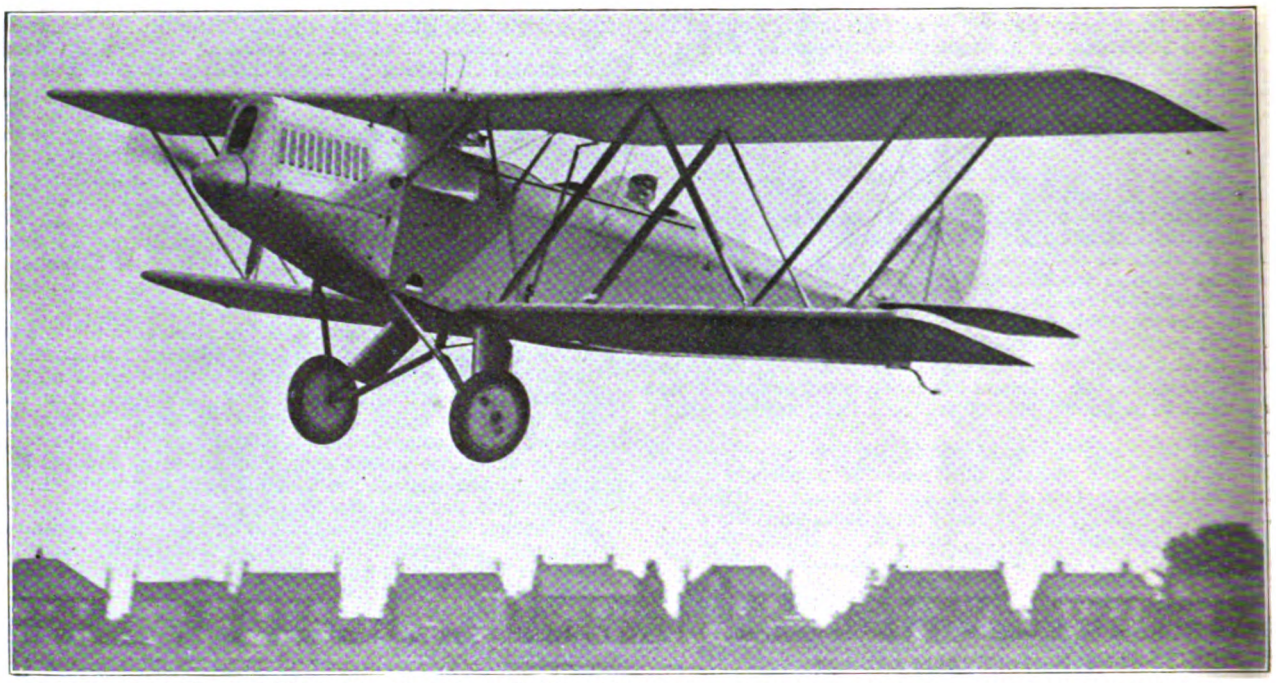


A NEW LIGHT AEROPLANE.—The Parnall Elf (Cirrus-Hermes engine), which has just been completed by George Parnall and Co. of Yate, Bristol. This machine will be at the Aero Show.—(*"Aeroplane" photograph.*)

THE PROGRESS OF THE "SOUTHERN CROSS."

The tri-motored Fokker (Whirlwind engines) *Southern Cross* piloted by Mr. Kingsford Smith left Sydney on June 25 for Derby on the North coast of Australia. The machine arrived at Derby on June 26, and left again on June 27 for Singapore. It reached Singapore on June 28 and left for Rangoon on June 29. Magneto trouble with one of the engines is delaying the party at Rangoon.

All reports of the journey refer merely to "Captain Kingsford Smith and his companions." No names are given, and no mention is made of Mr. Ulm. Therefore the conclusion seems obvious that, because of the censure of Mr. Ulm by the Committee of Enquiry in Australia, concerning the allegations that the landing of the *Southern Cross*, which cost the lives of Mr. Keith Anderson and Mr. Hitchcock, was a publicity stunt, Mr. Ulm is no longer a companion of Mr. Kingsford Smith.

ACROSS AMERICA AND BACK.

Captain Frank Hawks, who recently beat the record for the flight from Los Angeles to New York while flying a Lockheed Air Express monoplane with a Wasp engine and N.A.C.A. cowling, has put up a new record for the double trip across the Continent and back.

Capt. Hawks, who is an air-mail pilot on the trans-Continental route, flew on June 27 from New York to Los Angeles in 19 hrs. 10 min. 32 sec. He reached New York again at 01.16 hrs. on June 29, after a flight of 17 hrs. 38 min. 56 sec. from Los Angeles. His flying time was thus 36 hrs. 49 min. 28 sec. No information is yet to hand as to the time of his departure from New York on Thursday, so the total time taken is not available. Seven hours were reported as being wasted by repairs to a leaking carburettor.

THE ROYAL AERONAUTICAL SOCIETY.

At a Council Meeting of the Royal Aeronautical Society, with which is incorporated the Institution of Aeronautical Engineers, Col. the Master of Sempill, A.F.C., A.F.R.Ae.S., was elected President for the year October 1929-1930.

The following were elected Vice-Presidents of the Society for the year October 1929-1930:—

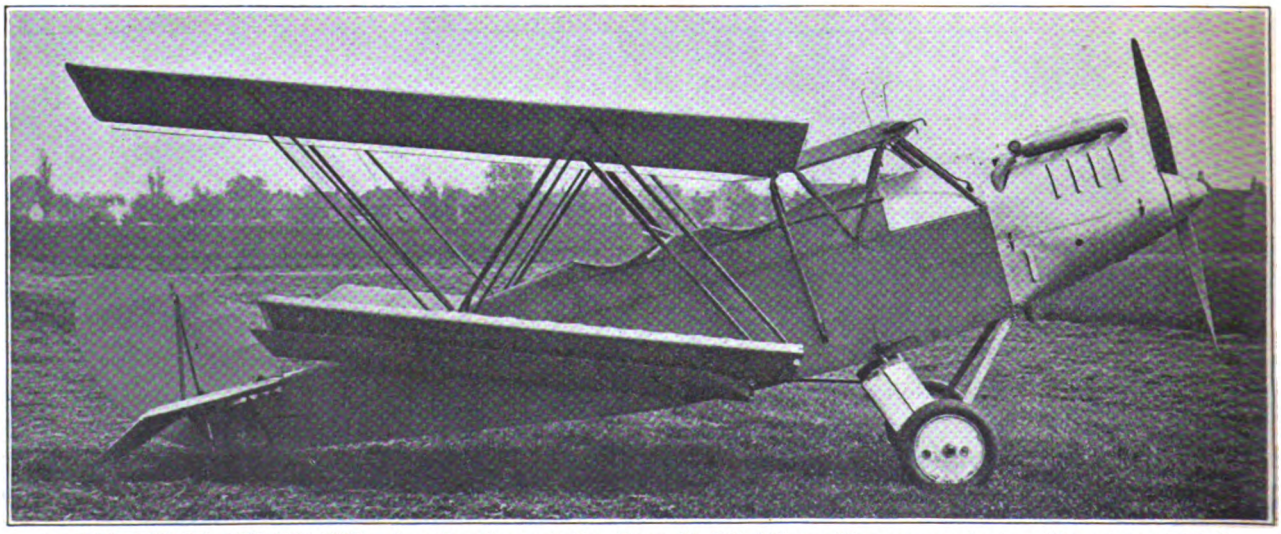
Air Vice-Marshal Sir Vyell Vyvyan, K.C.B., D.S.O.
Lt. Col. J. T. C. Moore-Brabazon, M.C., F.R.Ae.S., M.I.Ae.E.
Mr. H. E. Wimperis, C.B.E., F.R.Ae.S.

LARGER AND LARGER.

The largest aviation company in the United States has just been formed by the amalgamation of the Wright Aeronautical Corporation with the Curtiss Aeroplane and Motor Company. The capital is £14,000,000. Nine smaller companies are affected by the amalgamation.

The new combine will endeavour to secure expansion abroad by means of associated companies in Canada and in Europe.

There seems to be so much financial re-arranging and so much organisation of distributing agencies in the States that the mere layman is tempted to ask whether there is any aviation product in the World ready for finance and distribution in such elevated terms.



A NEW LIGHT AEROPLANE.—A side view of the Parnall Elf (Cirrus-Hermes engine) with wings folded. George Parnall and Co. have equipped their works to produce this machine in quantities.
—(*"Aeroplane" photograph.*)

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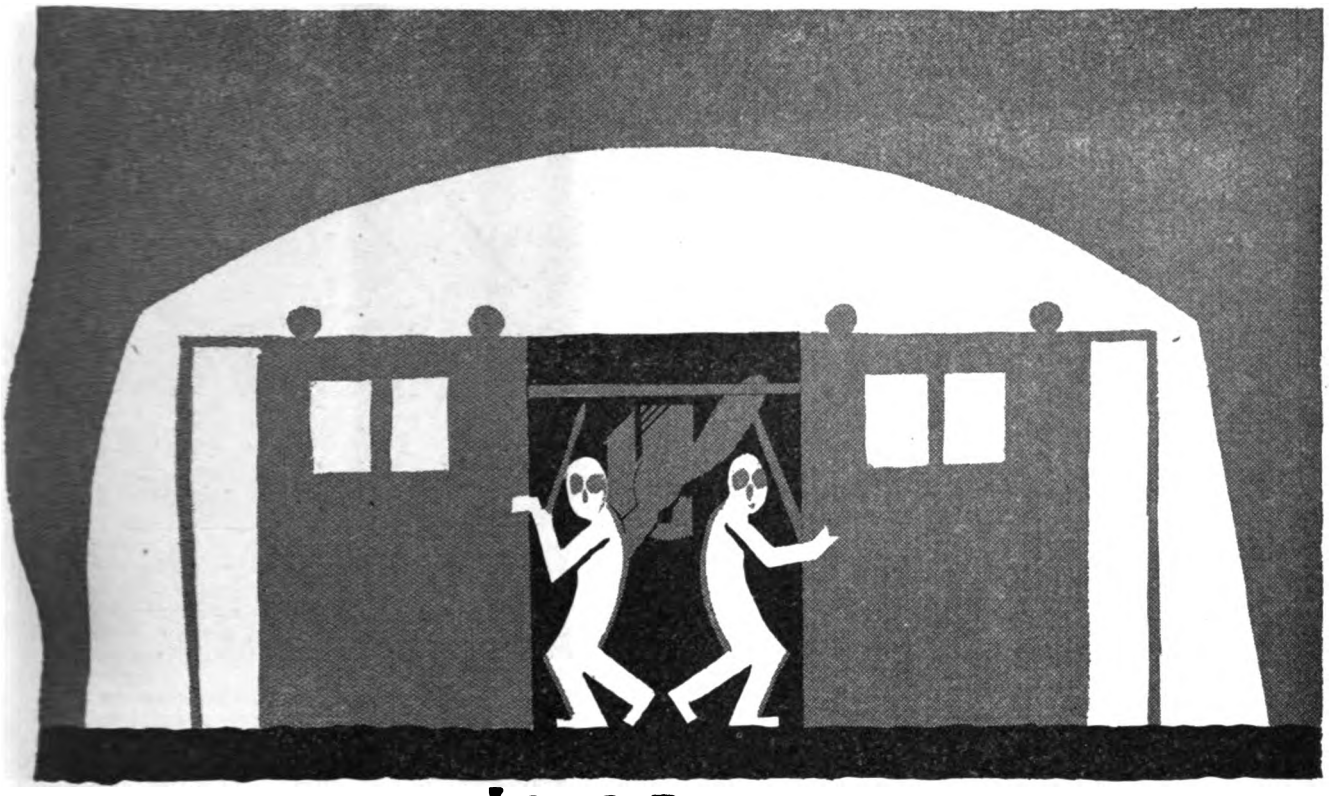

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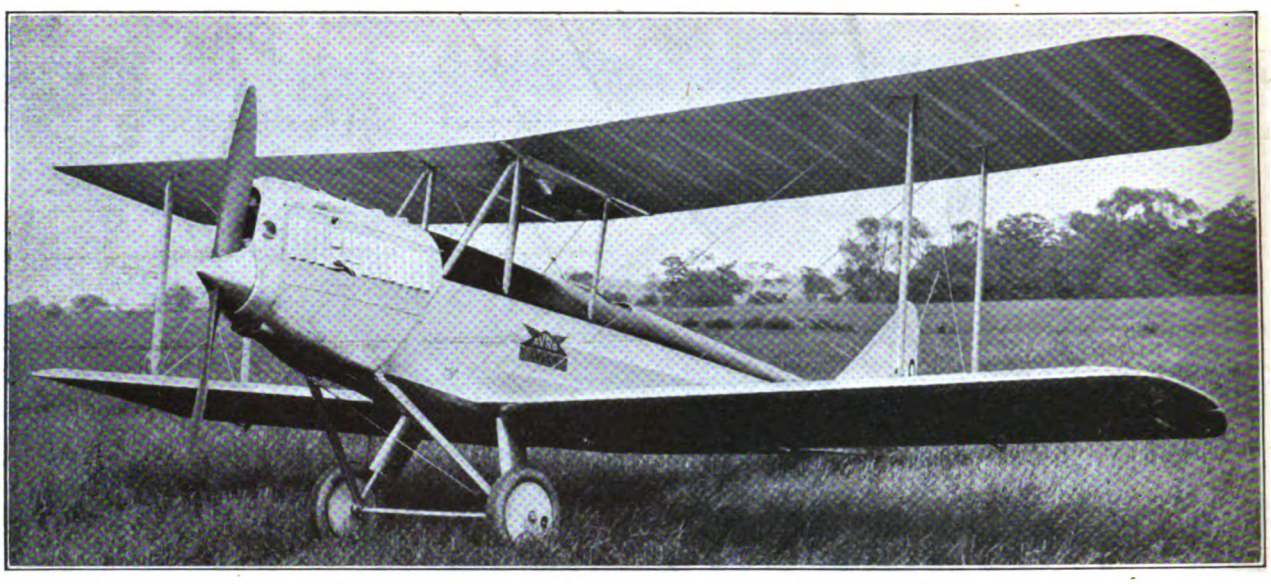

FOR THE KING'S CUP.—An Avro Avian IV (Cirrus-Hermes engine) with a metal fuselage, which will be competing in the race for the King's Cup.

A NEW CHANNEL ISLANDS SERVICE.

A new flying-boat service to the Channel Islands was billed to open on June 29, and will run daily henceforth to Jersey from Southampton (Woolston) and back, calling at Guernsey on each trip outward and homeward.

The service is in the hands of the Tour and Travel Association Limited, who have taken over the Woolston Air Port near Southampton from Imperial Airways and will operate from there.

The company has bought several Supermarine amphibian flying-boats, with Napier Lion engines, and has had the boats modified to carry one pilot and six passengers. Every machine is to have Handley Page Slots.

The machines will leave Woolston at 11.30 hrs. each day and will arrive at Guernsey at 12.45 hrs. and at Jersey at 13.25 hrs. On the return journey they will leave Jersey at 17.45 hrs., Guernsey at 18.30 hrs. and arrive at Woolston at 19.45 hrs. On Sundays the machines will leave Woolston at 12.15 hrs. and Jersey at 17.20 hrs.

The return fares to Guernsey and Jersey are £6 10s. from Woolston, and between Guernsey and Jersey £1 15s. return.

The company hopes to be able to duplicate the service shortly and also to run day trips at reduced rates. They also hope, at a later date, to be able to cater for private parties for air tours of the coasts of France and Spain.

THE NORFOLK AND NORWICH AERO CLUB.

The second Annual General Meeting of the shareholders of the Norfolk and Norwich Aero Club was held on June 25. Mr. A. A. Rice (Chairman) presenting the Report, said that the membership, which had stood at 162 in 1927-8, had increased to 384 for 1928-9. After writing off £494 for depreciation the accounts showed a profit of £417 on the year's working. This had been made possible chiefly by the income derived from the Government subsidy, which had amounted to £1,201.

The Club had had no serious accident throughout the year although 846 hours had been flown, much of it in bad weather and including a number of extension cross-country flights

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(July 16th-27th, 1929)

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See the R·A·F DISPLAY Hendon 13th July

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The first 250 members of the Club had been admitted without payment of entrance fee. Now that this number had been passed the Council had decided to charge an entrance fee to all new members of £3 3s. for flying members and £1 1s. for associates.

The Club had three aeroplanes, two Moths and an Avian. Also four private owners used the aerodrome and Club facilities. With the impending production of cheaper aircraft the Management Committee might probably have to consider the question of increased hangar accommodation. The City Council, which had a claim on the aerodrome, was interested in developing the City as an air port and the Club's position in regard to the aerodrome might be involved.

The Report and Accounts were approved.

For eight vacancies on the Council the following were elected:—C. R. Bignold, N. Brett, J. Collier, C. G. Gowing, R. J. W. Moore, J. D. North, A. A. Rice, G. F. Surtees.

Mr. C. R. A. Hammond was re-elected hon. treasurer, Mr. H. O. Bennett hon. secretary, and Mr. R. G. Adcock hon. auditor, the Chairman expressing the thanks of the Club to these officers.

Mr. A. A. Rice, on the question of the election of chairman, said he had been their chairman ever since the Club was formed and felt that someone should be chosen for the position who had more time.

Capt. Cater, proposing that Mr. Rice should again be their chairman, said they would like to thank him for all he had done for the Club in the last year. Mr. Rice was one of the few people capable of doing the job in the way he had done it in the past. (Applause.) Mr. Barrett seconded the proposition, which was carried unanimously.

Mr. Rice, returning thanks for the honour they had done him, hoped that next year someone else would come forward.

Before the business proper began the President (Mr. H. N. Holmes) made a presentation to Mr. F. Gough (Managing Director) from a large number of members. It consisted of a gold cigarette box and cigarette case. Mr. Holmes said that Mr. Gough had sacrificed a good deal of his ordinary business for the benefit of the Club and had done an immense amount of work for it. The presentation was an expression of the Club's deep appreciation.

PROGRESS AT NOTTINGHAM.

The Nottingham Aero Club has to give up its quarters at Hucknall at the end of July and, accordingly, is moving to Tollerton where the Nottingham City Council is making its municipal aerodrome.

The question of accommodation has not yet been settled. The City Council may possibly build sheds and a club-house and let them to the Club or the Club may have to construct their own buildings and come to some arrangement with the Council over the tenancy of the land.

A further suggestion is that the Club should be allowed to use the aerodrome on condition that it undertakes to maintain certain services including keeping a pilot and machine there ready to fly to any part of the country to order. This would give the Club a leg up until it was in a position to build for itself.

The move to Tollerton ought to improve the affairs of the Club, the progress of which has been seriously handicapped by the need for a club-house. Tollerton is only four miles from Nottingham and there is a very large Country-Club-Hotel there which is only separated by a couple of fields from the Tollerton Flying Ground,—which ought to be a distinct attraction to visiting aviators.

In spite of its handicaps the Nottingham Aero Club continues to make steady progress both in hours flown and in the number of its members. And in Flt. Lt. R. L. Bateman it has a capable pilot-instructor who is not only keen on flying but has a businesslike way of doing things which ought to make the club a commercial success.

THE BROOKLANDS SCHOOL.

The Moth Showroom at Brooklands has now been opened. Within the first two days the new Gipsy-Moth on show was sold to Mr. G. D. Shallabear. Evidently Moths are quick-selling stock. The School has already sold Moth G-ERRX to Mr. R. D. King.

CLUB RECORDS.

The recent fine weather has helped Club flying a good deal. The Bristol Club has broken its record for a single day's flying by putting in 14 hours and 40 minutes, which, with one Instructor (Mr. E. W. B. Bartlett) and two machines, is very good going. The Newcastle Club has broken its record for a week's flying having done 61 hours 30 minutes. The Instructor, Mr. G. M. S. Kemp, is to be congratulated.

A CHOICE OF ENGINES.

The Desoutter Aircraft Co. Ltd. intimate that the standard engine for the Desoutter Sports Coupé, the modernised version of which, as it will actually be supplied to customers, was described and illustrated in THE AEROPLANE, is the Cirrus Mark III. with the Cirrus-Hermes as an alternative. The D.H. Gipsy engine can be fitted when specially ordered.

FLYING TRAINING MANUAL, PART I.

Flying Training Manual, Part I, which has been out of print for some time, has now been re-printed and copies may be had from THE AEROPLANE Book Dept., Cannon House, Pilgrim Street, E.C.4, at 3s. 9d. post free.

This is an Air Ministry publication containing all the accumulated knowledge of the Air Force, and is the best and cheapest book in the World on the subject.

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 17; Monday, 42; Tuesday, 43; Wednesday, 42; Thursday, 54; Friday, 50; Saturday, 43.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 87, passengers 673, freight 29 tons. India service (out): Passengers 9, freight 0 lbs., mail 512 lbs. India service (in): Passengers 2, freight 0 lbs., mail 842 lbs.

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K.L.M.:

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SABENA:

Brussels—London and return: Machines 16, passengers 86, freight 4¾ tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London and return: Machines 28, passengers 56, freight 5½ tons.

MISCELLANEOUS:

British Machines 45, passengers 31.

Foreign Machines 4, passengers 1.

Total number of trips by British Machines, 132, carrying 704 passengers. Foreign Machines, 159, carrying 645 passengers.

COMPARATIVE FIGURES.

Week ending June 29:
Machines, 291; Passengers, 1,349; Crews, 583; Total personnel, 1,932.
Corresponding week, 1928:
Machines, 222; Passengers, 1,444; Crews, 421; Total personnel, 1,865.
Corresponding week, 1927:
Machines, 168; Passengers, 1,130; Crews, 301; Total personnel, 1,431.
Corresponding week, 1926:
Machines, 260; Passengers, 1,113; Crews, 218; Total personnel, 1,331.
Corresponding week, 1925:
Machines, 162; Passengers, 724; Crews, 208; Total personnel, 932.
Corresponding week, 1924:
Machines, 160; Passengers, 632; Crews, 197; Total personnel, 829.
Corresponding week, 1923:
Machines, 120; Passengers, 571; Crews, 195; Total personnel, 766.
Corresponding week, 1922:
Machines, 104; Passengers, 296; Crews, 156; Total personnel, 452.
Corresponding week, 1921:
Machines, 102; Passengers, 331; Crews, 127; Total personnel, 458.
Corresponding week, 1920:
Machines, 90; Passengers, 138; Crews, 110; Total personnel, 248.

CROYDON NOTES.

Talking to Mr. van Lear Black immediately after his arrival back in London, one gathered that his unfortunate experiences at Dum Dum Aerodrome, Calcutta, had done nothing to damp his enthusiasm for flying. His boat and train journey back from India indeed has done a great deal to confirm him in his opinion that there is only one method of travel for a gentleman, and in consequence he is busy preparing plans for more flying as soon as he can obtain a new machine. [British Manufacturers please note.—C. G. G.]

A fairly strong difference of opinion seems to exist regarding the aerodrome obstruction markings at Dum Dum Aerodrome where Mr. Black's three-engined Fokker stood on its nose in a soft patch.

Messrs. Geysendorffer and Scholte never saw any obstruction marks at all and these pilots have far too much experience to taxi into a clearly marked danger-zone when en route to Tokio and back via Siberia. In this case therefore it seems fairly clear that something was wrong with the aerodrome organisation and not with two of the finest and most experienced long-distance touring pilots in existence.

The trip was not abandoned on account of the upending of the plane in the Dum Dum swamps as some people seem to imagine, but on account of a record gale which sprang up the same night and tore the machine from its moorings and bowled it over and over like a fallen leaf. Incidentally it jumped a small hedge in the course of its involuntary flight.

A story is told here at Croydon of a certain well-known pilot, whose identity we must disguise under the fictitious name of Organ P. Golley. This aviator flew to a certain north-country city and on landing was accosted by a charming individual who earnestly required him to come and be introduced to the Mayor. Such is the retiring and modest disposition of our hero that he flatly refused to come forth into the blinding glare of personal publicity.

Moreover he was inspired to damn all Mayors, Corporations, Municipal bodies, Town Clerks, Beadles and Bum-Bailiffs into large heaps, and especially the Mayor of the City which was then trying to arrange a Civic ovation for him. Eventually the charming stranger pointed out he could hardly weigh in for the official (free) lunch unless he sort of said "howdy bo" to the Mayor. With that our gallant aeronaut stepped forward with a blush and performed the necessary handshake.

All the way to the Town Hall in the municipal Bentley the charming stranger chuckled and giggled to himself and at last Mr. Golley, feeling he might have a blob of Castrol "R" in one of his ears or something, asked him why he was so mirthful. The stranger apologised and said that Mr. Golley's remarks about the Mayor had delighted him hugely, inasmuch as the Mayor was his paternal relative.

It is recorded in letters of gold, to be read from right to left or up and down as the case may be, in the annals of the Aerodrome that Miss Anna May Wong crossed to Paris by Imperial Airways on Tuesday, July 2.

The inquiry into the loss of the *City of Ottawa* on June 17 has been a Heaven-sent opportunity for certain persons more remarkable for their verbosity than for their intelligence to make all manner of surprising comments.

One of the best was a fairly well known designer of aircraft who urged that motor boats travelling at 45 miles per hour should travel ceaselessly to and from across the Channel looking for aircraft which might be in trouble. This would be especially beneficial in a thick fog, and other fast motor boats could be kept handy to go to the rescue of the first lot and so on *ad infinitum*.—SPRY.

STAG LANE NOTES.

An interesting order placed during last week was for a Gipsy-Moth, with inter-changeable float and ski undercarriage, by Sir Douglas Mawson for use on his forthcoming Antarctic Expedition. Sir Douglas's ship, the *Discovery*, will leave London at the end of this month bound for Cape Town where she will pick up the pilot and mechanic for the Moth who are coming from Australia.

New English private owners are Major Allen, M.C., of Oxford, Mr. G. D. Shellabear, of the Eccentric Club, Mr F. S. Lee, of Exeter, and Mr. C. J. Scaramanga (through Malcolm Campbell Ltd., St. James's Street).

A new Spanish private owner is Senor Latona.

Apropos the rescue of the crew of the Spanish Dornier Wal in the Atlantic off the Azores by *H.M.S. Eagle* there is interest in recalling that one of the crew—Major Gallarza—only recently flew a Moth from Stag Lane to Madrid in company with three other Spanish pilots. These four Moths were for delivery to the Compania Espanola de Trabajos Fotogrametricos Aeroeos and were specially adapted to take special Zeiss survey cameras.

Herr Udet took part in the Berlin Flying Day held at the Tempelhoferfeld on June 23 with the Genet-Moth, formerly G-EBOU, and with it he performed the outside loop and other advanced manœuvres. This particular machine was one of a batch of six built for the Air Ministry which took part in the 1927 R.A.F. Display. Later it became the property of Flt. Lt. F. O. Soden, who this year disposed of it in part exchange for a new Gipsy-Moth through Malcolm Campbell Ltd. This latter company sold it to Herr Udet and after reconditioning by the De Havilland Company it was flown away from Stag Lane to Germany by her new owner.

This machine has probably endured more complicated stunting than any other light aeroplane not only in this country at the R.A.F. Display and at sundry flying meetings but also at the 1928 Orly Meeting and now in Berlin.

An interested visitor to Stag Lane last week was the Hon William Finlayson, Minister of Lands and Forests, Ontario, accompanied by his son, daughter and a friend. They all had flights in a Moth. Mr. Finlayson flew in the first Gipsy-Moth to arrive in Canada and by virtue of his post in Canada he is familiar with the good work done by Moths in forestry patrol and other work by the Ontario Provincial Air Service.

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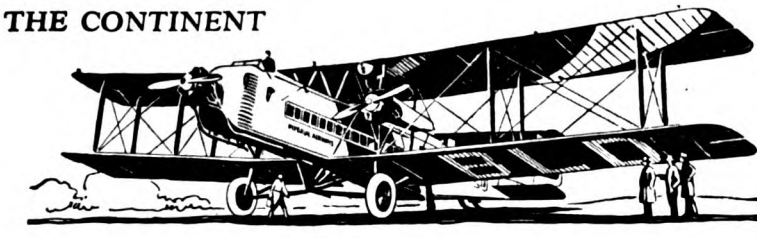

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AIR-PORT M.O.s.

Mr. Stuart Hirst, one of the pioneers of commercial aviation many years before the War 1914-18, writes:—

A paragraph that struck me on account of its future significance appeared under your Croydon Notes dated June 19. You said there was a feeling at Croydon that the time had come when the amount of passenger traffic called for the provision of a resident medical officer. You have here touched, perhaps unconsciously, upon an important oncoming need in air transport. Just as we have our Port Sanitary Authority for the seaboard, I think very soon we shall require to establish under the authority of the Air Ministry an Air-Port Sanitary Authority.

It is not merely a matter of medical aid in case of personal illness upon arrival of aircraft, but a matter of checking the propagation of infectious disease. The fact that aerial journeys from distant infected countries can now be accomplished in times less than the incubation periods of certain major infectious diseases calls for serious thought.

Passengers by air from India, for example, may now land at Croydon in the incubation stage of Eastern small-pox and for all that is thought or done at present subsequent development of the disease may occur in the midst of a large community. The time taken up for travel by sea permits of a warning by manifestation of the disease en route. The recent *Tuscania* incident at Marseilles illustrates the point. In view of the amount of infectious disease prevalent in India and the Far East preventive methods will certainly have to be considered by the Air Ministry.

An article on the subject of "Air Travel and Public Health" appears in this month's issue of the technical journal *Public Health*. Owing to the intelligence and foresight displayed by the writer I would recommend you getting a copy of the journal and making your comments.

I believe the Air Ministry have already had trouble on this matter and Sir Sefton Brancker tells me that it is one of his problems of which he does not see a solution at present.

About a year ago there was a plague in 'Iraq and all passengers coming from 'Iraq to Europe had to be put into quarantine at the Heliopolis Aerodrome for some days. The discomfort of tent life will not help to popularise air transport.

While the writer in *Public Health* rather accentuates small-pox I believe this is really unimportant as compared with plague and cholera, which are going to be our great difficulties in the East. Directly the journey from London to Karachi is being done in four days this problem will become even more complicated, and I suggest that your advocacy of the establishment of an Air Port Sanitary Authority will be what we journalists know as "intelligent anticipation."

[Let Mr. Hirst have all the credit for the intelligent anticipation. The case for Air-Port Medical Officers could not be put better. The way out of the quarantine difficulty seems to be that adopted by the French Authorities lately,—namely to put each person coming from an infected country under observation for the period of incubation. Let them go to their homes, or other destinations, with a health card, which has to be signed every day—or perhaps every second day—by a doctor till the quarantine period is over.—C. G. G.]

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Liverpool Air Lines Ltd.—Private company. Registered June 26. Capital, £100 in £5 shares. Objects: To carry on the business of constructors, designers, manufacturers and letters on hire of and dealers in aeroplanes, aeroplane engines, airships and flying machines of all kinds, organisers and providers of private and public conveyances, etc.

The subscribers (each with one share) are: W. W. Mattingly, 4[illegible] Witherington Road, Highbury, N.5, secretary of a fidelity guarantee association. A. G. Langley, 82, St. Ann's Road, Notting Hill, W.1[illegible] clerk. Solicitors: Wainwright Pollock and Co., 9, Bush Lane, E.C.4.

Mono-Spar Company.—Mono-Spar Company Limited was registered as a "private" company on June 25 with a nominal capital of £12,40[illegible] in 8,000 "A" shares of 1s. each and 12,000 "B" shares of £1 each. The holders of the "A" shares are entitled to half the net amount certified as the annual profit until the sums reserved in dividends on such shares amount to £30,000 and thereafter to 40%. The holders of the "B" shares are entitled to the residue. On a winding up the assets available for distribution are to be paid as to 40% proportionately to the holders of "A" shares and as to the remaining 60% rateable to the holders of the "B" shares. The objects are to engage in any scheme or business for the development, investigation, financing or encouragement of aircraft, aeronautic and airship construction and in conjunction therewith or apart therefrom, to carry on business in all its branches and in any part of the world as a general trading and investment trust, mortgage, finance and agency, company especially in businesses concerned with aeroplanes, airships and aeronautic development, and with its subsidiary apparatus, appliances and inventions, etc.

The first directors (to number not less than 2 nor more than [illegible]) are:—H. J. Stieger, 54, Bathgate Road, Wimbledon, designer. R. A. Haga Haig, 5, Clarendon Street, S.W.1, consulting engineer. A. E. Chorlton, 55, Lower Belgrave Street, S.W.1, consulting engineer. W. S. Stephenson, 143, Harley Street, W., engineer. C. W. Haywar[illegible] Rosedale, Dunstall Road, Wolverhampton, engineer. A. H. Ka[illegible] Dalkeith, Upper Park Road, Kingston Hill, sales manager. M. [illegible] Bramson, 26, Hanover Square, W., engineer. G. O. Mitchell, Co[illegible] Wood Cottage, Ducks Hill, Northwood, solicitor. The three first nam[illegible] are to hold office for three years. Secretary (pro tem.): G. O. Mitche[illegible] Solicitors: Norman Hart and Mitchell, 21, Panton Street, S.W.1. T[illegible] registered office is at 4, Broad Street Place, E.C.3.

PERSONAL NOTICES.

Deaths.

EYRE.—On June 27, at Redhill Hospital, as the result of a flyi[illegible] accident at Hendon on the same day, Vickers Osbourne Eyre, Flg. O[illegible] R.A.F.

Mr. Eyre passed out of Cranwell, where he was a Flight Ca[illegible] Serjeant, in December, 1925, and was posted to No. 56 (Fighter) Sq[illegible] He was promoted Flying Officer in June, 1927. No. 56 (F) Sqdn. w[illegible] practising for the R.A.F. Display when the accident happened.

HALLIDAY.—On June 27, at Luquait, 'Iraq, as the result of a flyi[illegible] accident, Flt. Lt. Christopher George Halliday, R.A.F.

Flt. Lt. Halliday served with the R.A.F. during the War 1914-18 a[illegible] retired in 1919. In August, 1920, he rejoined the Service with [illegible] rank of Flying Officer and was posted to the R.A.F. Depot, Uxbrid[illegible] In April, 1921, he was posted to No. 39 Sqdn. and in March, 19[illegible] he was transferred to No. 100 Sqdn., then at Spittlegate. In Janua[illegible] 1925, he was promoted Flight Lieutenant and shortly after he [illegible] posted to the Experimental Section, R.A.E., Farnborough. In Aug[illegible] 1925, he went to Halton to the Training Flight. In March, 1928, [illegible] was posted to the Aircraft Depot, Hinaidi, 'Iraq.

Marriages.

FESTING-SMITH—MAGUIRE.—On June 20, Patrick de Cou[illegible] Festing-Smith, R.A.F., only son of the late Alfred Charles Festi[illegible] Smith, L.R.C.P., L.R.C.S., of St. Budeaux, and the Hon. Mrs. Win[illegible] botham, of Ambury, Cheltenham, to Edith Ann Veronica, youn[illegible] daughter of the late Daniel Maguire, of Country Monaghan, Irela[illegible] and of Mrs. Maguire, of Liverpool.

TRACE—JOHNSON.—On June 17, at The Cathedral, Salisbury, [illegible] Rhodesia, Garth Trace, D.F.C., elder son of Mr. and Mrs. James Tr[illegible] of Bournemouth, to Doris Mary, only daughter of Lieut.-Col. H. [illegible] and Mrs. Johnson, of Sheffield.

Forthcoming Marriage.

COLQUHOUN—KINGSLEY.—The engagement is announced betw[illegible] Flt. Lt. James Woods Colquhoun, R.A.F., eldest son of the Rev. R. [illegible] and Mrs. Colquhoun, of Congresbury, Somerset, and Miss J[illegible] Kingsley, daughter of the late Mr. A. Kingsley and Mrs. Kings[illegible] Shakespeare Road, Bedford.

Births.

BUSK.—On June 27, at 4, Banks Terrace, Sheerness, to Enid, [illegible] of Flt. Lt. C. W. Busk, M.C., A.F.C., R.A.F.—a son (stillborn).

GOLDIE.—On June 21, to Sylvia Mary, wife of Flt. Lt. A. H. Gol[illegible] R.A.F. (formerly Bedfordshire Regt.), of The Mount, Harefield R[illegible] Uxbridge—a son.

LYWOOD.—On June 21, at a nursing home, Uxbridge, to Hi[illegible] wife of Sq. Ldr. O. G. Lywood, R.A.F.—a son.

STEVENTON.—On June 18, at "Mantua," Birchington-on-Sea, [illegible] Doris (*née* Barnes), wife of Flg. Off. C. F. Steventon, R.A.F [illegible] daughter (still-born).

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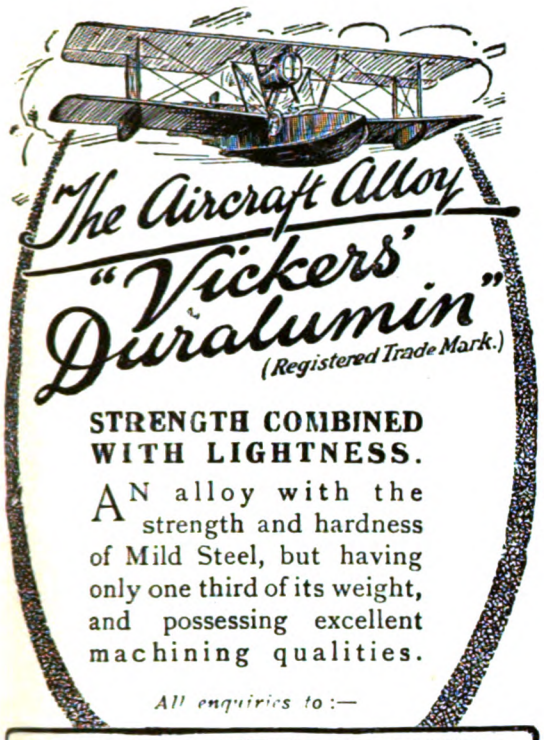

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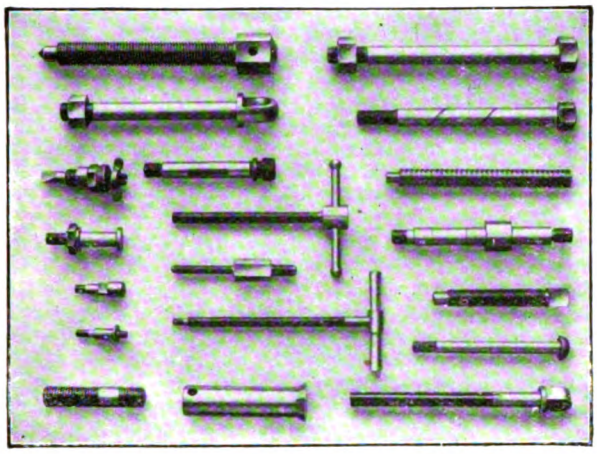

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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Gray

Vol. XXXVII. No. 2. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

"TO ME MY KING'S MUCH HONOUR."—(KIPLING).

THE KING'S CUP:—The Lord Thomson, Secretary of State for Air, presenting the King's Cup to Flg. Off. R. L. R. Atcherley, R.A.F. On the left is Flt. Lt. G. H. Staniforth, R.A.F., Mr. Atcherley's passenger.

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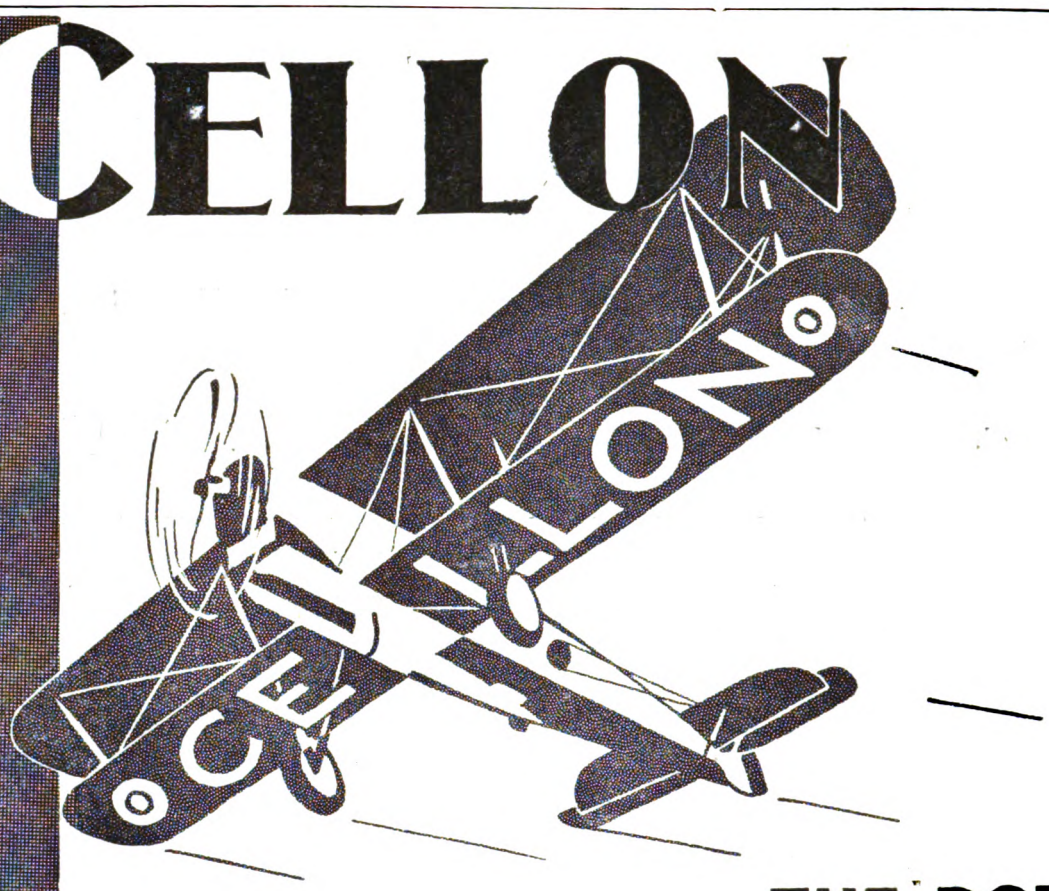

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ON THE KING'S CUP RACE.

THE DAWN PATROL.—Getting ready for the start at Heston. Mr. Broad's "Pull-over" or "Turkish Bath" is in the foreground.

For once in a way the King's Cup Race has been an undiluted success,—except for those competitors who did not win. Whether the cause was the increasing airmindedness of the public, or whether it was the topographical attraction of Heston Air-Park, or whether it was the businesslike enthusiasm of the Proprietors of the Air-Park one does not pretend to say, but on a cold, windy and threatening-to-be-wet morning there were more people out to see the start than there have ever been at a King's Cup Race. And at the finish not only were there far more people than have ever come to see the finish of a King's Cup Race (at any rate since the immediately post-war enthusiasm of the popular press died down), but the people who came to Heston were distinctly of a better class than have ever assembled at any air meet with the exception of the R.A.F. Pageant.

This is not said in any spirit of snobbishness, but merely to show that the right people, that is to say the people whose support has all along been necessary to make aviation a success, are taking an active interest in flying. Let us hope that the Aero Show will demonstrate that this interest is going to take a practical form in hard cash.

At the Start.

Heston Air-Park, for all its cheeriness, was a mighty cold place when the competing machines turned out on Friday morning. The first away was Flt. Lt. Ashton in the old familiar H.A.C. II Minus, G-EBOO. Presumably it is called Minus because it has lost its lower plane since it was first built. The little light aircraft was, to use the stock aerodrome phrase, "bumped to blazes" getting off, but it got away in good style. The next away, forty minutes later, was Mr. H. H. Leech, R.A.F., in the sole surviving original Baby Avro (Cirrus I). Just what happened has not been learned, but the machine bounced and trickled the whole length of the aerodrome without getting off. He taxied back to the starting line, made the necessary adjustment, and got away quite well considering the age and low power of the machine.

Over half-an-hour later the first of what might be called the big light-aeroplanes went. This was a Simmonds Spartan (Cirrus III), booked to be piloted by Lieut.-Col. Strange. Unfortunately he was ill, so Mr. Staniland, the firm's test pilot, took it over. Then two minutes afterwards went Mr. H. V. Ashworth in the first of the Avians (Cirrus II). At the same time Mr. V. N. Dickinson, of Birmingham, in a Moth X (Cirrus II), and Capt. H. H. Balfour, M.C., our latest flying member of Parliament, also in a Moth X (Cirrus II), and Flt. Lt. T. B. Bruce, M.C., in a Simmonds Spartan (Cirrus III), and Mr. G. E. F. Boyes, of National Flying Services, likewise in a Spartan (Cirrus III), were booked to start. But actually they were started at half-minute intervals, and the odd half-minute was adjusted in their starting time at Blackpool next morning.

Four minutes later went Mr. H. R. Law, who is the son of the late Mr. Bonar Law, with Mr. MacDonald, R.A.F., in a Moth X (Cirrus II). Why they were giving four minutes' start to machines of precisely similar specification was not evident, but the handicappers knew best. On the same mark was Mr. R. W. Jackson, R.A.F., in a Spartan (Cirrus III), also pulled back four minutes compared with similar machines.

THE FIRST AWAY.—Flt. Lt. Ashton taxying out to the start on the Halton "Minus."

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AN ANCESTOR.—Mr. Leech (and passenger) getting off in the original Baby Avro. —(*"Aeroplane" photograph.*)

Three-and-a-half minutes behind him went Colonel the Master of Sempill in one of the new Bluebird IVs (Cirrus III). Presumably the handicappers were suspicious that the catalogue performance figures were too modest, or else they assumed that Col. Sempill's experience can get a good many miles more out of an aeroplane than the engine gives it normally.

A minute behind him was Wing Commander E. R. Manning, D.S.O., M.C., in his own Westland Widgeon III (Cirrus III), who was given six minutes' start from Mr. R. G. Cazalet in a precisely similar machine. The difference in this case seemingly was that Wing Commander Manning had a passenger and Mr. Cazalet had fitted a lid over his passenger seat and was flying alone.

On the same mark as Mr. Cazalet was Lieut. L. G. Richardson, R.N., in a Moth (Cirrus III). Lieut. Richardson, as is now pretty well known, turned out to be second in the King's Cup Race and to be the winner of the Siddeley Trophy,—a good show.

The next away was Flt. Lt. C. F. le Poer Trench, R.A.F., in an Avian (Cirrus III) all alone, with the machine stripped and streamlined to the last ounce. His handicap was cut down by five minutes because when the handicappers saw the machine it looked so much faster than any self-respecting Avian ought to be.

THE GIPSY BRIGADE.

Just behind him came the first of the Gipsy-Moths flown by Lieut. A. M. Kimmins, R.N., who is a Flight Lieutenant in the Fleet Air Arm. This was on the same mark as an identical machine flown by Mr. B. E. Lewis, of Malcolm Campbell Ltd., with Flt. Lt. J. G. D. Armour, R.A.F., who served in the same squadron with him during the War. Their take-off was the first sensational effort of the morning. Getting off at the same time as Lieut. Kimmins, either Mr. Lewis or Flt. Lt. Armour (whoever happened to be handling the controls at the moment) held the machine down on the ground till she was well up to her speed, jerked her up into the air and threw her round onto her right shoulder, gaining about a hundred yards on the turn down-wind.

A minute and a half later Mr. D. S. Schreiber, a new and very sporting private owner, started in a Gipsy-Moth with Flt. Lt. David Bonham-Carter (who has recently qualified for membership of the Caterpillar Club) as passenger. Rumour had it that Mr. Schreiber, being still a new pilot, was not a good insurable risk for a race, so he imported Flt. Lt. Bonham-Carter to satisfy the demands of Mr. Lamplugh of the British Aviation Insurance Group. The result showed good judgment on the part of all concerned.

On the same mark was the first matrimonial crew in the race, Mr. and Mr. J. W. P. Chalmers, also in a Gipsy-Moth. If one's memory serves, this is the first time that a husband and wife have flown in the same machine in an important race. Incidentally also this was the first machine in the race with slots, and the said slots insisted on opening while the machine was on the ground,—which seemed to worry some of the friends of the crew somewhat.

Also on the same mark was Mr. P. P. Grey, in a Gipsy-Moth, and Capt. W. R. Bailey in a Gipsy Coupé-Moth, and Mr. M. Brunton in an X-Moth (Cirrus III). In this case the apparently curious arrangement of handicap was due to the fact that Mr. Brunton was flying alone and had the front seat of the X-Moth covered over.

The next pair to go were Mr. G. Thorne, R.A.F., in an Avian I (Cirrus II), solus and streamlined, and Mr. "Wellworth," or "Woolworth," in a Widgeon III (Armstrong Siddeley Genet). The number of the machine, G-EBRQ, will be familiar to readers of this paper. This time the owner was flying without a passenger, and had the front seat streamlined in, so it was not as at Rotterdam.

After that went Mrs. Alan Butler in her Gipsy-Moth Coupé with Mr. Reeves of the De Havilland Co. as chief engineer and spare pilot.

The next starter was Mr. A. F. Wallace in a Gipsy-Moth. After him went Mr. C. S. Napier, alone in a Widgeon

BAD LUCK.—Mr. Staniland in the Simmonds Spartan, who sank at Hamilton. —(*"Aeroplane" photograph.*)

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The Times—17/6/29.

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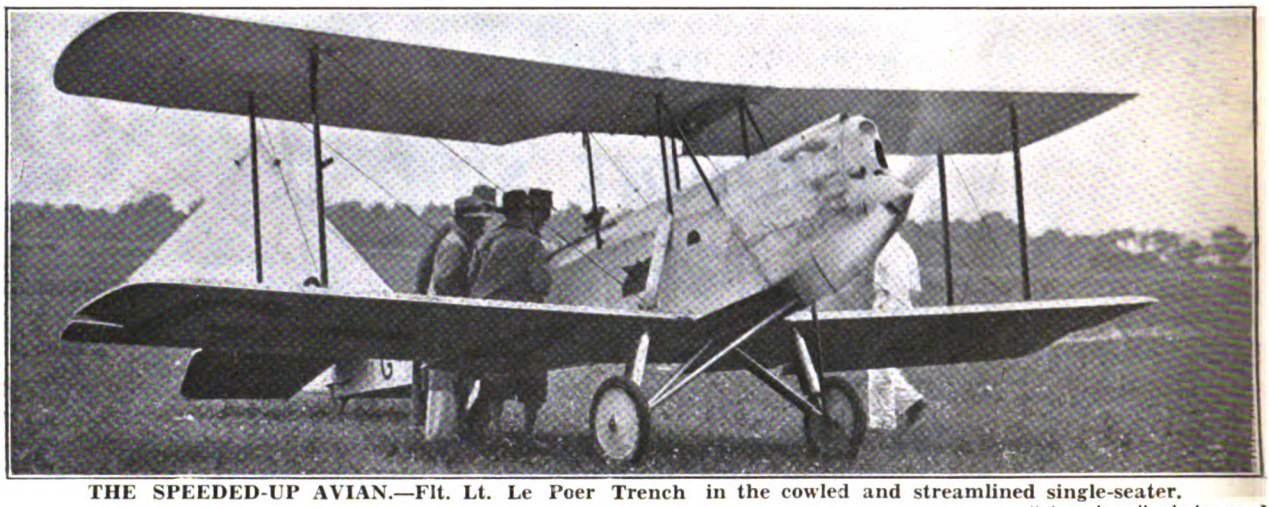
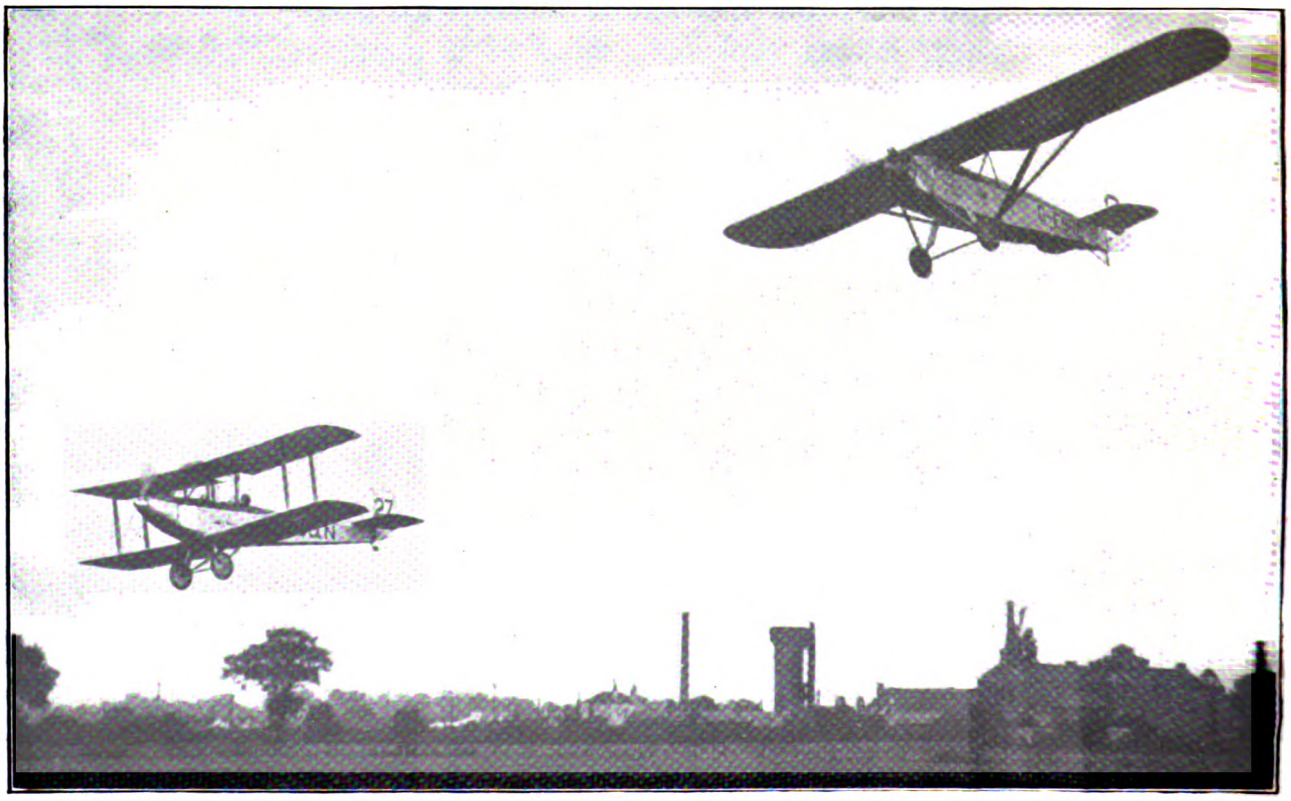
THE LEADING WIDGEON.—Wing Cdr. Manning going out to the start. —(*"Aeroplane" photograph.*)



THE SPEEDED-UP AVIAN.—Flt. Lt. Le Poer Trench in the cowled and streamlined single-seater. —(*"Aeroplane" photograph.*)

(Gipsy),—the only Gipsy-engined Widgeon of which one wots. Mr. Napier is the son of Mr. Montagu Napier of D. Napier and Son Ltd., the great engine makers, and has only learned to fly comparatively recently. He has the makings of a very good pilot.

On the same mark with him was Mr. A. C. M. Jackaman, alone in his Bath-Moth (Gipsy), and Capt. Geoffrey d Havilland with a passenger. Why Capt. de Havilland with passenger should be on the same mark with Mr. Jackama alone is one of those little mysteries of handicapping ex plainable only by the supposition that, good pilot as is M Jackaman, the handicapper has a still higher opinion c



AT HESTON AIR PARK.—Mr. G. Thorne (Avian, Cirrus II) and Mr. "Woolworth" (Widgeon, Genet) just starting. —(*"Aeroplane" photograph.*)

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AN UNUSUAL COMBINATION.—Mr. C. S. Napier (the son of Mr. Montagu Napier, of D. Napier and Son Ltd.) in a Westland Widgeon with a De Havilland Gipsy engine, starting from Heston.

Capt. de Havilland. The results showed that the handicapper was right, as Capt. de Havilland finished two places ahead of Mr. Jackaman.

FEMININE COMPETITION.

Miss Winifred Spooner was the next starter, alone in her very much streamlined Gipsy-Moth, giving one-and-a-half minutes to Capt. de Havilland. She got off with one of the most perfect turns of all the starters.

Mr. J. D. Irving of the Newcastle Club in a Gipsy-Moth was on the same mark as Miss Spooner and one-and-a-half minutes after him went Lady Bailey, alone in her Coupé-Moth.

That finished the normal, or almost normal, light aeroplanes in the race. From then on there was rather more variety about the machines.

Hereabouts happened a distinctly funny incident. A little Press photographer came up to a group of us standing by the next machine to start and wanted to know what machine had number 2 on its tail, because just when it was going a man had rushed up and kissed the pilot. Reference to our programme showed that the pilot was a distinguished officer in the Air Force and the action, though doubtless indicative of affection, seemed unusual in any of the British Services, though, judging by the number of bewhiskered Frenchmen who dashed onto the Court and kissed the French victors at Wimbledon, it might not seem so unusual across the Channel. Further inquiry discovered that another machine started at the same time as this particular one, whereas the accused officer had started on his own. A little further study of the programme showed that of the two machines that started one was piloted by a feminine competitor whose brother had come to see her off and quite naturally bade her a fond farewell.

A VARIETY SHOW.

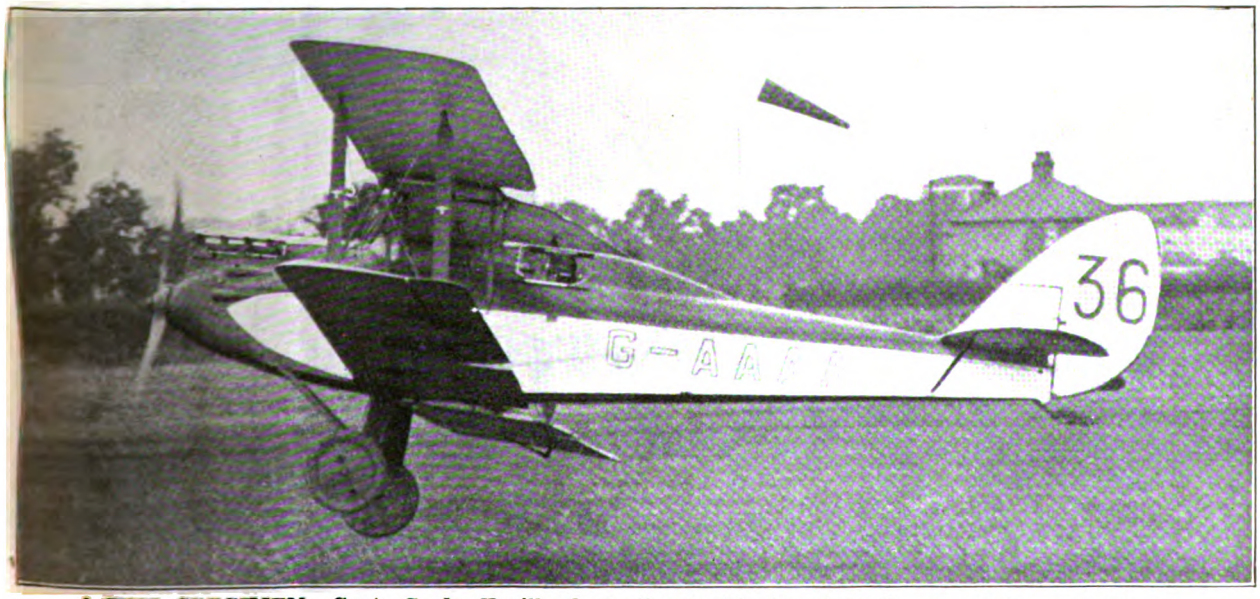
The next starter was No. 7 in the entries,—Flt. Lt. T. Rose, D.F.C., formerly of the Midland Club, flying an S.E.5a (Airdisco engine) belonging to Mr. W. L. Handley, a member of the Midland Club. In past years we have all become so accustomed to the S.E.5a that we have almost learned to regard it as an aeroplane. Only after watching the strings of Moths and Avians and Widgeons starting and then bumping into this funny old kite did one realise what an atrocity it was. And yet the wretched thing used to get along quite well during the War 1914-18 with a bare 180 h.p. Flt. Lt. Rose's take-off was worthy of his reputation as a pilot and instructor.

After him went Mr. Neville Stack, A.F.C., in an Avian IV M (Cirrus-Hermes engine),—the first public appearance of the Hermes. The machine had the special cowling designed by A.D.C. Aircraft Ltd. for the Hermes, and the rest of the machine was streamlined down to the last projection till, as a bystander said, it had about as much head-resistance as an orange pip,—and the Hermes engine sounded beautiful.

THOSE WICKED HANDICAPPERS.

Mr. Stack had been handicapped on the assumption that his machine would be something like an ordinary Avian, but with the extra power of the Hermes. When the handicappers saw it, and the way it had been cleaned up, they rushed for their slide-rules, ran them rapidly up and down, and, by the time they had got them to the verge of overheating, decided that Mr. Stack must have nine minutes docked off his handicap. Whereupon Mr. Stack was escorted to the starting line uttering low moans and proclaiming to the World that his chance of winning the King's Cup Race was now destroyed entirely, though he had had hopes of winning it before.

On the other hand, even knocking ten minutes off his original handicap did not console the pilots of the Speed-Moths, who were still set by the handicappers the task of giving him anything between ten and twenty minutes on the first day's flying. Judging by the fact that Mr. Stack was wailing about not having enough start, and that Messrs. Hope, Butler and Broad were firmly convinced that he had



A FINE SPECIMEN.—Capt. G. de Havilland starting in his Coupé Moth. —(*"Aeroplane" photograph.*)

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The Observer,
July 7th, 1929.

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The Daily Telegraph, July 8th, 1929.

GLOSTER

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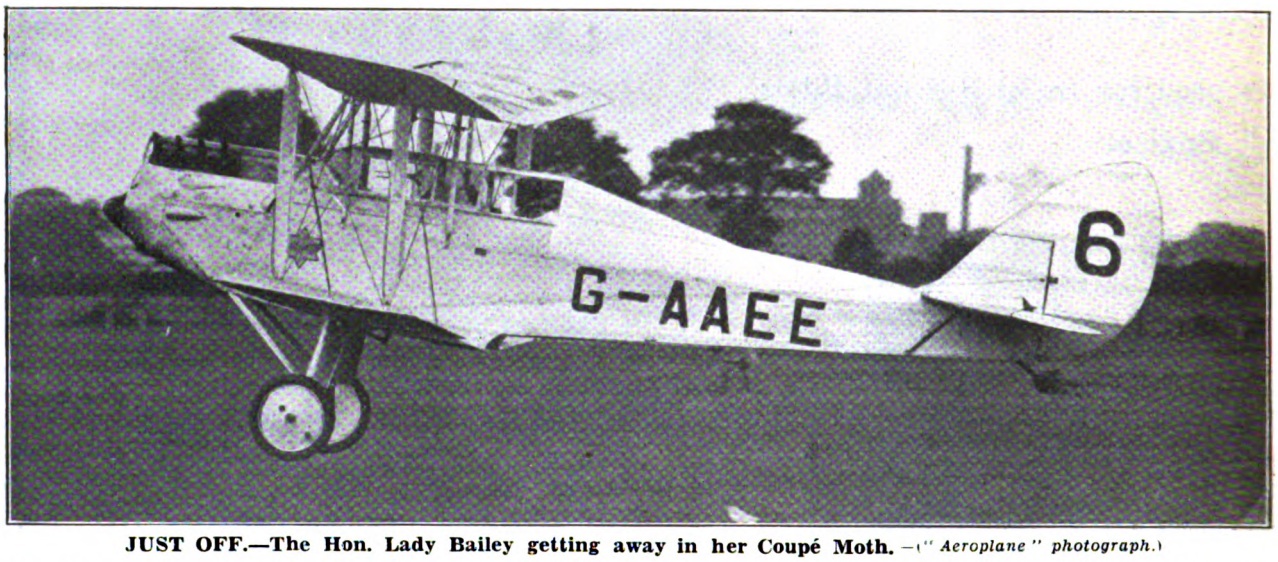
GETTING READY.—Mrs. Alan Butler and Mr. Reeves taxying up to the line.—("Aeroplane" photograph.)



JUST OFF.—The Hon. Lady Bailey getting away in her Coupé Moth.—("Aeroplane" photograph.)

too much start, one came to the conclusion that the handicappers were not very far out.

THE SPEED STUFF.

The next starter was Mr. W. Lawrence Hope, who won the race last year and the year before. He was flying a Gipsy-Moth painted bright scarlet, and streamlined down to about the same degree as Mr. Stack's Avian. Also it had tiny little wheels not much bigger than furniture-castors, and one was moved to wonder whether in next year's race we should see the Moths starting off on "domes of silence."

In starting Mr. Hope put his right wing-tip firmly on the ground, at least it looked like it, after travelling about twenty yards, spun round on it, hooked himself into the air, and went straight off on a steady fast climb to about 1,000 feet, where he would get every breath of wind that was blowing. Which was very wise seeing that the wind happened to be going at about 40 miles an hour the same way that he was.

Some of the less experienced pilots, and several who ought to have known better, started by flying low, although

THE VICTIM.—Mr. Neville Stack in the Avian (Cirrus-Hermes) which won the race all the way to the last stage, and then burst something inside.—("Aeroplane" photograph.)

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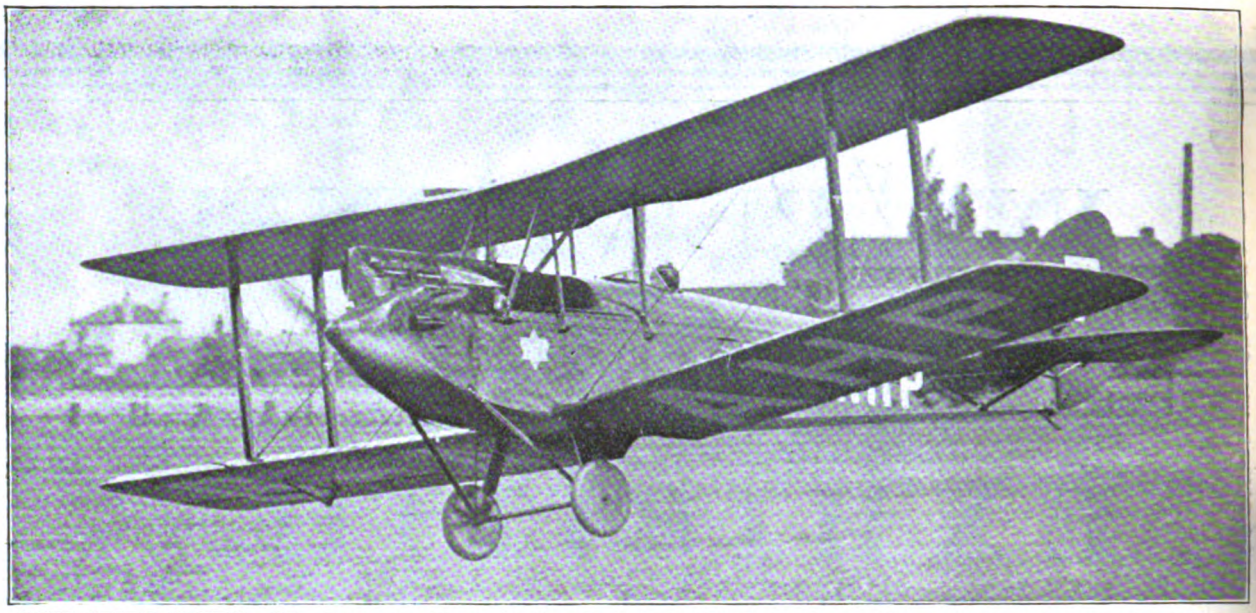


DUM SPIRO SPERO.—Mr. Lawrence Hope, in the first streamlined Moth, setting out to retrieve the Cup. —("Aeroplane" photograph.)

there was a favouring wind, which was obviously much stronger higher up. They had evidently got into their heads the idea that hedge-hopping was the right thing on a windy day, regardless of whether the wind was ahead or aft.

Mr. Alan Butler, who started about five-and-a-half minutes behind Mr. Hope, was also flying a well-streamlined Gipsy-Moth. One of Mr. Butler's outstanding characteristics is his apparently irresistible desire to tell the truth,—a rather unusual characteristic either in sport or business. He said quite frankly, before he got into his machine, that their engines were the only thing the De Havilland speed-team had to worry about. The engines had very naturally been tuned up to pretty nearly the last ounce, and so, he said, the great thing would be "to keep 'em ticking."

The proof of how well all the Gipsies had been tuned is that out of sixteen Gipsy-Moths which started only one, that flown by Mr. Lewis and Flt. Lt. Armour, was brought down by engine stoppage,—and that stoppage was not the fault of the engine, as will appear hereafter.

Mr. Hubert Broad's Moth, entered by Sir Charles Wakefield, was the last of the light aeroplanes. It was one degree more streamlined than the rest, and that fact, coupled with Mr. Broad's vast experience, was probably why he had to give five minutes' start to Mr. Butler and ten minutes to Mr. Hope.

The cockpit was covered over by a little cap, or lid, the top of which was within an inch of the top of Mr. Broad's skull. The front windows were so close to his face that he said they were just like looking through a large pair of spectacles. The two side windows were made to slide back so that the cockpit was quite well ventilated, and, although from the outside there appeared no possibility of the pilot having any view at all, Mr. Broad said that it gave him just as good a view as any machine with an open cockpit. In effect, closing the lid was almost exactly the same thing as putting on a flying cap with goggles.

Being white (or cream) and green, like Mr. Jackaman's bath-room Moth, it was promptly nicknamed "the Turkish Bath." And certainly its speed on the first day, when Mr Broad picked up 10 mins. on Mr. Stack, indicated that it must be pretty hot.

The next starter was Mr. A. H. Wheeler, R.A.F., in a S.E.5a (Viper), entered by the Duke of Northumberland. Here again we had a sight of what used to be, and were moved to wonder how on earth such a mass of wires and struts and odd pieces could be pushed through the air as fast as the thing used to go.

HORS CONCOURS.

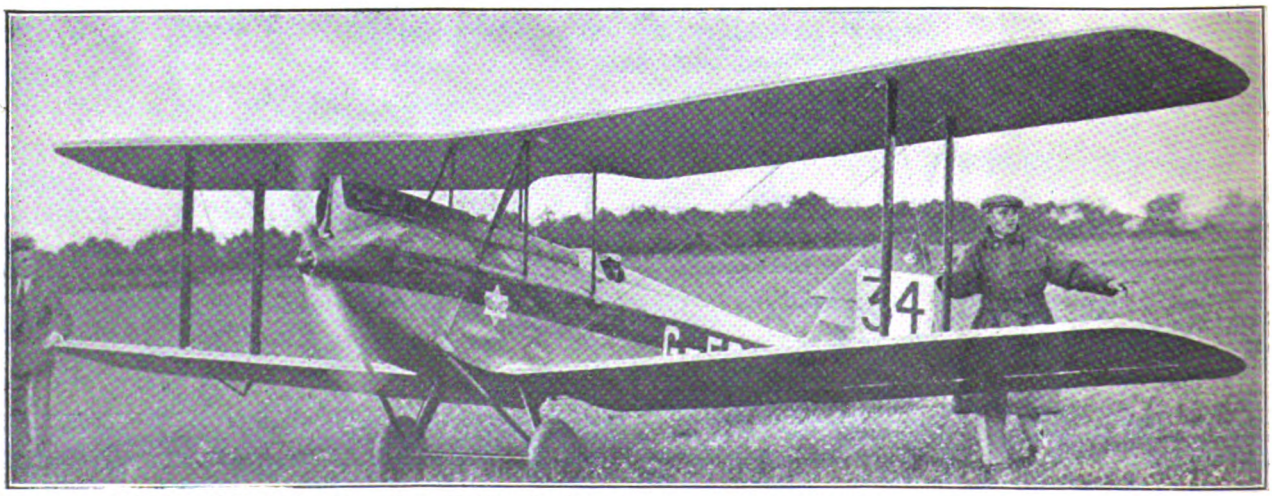
The next starters after this were outside of the Competition. One was G-EBMR, a Handley Page with two Rolls Royce Eagles, which Mr. Van Lear Black had chartered to take himself and a few friends, first of all to Lympne, and then to Blackpool, to see as much of the race as possible.

As the great lumbering thing came taxying across the aerodrome and swung round head-to-wind its tail-skid ploughed a huge furrow in the delicate young grass of the Air-Park. It was an excellent example of how we in this country cling to antiquated ideas. In America tail-skids are practically obsolete and tail-wheels fitted with brakes are universal,—in heavy machines at any rate. How long are we likely to go on allowing tail-skids to commit atrocities on our aerodromes in this country when in any intelligent community they would have been prohibited two years ago at least.

The other non-competitor was Sir Sefton Brancker, in a Coupé Moth flown by Flt. Lt. J. I. T. Jones,—commanding the Communication Squadron at Hendon. The machine was a cream-and-blue demonstration machine belonging to the D.H. Co., and very smart it looked.

MORE ANTIQUES.

After the old Handley Page had lumbered off there was



STREAMLINING.—Mr. Alan Butler in his single-seat Moth (Gipsy). —("Aeroplane" photograph.)

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Again! Again!

B T-H

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King's Cup

1929

B.T.H. MAGNETOS WERE USED ON THE MACHINES GAINING

1st Place GLOSTER GREBE (Armstrong Siddeley Jaguar) Pilot Flying Officer R. L. R. Atcherley.

2nd Place D. H. MOTH (Cirrus III.) Pilot Lieut. L. G. Richardson, R.N.

3rd Place D. H. GIPSY MOTH (D. H. Gipsy) Pilot Capt. W. L. Hope.

also

SIDDELEY TROPHY

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(Cirrus III)
Lt. L. G. Richardson, R.N.

and

22 of the **23** machines completing the course were fitted with B.T.H. Magnetos.

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Lieut. L. G. Richardson, R.N., winner of the SIDDELEY TROPHY and second in the King's Cup on a CIRRUS Mk. III MOTH.

Lt. L. G. Richardson, R.N. receiving the Trophy.

ROPHY

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G. RICHARDSON, R.N. CIRRUS-MOTH.)

es was entered in the KING'S CUP apt. T. N. Stack, A.F.C, it was the winner e first day's flying. Capt. Stack finished d day) in spite of having to make an finishing line.

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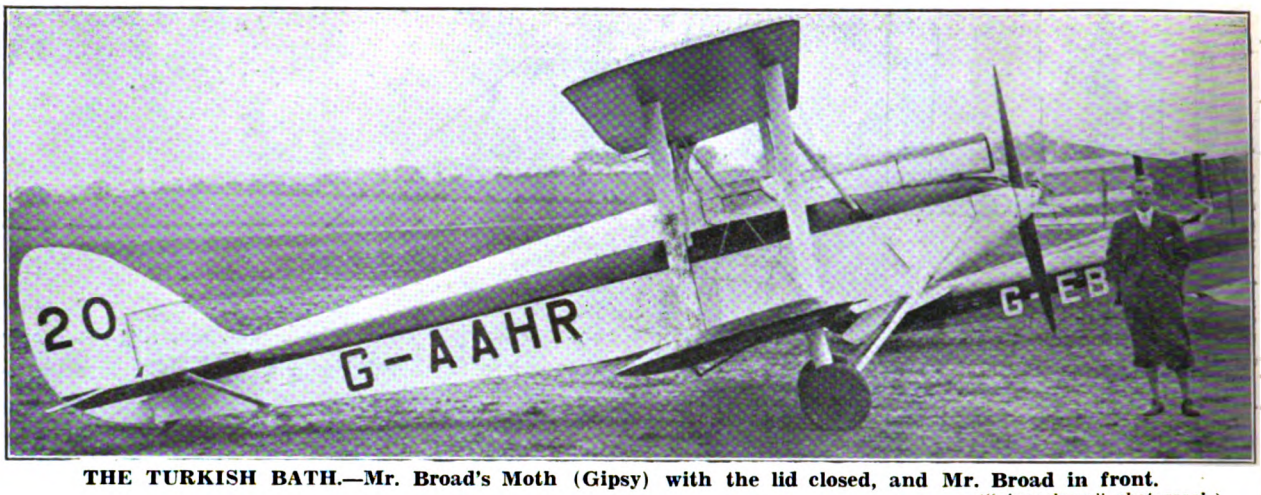


THE TURKISH BATH.—Mr. Broad's Moth (Gipsy) with the lid closed, and Mr. Broad in front.
—(" *Aeroplane* " *photograph.*)

wait of three-quarters of an hour before the two Grebes started. One, entered by Sir Walter Preston, the new M.P. for Cheltenham and that part of the World, who is showing strong symptoms of airmindedness, was flown by Mr. R. L. R. Atcherley, R.A.F., under the *nom de vol* of "R. Llewellyn,"—Somebody suggested that he ought to have taken the Shakspearian form of his name—Fluellyn—because he flew well in the race.

The other Grebe, with Mr. E. H. Fielden, A.F.C., late R.A.F., as pilot, carried as passenger Squadron Leader the Right Honourable F. E. Guest, C.B.E., D.S.O.,—the entrant of the machine. Sq. Ldr. Guest has always been a sportsman, a great hunting man and polo player, and he has been in most of the wars which have happened since his childhood, but he is not quite a young man in these days, so that his performance in flying round the course in such appalling weather in the back seat of a machine which was intended to be a single-seater is no mean effort.

A curious point about these two machines is that they both bore Service lettering and markings and were apparently not registered as civil machines. This seems somehow to need some explanation from the Air Ministry.

The fact that there should still be machines of this type to enter for a big race, and that anybody should think it worth their while to enter them and still more that one of them should win the race, is an amazing example of how little we have progressed in the last ten years. Intrinsically the Grebe is the direct descendant of all the B.Es. and S.Es. that were ever built, crossed with the Sopwith Pup,—which resulted in the Nighthawk, built by the B.A.T. Co. in 1919, which was the grandfather, or perhaps even the father, of the Grebe.

The only essential difference is that they have the excellent Armstrong Siddeley Jaguar engine instead of the entirely unreliable Dragonfly, and that the structure has been strengthened up to stand its weight and power. The Grebes have been Service equipment in the R.A.F. for at least five years, and they have been abolished. So the fact that the race for the King's Cup, which was intended not merely to stir up interest in aviation all round Great Britain but was also intended to promote the production of ne and efficient aircraft, should be won by a machine which very nearly a genuine antique, is utterly pathetic.

The last away was Mr. J. Summers, the new test pilot Vickers Ltd., in the Vickers 141 (Rolls-Royce FXI). It a peared in the programme as a single-seater, but it is qui big enough for a three-seat fleet-spotter. The relationsh between it and the Victoria is as obvious as the relationsh between a whale and its calf. All the same, it got off tl ground quite quickly and the engine sounded lovely.

THE NORWICH CONTROL.

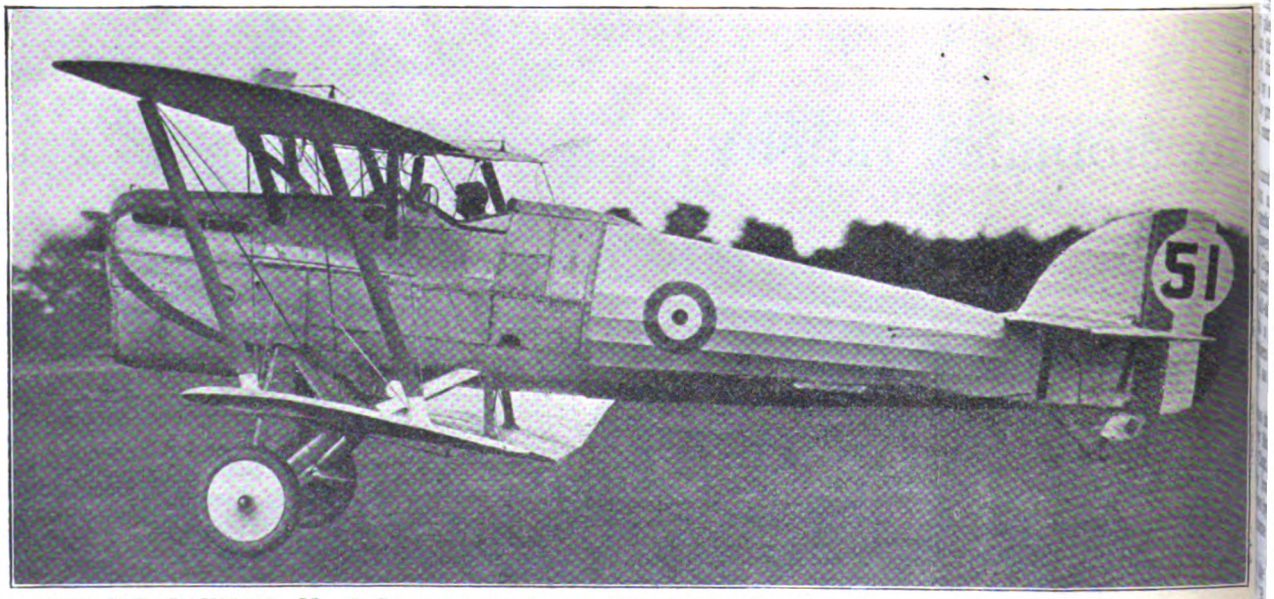
Observed by C. M. McAlery.

The first stopping-place in the race for the King's Cu was the Mousehold Aerodrome, Norwich, the Headquarte of the Norfolk and Norwich Aero Club. All the arrangemen for the Norwich control were handled by officials of tl Club. The timekeepers at Norwich were Mr. T. D. Dutt and Mr. F. T. Bidlake. Help was also given by the Adjutar 84th Brigade, R.F.A. (T.A.), who loaned field telephones ar provided an operator; the Norfolk Branch of the Briti Red Cross Society, who provided an ambulance; and M Seaman, who has grazing rights over the aerodrome ar arranged to keep his stock from interfering with the race.

A Royal Air Force detachment from Bircham Newt maintained wireless communication with the other contro and the meteorological information centres, and also su plied a Hucks-Ford starter in case of need. Wing C Hubbard flew over from Bircham Newton in a Service Ly Aero, and provided the only non-competing visiting aer plane.

A good number of Club members and other spectatc turned up at the aerodrome by car and on foot in spite the early hour and the fact that it was a week-day.

Mr. J. W. Pickthorn, of the Norfolk and Norwich Ae Club, broadcast what the B.B.C. call a "running comme tary" on the race, which added very considerably to t interest of the spectators. His supercharged eyesight warn them of the approach of each competitor long before appeared to the ordinary vision, and his knowledge of t



THE SCRATCHMAN.—Mr. J. Summers starting in the Vickers 141 (Rolls-Royce F.11).—(" *Aeroplane* " *photograph.*)

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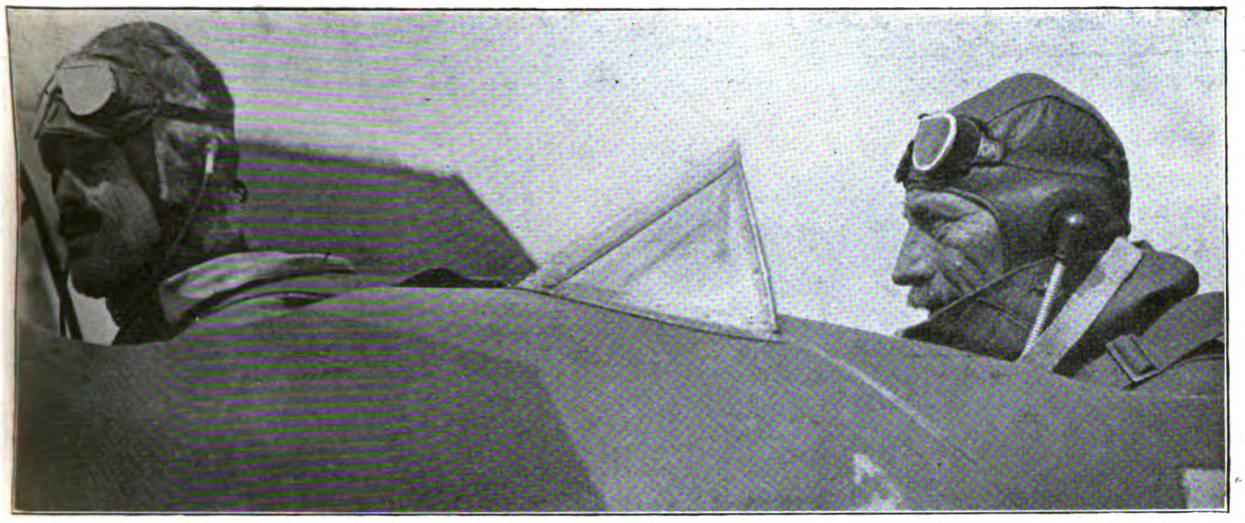

A SPORTSMAN.—Sq. Ldr. the Hon Frederick Guest (right), with his pilot, Mr. E. H. Fielden, at the start of the race.—This picture might be called "Speeding the parting Guest," seeing that Sq. Ldr. Guest parted with the money to provide the machine, and then flew in it.—(*"Aeroplane" photograph.*)

machines and the flying records of the pilots gave colour to the otherwise grey gaps in the morning.

The Club has certainly done a lot towards making Norfolk air-minded, in spite of the local inhabitant who said that he had seen all the machines arrive and depart, but, personally, he would rather walk, if it took him all his life. East Anglia, being essentially chivalrous, nearly everybody hoped "the ladies" would win, presumably all three in a dead-heat for choice.

The first weather report gave the wind at from 20 to 25 miles an hour, with visibility excellent and clouds at 4,000 feet. As the wind was mostly behind them, the competitors made good time between Heston and Norwich, the slowest machine, the H.A.C. 2 Minus (Bristol Cherub III. engine) doing the 119 miles in 72 minutes 20 seconds, and the scratch machine, the Vickers 141 (Rolls-Royce F. XI. engine) doing it in 42 minutes 1 second.

Nearly all the pilots of the low-powered machines complained of the bumpy state of the atmosphere. Some of them had been badly thrown about. Mr. B. E. Lewis and Flt.-Lt. Armour, flying a D.H. Gipsy Moth, had a forced landing between Henlow and Norwich, and was the first casualty after the start. Mr. R. W. Jackson, flying a Simmonds Spartan (Cirrus III. engine), had the bad luck to get an ineffective compass, with the result that he went off his course and lost over half an hour.

Mr. T. N. Stack, flying the Hermes Avian IV. M., got to Norwich in just under 49 minutes. Flt.-Lt. T. Rose brought the S.E. 5A (Airdisco engine) along in 56 minutes 20 seconds, and enlivened the proceedings with an aerobatic climbing turn after crossing the line. Mr. A. H. Wheeler, flying an S.E. 5A (Viper engine), was nearly five minutes faster over the course. Lt.-Col. Strange, in a Simmonds Spartan (Cirrus III. engine), looked strangely unfamiliar, but turned out to be Mr. C. S. Staniland.

Sq.-Ldr. Guest, who was a passenger in the two-seater Gloster Grebe (Jaguar engine), which he had entered for the race, was not very pleased with the Mousehold aerodrome. He thought that the dip into which the machines had to land, because of the direction of the wind, ought to be filled in. Judging by some of the landings made, that dip, in the opinion of the present writer, was the only thing that prevented certain competitors from running straight into the North Sea.

Talking of landings, a candid critic described some of them as "paper-bag" landings, and certainly a good many of them gave rise to the conclusion that the bumps in the air had become a habit. However, the only Norwich casualty was Capt. W. R. Bailey's Gipsy-Moth, which was written off with a broken longeron and other damage, having hit the aerodrome apparently tail-skid first, and with slots wide open. It was towed into a shed, where it was last seen surrounded by Club members wondering whether there was any chance of holding it as a hostage, duly repaired, for their own use.

Considerable interest was shown by the knowledgeable in the new steel airscrew for Moths, made by the Metal Propeller Co., and fitted to Capt. H. H. Balfour's D.H. Moth (Cirrus engine). The new low Gipsy-Moth entered by Sir Charles Wakefield and flown by Mr. Broad was also a centre of admiration. A good name for it might be the Moth "Pull-over."

As early in the race as the Norwich halt great mystery surrounded the identity of "R. Llewellyn," the writer's suggestion that he was "atchually" somebody else was quelled with uproar.

Mr. Summers, flying the Vickers 141 (Rolls-Royce FXI. engine), arrived covered with oil, but apparently his endurance ratio is high, as he left again on time under the same conditions. The speed of the 141 from Heston was 178 m.p.h., and the actual time 41 minutes 54 seconds.

THE CONTROL AT LYMPNE.

Observed by R. Dallas Brett.

Mr. H. R. Law, the Cinque Ports Club's representative in the Race, arrived late at Lympne, owing to having gone to Hunstanton by mistake, and having to return to Norwich. However, he proceeded in spite of the weather and an impossible handicap, and only retired at Blackpool on account of serious magneto trouble. We wish him better luck next year.

The handling of the Lympne control for the race was made exceedingly difficult by the high wind, which necessitated the machines being held down or chocked all the time they were on the ground. It was solely due to the very hard work of the Officers, N.C.O.'s and Airmen of No. 25 (Fighter) Squadron, R.A.F., Hawkinge, who so sportingly volunteered to help the Club Officials, that only one accident occurred, when Mr. Ashworth's Avian was blown over just after landing and broke its propeller, necessitating retirement from the race.

We offer our apologies to any competitor who suffered inconvenience or delay at our control, but we feel sure that all competitors appreciated the very great difficulties under which the control was worked, and we do not actually know of anyone who suffered delay.

We would like also particularly to thank Squadron Leader Payn and his Officers, N.C.O.'s and Airmen for the most sporting way in which they came to our assistance and for the very hard work which they performed so efficiently.

THE BRISTOL CONTROL.

Observed by Major G. S. Cooper, D.S.O.

The event of the week was the halt here in the King's Cup Race. In spite of rough weather we had a good assembly of spectators who constantly had to shelter in their cars—heavy showers intermittently falling all the afternoon.

The first arrival was anxiously awaited and then excitement was well maintained, almost too well perhaps for those controlling the aerodrome!—sometimes three and four machines landing almost at once. Everything however appeared to pass off smoothly, thanks very largely to the organising ability of Mr. C. T. Holmes, and his volunteer staff, and we hope that competitors were satisfied with the arrangements made for them.

The management of the aerodrome was made much easier owing to the ready and able assistance rendered by the R.A.F. who have lately arrived here,—to whom our very grateful thanks.

Over 200 teas were served in the hangar and Club-house, almost entirely run by voluntary work of Club members. The control work of the A.A. was as usual admirable, and the Bristol City Marine Ambulance and the Rev. Mr. Gay and his Boy Scouts gave splendid assistance selling programmes and tea tickets. Our official ambulance, the Bristol City and Marine, under Capt. Tresize was, as ever, ready for any eventuality.

After the departure of the last competitor we threw a typical Bristol "party" in the Club House—this continued until the early hours elsewhere and with some only died an unnatural death about lunch time on Saturday.

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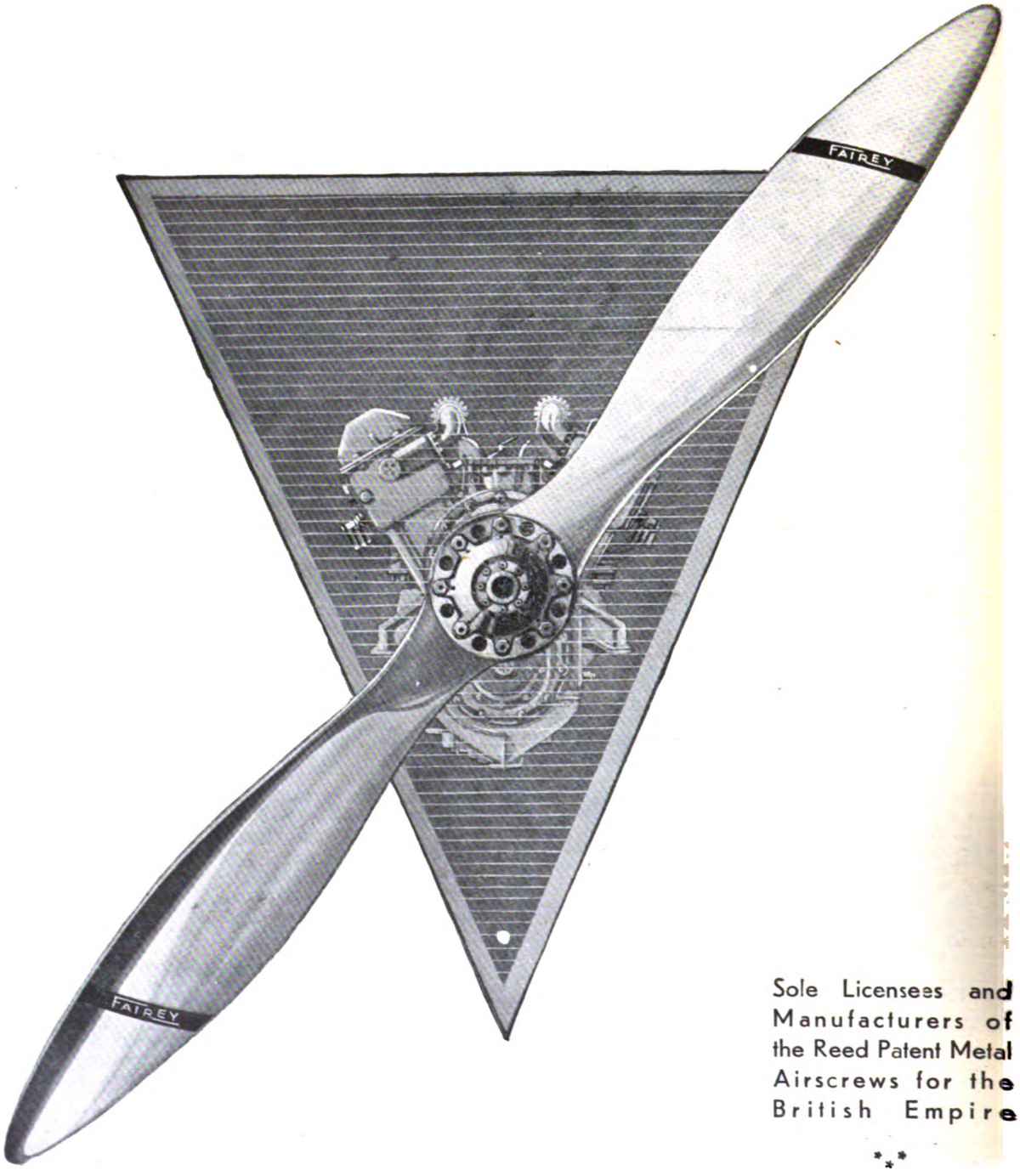

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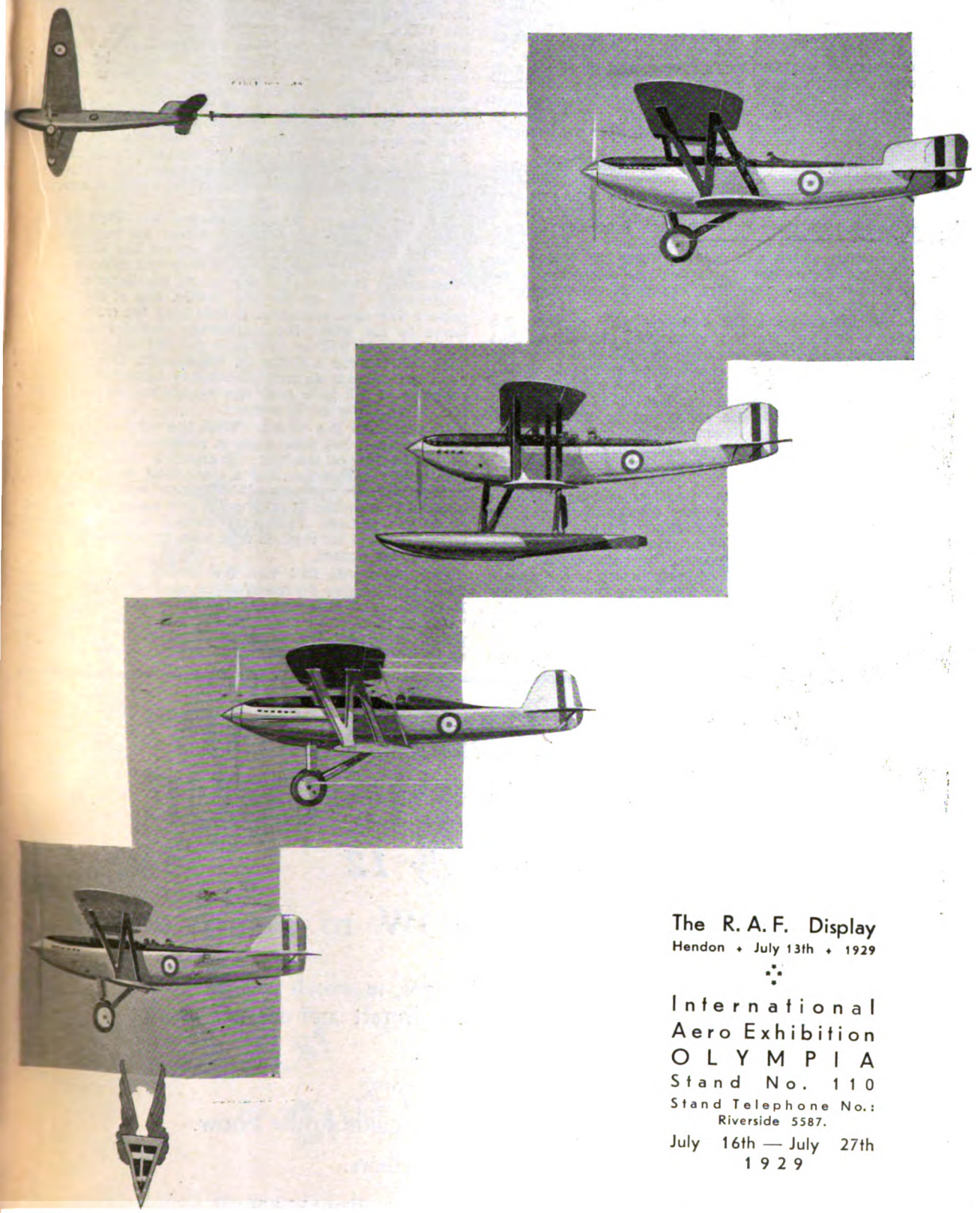

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AN IMPRESSION AT BLACKPOOL.

Observed by Lester D. Gardner, U.S.A.

These impressions of the King's Cup Race are being written, quite appropriately, on board the Imperial Airways Handley Page *City of Pretoria*. That incessant air traveller Mr. Van Lear Black chartered it so that he and his guests might see the start of the race at Heston, the arrival at Lympne, the finish of the first day's flying at Blackpool, the start and finish of the first day's racing, and do it all with the luxurious comfort that only a well-appointed air liner affords. Air Vice-Marshal Sir Sefton Brancker also flew from Heston to Blackpool in a Moth, not only to act in his official capacity, but to give the occasion a properly cheery tone.

With "true Southern hospitality," as it would be known in Baltimore, where Mr. Black lives when he is not flying to all the far ends of the earth, this correspondent *pro tem.* of THE AEROPLANE was invited to join the party, and is therefore scribbling these lines between luncheon courses en route from Blackpool to Heston. This may be the beginning of a custom which will make writing for THE AEROPLANE so delightful that even C. G. G.'s pen might lose some of its—to coin the only word that occurs at the moment—*caustiferousness*.

It was difficult to leave the monkeys, the midgets, the goose-stepping lion and the thousand other attractions that make Blackpool and Coney Island so similar, and to go out to a mere aerodrome to see another so-called air race—where, as they say in Ireland, the inevitable never happens and the impossible always occurs. But C. G. G. wanted American impressions, and he could not be disappointed, as several years ago he had favoured *Aviation* readers with his amusing ideas of the Dayton air races—and the citizenry of that air-minded city are stinging yet from his caustiferous praise.

Before going to the aerodrome a call should be made on the Lancashire Aero Club, which was celebrating under the watchful eye of Mr. Alan S. Goodfellow. As the hour was midnight, a time when Coney Island would be at the height of its festivities, Blackpool resembled the quiet of the Wall Street district on Sunday night. The similarity to the nights before the races in Baltimore, Los Angeles or Detroit became evident immediately. It resembled Detroit perhaps a little more. There it is so easy to get from Canada that apparently necessary lubricant which all over the world is required to ensure a smooth-running air-meet. The Quiet Birdmen at their zenith have nothing on the hospitality of the Lancashire Aero Club before, during, and "the morning after" an air-race.

When we reached the aerodrome on Friday afternoon and saw only a small group of spectators we received our first shock. Imagine such a lack of interest in Italy, or even in the U.S.A., where we have no gracious King to encourage aviation. My mind naturally recalled the Ford tour, which resembles a flying advertisement for everything under the sun, arriving in, say, Kansas City, Wichita, or even Montreal. The whole populace of these cities would be packed around the field, thousands of motor-cars would be parked near by, the enthusiasm that would greet the leader of the first leg would be tumultuous. The loud-speakers would belch forth to all parts of the field informative comment and no the mournful "one never knows" which was the Blackpool announcer's repetition on almost everything in connection with the events of the afternoon.

To one who had always regarded the King's Cup Race as the blue riband of British Aviation, the complete lack of interest in an amusement (*sic*) centre like Blackpool was depressing. True, the most agreeable and entertaining Lord Mayor was present with the other dignitaries of the city government: but as for the public, one of the Blackpool papers was accurate when it said that the crowd had gone home to tea when the contesting planes arrived. Either such contests will be run only for the air enthusiasts, they will become a Derby or Wimbledon. But, of course, even the officials do not receive any information as to the progress of the race until the aeroplanes arrive, the crowd cannot be expected to come.

So much for the crowd. With the arrival of the plane one American hat went high in recognition of the efficiency of the control of the field. Everything was done perfectly. The racing aeroplanes had a clear field, they were ushered immediately to their appointed place, and the pilots were allowed to disappear to the quiet of a hotel instead of being made the victims of an over-zealous Entertainment Committee of local air modocs who wish to bask in the reflected glory of air heroes.

One noticeable fact was the deference with which the Press and cinema representatives approached their victim. Even the calm Miss Spooner left them flat with the remark "Horrid people you are." Which put us all in our proper place. Evidently the blessings of publicity are not valued as highly in England as in the U.S.A., where pilots of the

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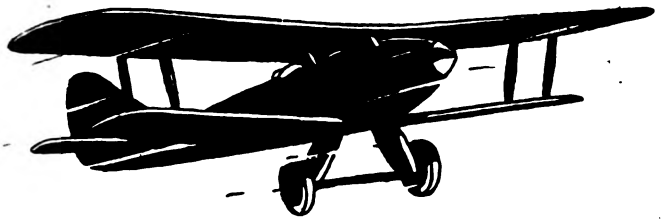

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King's Cup Result

1st. . Gloster GREBE 400 h.p. Jag
"R. Llewellyn" 150.3 M.P.H.

2nd. . CIRRUS MOTH Lieut. L. Richar
100.2 M.P.H.

3rd. . GIPSY MOTH Capt. W. L. I
116.7 M.P.H

4th. . GIPSY MOTH Mr A. S. E
118.7 M.P

5th. . GIPSY MOTH Miss W. Spc
105.1 M.P.

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OF MOTH

Siddeley Trophy Result

1st . . CIRRUS MOTH Lieut. L Richardson
2nd . . GIPSY MOTH Capt. W. L. Hope
3rd . . GIPSY MOTH Mr. A. S. Butler
4th . . GIPSY MOTH Miss W. Spooner
5th . . GIPSY MOTH Mr. J. D. Irving
6th . . GIPSY MOTH Mr. A. Jackaman

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GIPSY Mr. A. S. Butler—118.7 m.p.h.

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gentler sex give their first thought to the Press—often for a handsome consideration.

The complete lack of enthusiasm at the field was not in evidence at the hotel. Led by the amiable Lord Mayor, who gave every evidence of being a true member of the air clan, "a good time was had by one and all," as our small-town U.S. newspapers would say. But as I have heard that THE AEROPLANE is read by some of the best families as well as by aviation people generally, and as it is its policy to draw a veil over any view that might shock some of its readers, perhaps Lord Melbourne's remark will be appropriate: "It doesn't matter what we say so long as we say the same thing."

As a sporting contest the King's Cup Race has been the most productive of results of any air race in the world. Pilots, as well as the development of sport-planes, have been given that impetus which has put British aviation ahead of the world in this field.

The possibilities of using the race to interest the public is best expressed by the prayer of the Scots: "Oh, Lord, keep our minister humble and we will keep him poor."

THE BLACKPOOL CONTROL.

Observed by C. N. Colson.

When the stars are winking down on Blackpool sands,
O-o-h! I want ROMANCE! —*Beachcomber.*

One is tempted to ask, Has "*Beachcomber*" ever been to Blackpool? And, if so, did he go by train? His pseudonym suggests his acquaintance with a possible setting for Romance—sands—beach—comber—roamer—but surely even Boltonians prefer comparative solitude for such matters. Or can it be that they like it *en famille*—or, more correctly, *en masse*?

The stars may twinkle, but I doubt whether their light can penetrate the solid mass of humanity that seems to enjoy the sands until the early hours! And "Beachcomber" resides in London, and one can fairly safely say that all Romance would be bored out of him by the time he reached Blackpool were he to go by train.

Seven or more hours for a journey of roughly 228 miles, or approximately 32½ miles per hour!—in these days, and often no restaurant car on the train, at that!

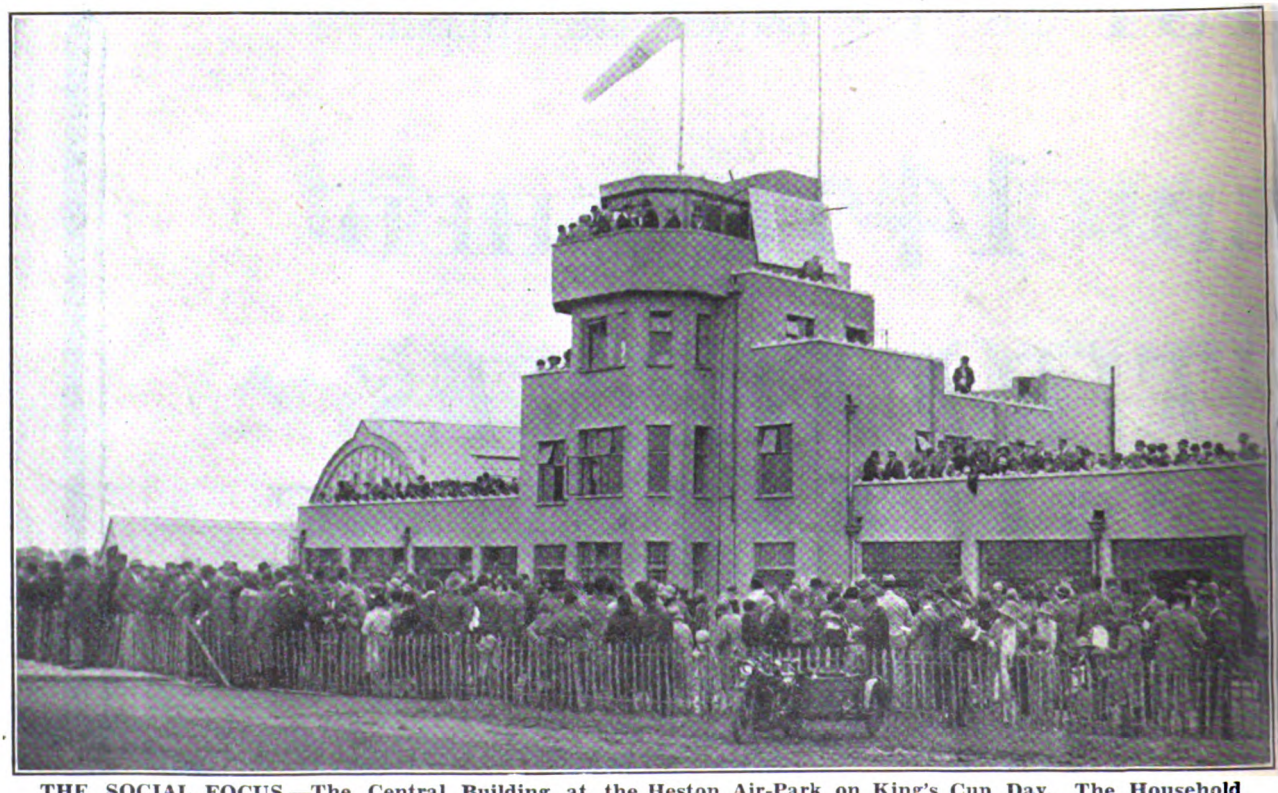
But probably he copies his eminent rivals, whose "flying photographic studio" *Geraldine* carries its lucky occupants to such places in an easy 2-3 hours, and does not subject them to pushing and crushing or to the unwelcome attentions of other people's sticky infants.

From the above diatribe 'tis obvious where one spent the time during the race for the King's Cup, and also that the journey by train thence may be taken as a cure for anyone whose "air-minded complex" is not yet up to THE AEROPLANE standard.

Actually one left Euston at 6.45 hours (evidently the Editor had never tried to get transport at that time of the mornin when he advised that train!), and arrived at 13.47 hour with one's main fuel tank in a sad state of vacuum. Hov ever, a visit to the Queen's—the Headquarters of the Lai cashire Aero Club during the race—soon remedied this d fect, and one hurried out to Squire's Gate aerodrome.

A varied programme had been arranged to keep the spe tators amused until the arrival of the King's Cup compet tors, and was admirably carried through more or less t schedule. But evidently "Beachcomber's" effort had fire the potential crowd to look for Romance elsewhere, as ther could not have been more than 2,000-3,000 onlookers at an time.

THE END OF THE FIRST DAY.—Mr. Neville Stack, first at Blackpool, being congratulated by Miss Winifred Brown, and Mr. Brown (no relation) of the Lancashire Aero Club.



THE SOCIAL FOCUS.—The Central Building at the Heston Air-Park on King's Cup Day. The Household Brigade Flying Club owned the upper terrace on the right and the middle bay is their club-room.

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Our admirable D.C.A., Sir Sefton Brancker, who is indefatigable, had flown up after seeing the start at Heston in the morning [isn't it high time the Editor took a lead from Sir Sefton, and sanctioned the provision of, say, a Robin for such jobs as these?] and was understood to be going to reverse the procedure after the start on Saturday morning so as to be in again at the kill.

The aerodrome is, like many others, a disused race-course, and except for the very bad furrows which were filled with clinker and stones, and so nearly caused the retirement of the ultimate winner, does not make a bad landing ground.

The grand-stand has been arranged for the club-room and the office of the Lancashire School of Aviation; who, by the way, were doing, as is usual, a steady trade in joy-rides with two of their Avros. It was also the Press stand which, except that it was a trifle far from the actual landing-ground, provided a fine vantage point.

The general enclosure was defined by a barrier right across the main part of the ground, and was large enough to accommodate many tens of thousands.

No doubt the Committee had good reason for their action, but it certainly seemed unnecessary to keep all cars back in a special enclosure and not to allow them to be used as private grand-stands, as is usually done. However, the new Municipal Aerodrome, on what is said to be an ideal site, was announced to be shortly becoming an accomplished fact, so no doubt arrangements there will be up to date.

Loud-speakers were installed, and the services of Mr. Will Hay had been secured as announcer. His inimitable wit greatly enlivened the proceedings.

The attendance of visiting aircraft was distinctly poor, and one gathered that many more than those present had promised attendance. Actually there were only about five Moths and five Avians, consequently the various events lacked much real support.

A successful effort was made to depart from the rather time-worn bombing of a car by having a motor-cyclist instead, and he skilfully rode up and down, while ziz-zagging—*à la* war-time convoys—the whole length of the spectators' barrier. But the bombers' aim was not good, and one thinks they might gain much good advice from those "knights of the flour-bag" who jousted at the last Conington meeting.

The programme became somewhat strung out as time wore on, because the clouds had been piling up and getting blacker and blacker, and no one was surprised when it was announced that heavy weather and head winds had caused an extra hour or more to be added to the probable time of arrival of the first competitor.

Various pilots gave exhibitions of aerobatics as part of a local competition, and Miss Brown showed that she could hold her own in this branch—her loops being particularly neat.

We were treated to the hair-raising spectacle of a supposedly old lady taking off, flying round, and finally landing, despite the protests of the authorities—her identity was not disclosed. One hopes that the episode will not cause friction with Mr. Lamplugh, for one was recently told by a prominent insurance manager that the raising of premiums of all lady car-drivers was being seriously considered, so as to prevent the penalisation of drivers in general in insurance matters! And may be he is following suit.

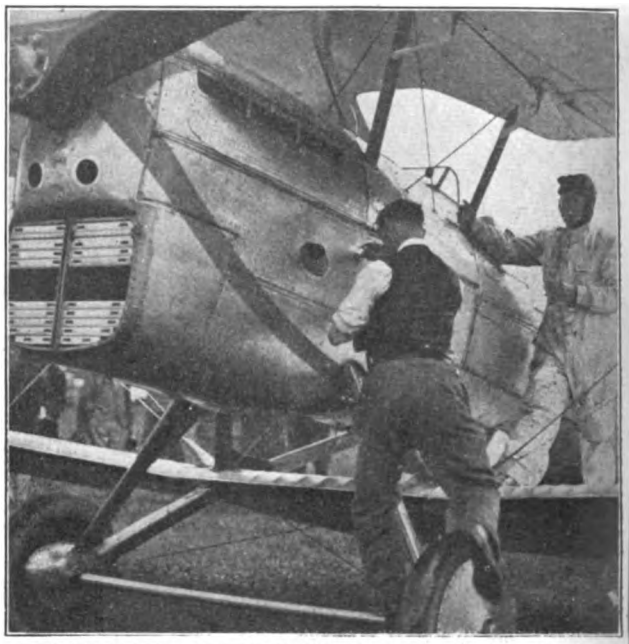
A pilot then gave a pretty display of aerobatics on Mr. Will Hay's banana machine, as he called it—a Moth with a bright yellow fuselage!

It had previously been announced that Mr. Van Lear Black and party were flying up in an Imperial Airways machine, and now Mr. Hay reported with stentorian voice that the machine G-EBMR, a twin-engined Handley-Page, was actually in sight and had on board (or does one say "in" an aeroplane,) Mr. Van Lear Black—the well-known Dutch millionaire—and party. Mr. Black is the owner of *The Baltimore Sun,* and one wondered whether he appreciated being called a "Flying Dutchman!"

The real business started shortly after this, when Mr. Hay told all and sundry that though he was supposed to be short-sighted—when occasion demanded!—he could see the first machine arriving.

It was a distinctly thrilling moment, as one instinctively thought of the bad weather which had been reported, and as one saw the black speck drawing closer, just skimming the house-tops, flying well below some factory chimneys standing in the distance. One thought of the physical and mental strain of flying full out for some 500 miles through such bumpy weather.

It was soon obvious that it was no amateur coming in, flat out, dead on his right course, and hedge-hopping with perfect judgment. In the few seconds that remained one ran through the various high-powered machines in one's mind, as it was certain that the fast machines would do best in that weather. But this machine did not seem like any of them. Then in a second or so one saw it was an Avian, and No. 49. A yell arose, and the loud-speaker said: "Good old Stack, have you brought your uke?" [Mr. Hay's allusion being to Mr. Stack's pet ukalele, which travels everywhere with him.—ED.] A half-circuit, and a perfect landing, a rush of Press photographers, a few minutes' cheering, and one was eagerly scanning the ominous bank of black clouds for the next arrival.



WINDING UP THE CLOCK.—Putting in the starting-handle of the Vickers 141.

About ten minutes elapsed, then she came—obviously a high-powered machine, this time. Down she dived over the line, then up in a light-hearted Service zoom, and "R. Llewellyn" had arrived in the first Grebe.

But tragedy followed all too quickly. The wind had veered round to the north, and landings had to be made across those furrows already mentioned. Had the machines been directed to land further down the S.E. end of the aerodrome all would have been well, but as it was, there were several deep, stony furrows right across where they came. And as the Grebe came in, necessarily fairly fast, the tail-skid caught up the stones and broke away. Luckily she just slewed round and stopped in such a position as to keep the following machines clear of the danger area.

The second Grebe came along 1½ minutes later, and then machines arrived almost too fast for one to note the times.

Miss Spooner was the first woman in, having gained many places, and once more proving her ability as a pilot. Incidentally it is marvellous how she has recuperated since her accident, for though obviously tired out, she was by no means so "done" as many of the men.

There was much movement in the "Gloster" camp during the night, and the requisite parts were rushed up by road through the dark, arriving about 3 a.m. With the help of certain sportsmen from the Club, who stuck to the job all night, a new skid, rudder, sternpost, and lower fin were fitted, and the Grebe was ready in time to leave next morning.

When it was certain that everyone who was going to arrive had done so, one repaired to G.H.Q. for refuelling.

It was soon obvious that all and sundry had read and thoroughly imbibed "Beachcomber," and had "a year's high spirits that are ripe to burst"—and burst they did!

Talent was soon forthcoming, both vocal and instrumental, and the inimitable and only Stack obliged with delightful renderings of "The Persian Kitten," "Something better than Love," etc. Others, whose names one was unable to get, sang and showed versatility on the piano, and provided together a very cheery evening.

As the first man was due away at 8.00 hours next morning everyone was up betimes to do their share of marshalling, and so forth.

Mr. Staniland was the first man away, in his Spartan, and was followed by the others without hitch.

Much relief was expressed that "R. Llewellyn's" Grebe was O.K., and he had an especial cheer when he left, from those few spectators who had arrived.

Four more retired, Flt.-Lieut. Bruce, V. N. Dickinson, H. R. Law, F. O. Wheeler—who felt, as they put it, "they hadn't an earthly," and so mostly flew straight down to Heston to see the finish.

Finally, Mr. Summers took off the Vickers 141, 3 hours 1 minutes after Mr. Staniland, and rapidly roared away out of sight, and so ended Blackpool's part in the race.

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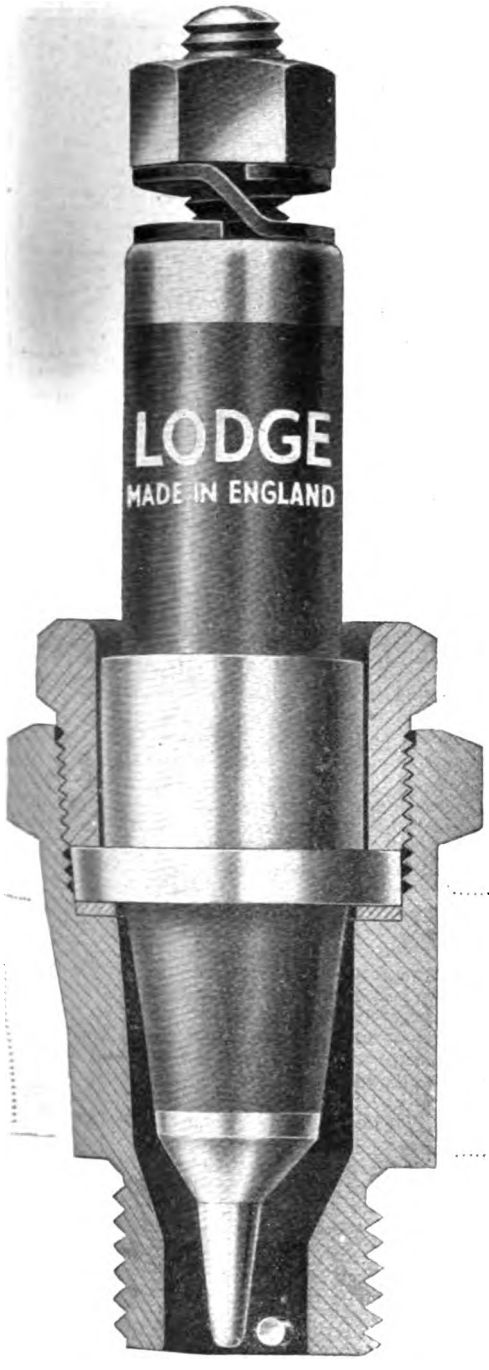

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THE GLASGOW CONTROL.
Observed by John Talbot.

As a mere refuelling station Glasgow had not the pleasure of entertaining overnight the competitors in this year's King's Cup Race. In spite of this, however, the Scottish Flying Club took advantage of the circumstances to stage an all-day flying programme at Moorpark Aerodrome, and the public turned up in such numbers as to beat all previous records, and unfortunately to show glaring weaknesses in the official organisation.

As to the race itself, competitors arrived, taxied out of sight of everybody for filling up, and departed to schedule with monotonous regularity, almost without incident. The wind was unfortunately in the worst possible direction, giving a short, uneven width of the aerodrome for landing and taking off. The two Grebes and the new Vickers 141 were, however, the only machines to have difficulty in alighting, Mr. Summers trying three directions before finally making a perfect landing.

With the departure of the back-marker, the rapidly increasing crowd settled down to see our own local pilots "do their stuff."

The proceedings were opened with an aerobatic display by a club member, Mr. George Yuill, whose polished show was only marred by the fact that he performed in quite the wrong quarter of the sky for comfortable observation. Thereafter we had the usual bombing—this time a wedding party which was bombed in handfuls by the disappointed suitor; a height-guessing competition; wing walking (by the Berkshire Aviation Tours, Ltd.), and a club race for a Cup presented by "Mobiloil" proprietors. The programme as printed was rapidly reduced to chaos, time became a matter of no importance, and several items were missed out entirely for no apparent reason.

The star event was a delayed drop parachute descent by Mr. Tranum, but as he "took off" from only about 1,200 feet, the "delay" was not very noticeable.

One hates to criticise adversely a young and flourishing body of enthusiastics, but one feels sure that the Scottish Flying Club *can* and *will* do better in the future, and that they will receive such criticism in this spirit.

The public enclosure consisted underfoot of unrolled road metal, while the car park resembled nothing so much as a builder's yard.

The closest ground view obtainable of any of the Cup machines or pilots was about 500 yards, and in fact the competitors were never seen out of their respective cockpits for the reason already stated at the beginning of these notes.

THE MATRIMONIAL MOTH.—Mr. and Mrs. J. W. P. Chalmers after finishing.

THE FIRST FEMININE FINISHER.—Miss Winifred Spooner, after coming in fifth.

The best view of all the day's events was obtained by t many thousands of hedge-crashers who lined the east ed of the aerodrome—while, conversely, the already bli hangar-side road was carefully screened by canvas.

To a certain extent one's sympathies go out to the sec tary and his committee who, having provided a rabbit hut were presented with a herd of elephants.

BEFORE THE FINISH.
Observed by C. G. G.

Heston Air Park on July 6 looked very like what Londo fashionable aerodrome should look like on a King's C day. The crowd in the reserved enclosure were the be looking lot one has ever seen at an aviation meeting.

One learned that the Air Park Secretariat, which consi chiefly of Miss Slade, herself a pilot of considerable abil who has her own Moth, had invited the whole of the Ho of Commons as guests,—to teach them something ab aviation. Whether many of them were there seems dou ful,—they could not have been such good-lookers. Perh they gave away their invitation tickets to their really r relations. Actually the crowd was very much more like Ascot crowd in sports clothes than an ordinary flying-c or aerodrome crowd,—and people of that sort are th whom we want to interest themselves in aviation.

Probably the quality of the crowd was helped a good by the fact that the Household Brigade Flying Club adopted Heston as its home aerodrome and has also stalled itself in the best room in the Social Focus as its club premises. But be that as it may, if the lads and la of the village and their thoroughly nice elderly relati whom they had obviously dragged to Heston, either buy a planes themselves or persuade the said relatives to them, Aviation is obviously going to be the done th within the next 12 months.

And when it is, not only shall we have to thank He Air Park largely for the new development, but the prietors of Heston Air Park will profit very handsomely the new fashion.

For the first time in the history of Aviation the r people were taking an interest in an air race,—which very right and proper seeing that the attraction was race for the King's Cup. Fortunately Fate and Mr. Da and his assistant Mr. Rowarth, provided a really exc finish. And anybody who was there for the first time have gone away with the idea that even long-distanc racing is thoroughly exciting sport.

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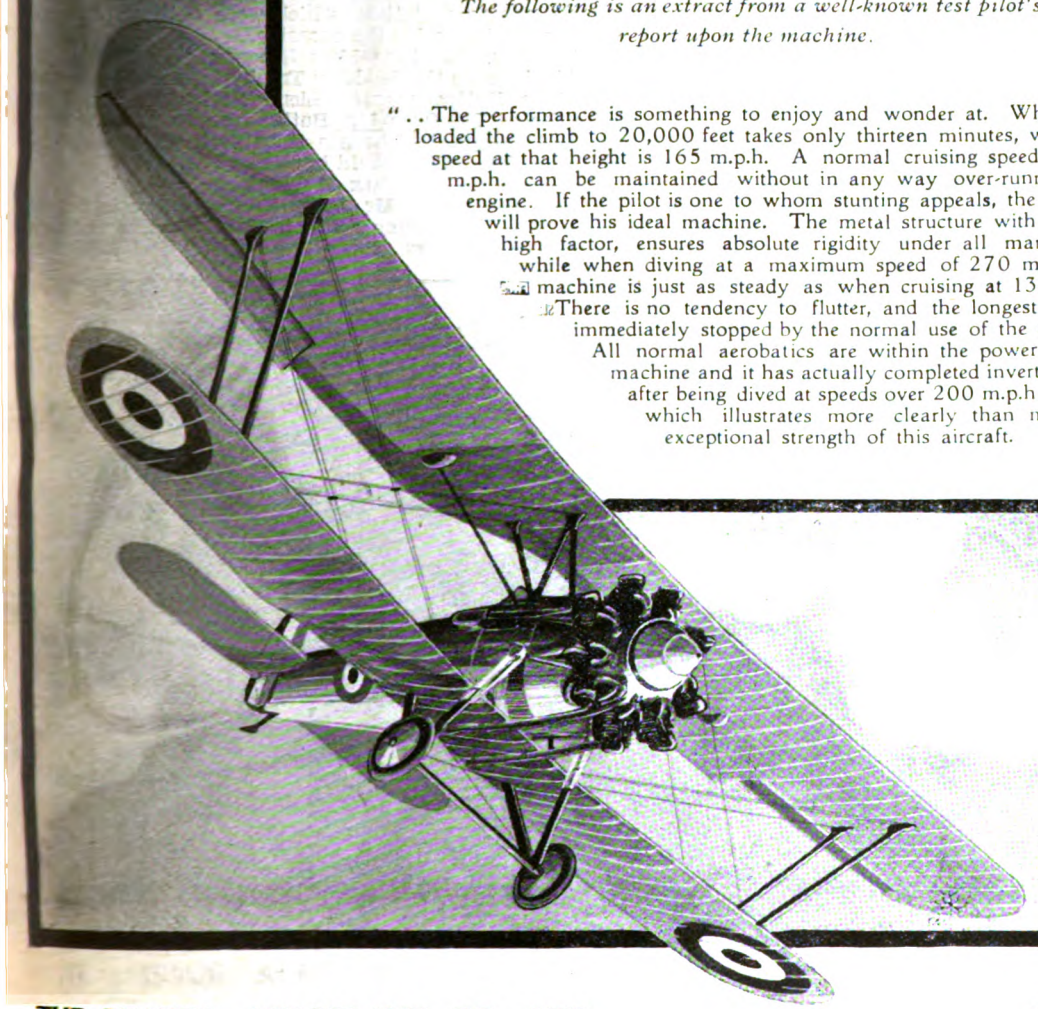
"Bristol"

BULLDOG

ALL METAL
SINGLE SEATER
FIGHTER

The following is an extract from a well-known test pilot's report upon the machine.

"..The performance is something to enjoy and wonder at. When fully loaded the climb to 20,000 feet takes only thirteen minutes, while the speed at that height is 165 m.p.h. A normal cruising speed of 130 m.p.h. can be maintained without in any way over-running the engine. If the pilot is one to whom stunting appeals, the Bulldog will prove his ideal machine. The metal structure with its very high factor, ensures absolute rigidity under all manœuvres, while when diving at a maximum speed of 270 m.p.h. the machine is just as steady as when cruising at 130 m.p.h. There is no tendency to flutter, and the longest spin is immediately stopped by the normal use of the controls. All normal aerobatics are within the power of this machine and it has actually completed inverted loops after being dived at speeds over 200 m.p.h., a fact which illustrates more clearly than most the exceptional strength of this aircraft.



THE BRISTOL AEROPLANE CO., LTD., FILTON, BRISTOL.

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A Sporting Event.

By way of keeping things going while the crowd was arriving, and before the King's Cup competitors arrived, the Household Brigade Flying Club held a landing competition for the Gwynn Madocks Cup, a trophy presented in the finest sporting spirit by the parents of the late Mr. Gwynn Madocks of the Coldstream Guards,—who was killed at Brooklands just before the opening of the club's first meeting.

The cup was won by Mr. Robert Quilter, late Grenadier Guards, with full marks for style, approach and landing. His actual landing was 8 inches from the target, or mark. The second was Mr. E. Somerset, Coldstream Guards, with 92 marks, 8 yards from the target. The third was Mr. A. V. C. Douglas, Scots Guards, 44 yards.

The also-landed were Mr. E. L. Donner, Irish Guards, 58 yards, Mr. R. L. Preston, Coldstream Guards, 105 yards, Capt. T. Rhodes, late Grenadier Guards, 130 yards, and Mr. W. R. West, Grenadier Guards, 142 yards,—for which he was given only 29 marks.

After that there was a variety of other flying, and sundry visitors arrived. Mr. Van Lear Black and some friends, including Mr. Lester D. Gardner, the founder and until lately the proprietor of *Aviation*, New York, the leading American aviation paper, arrived from Blackpool.

Sir Sefton Brancker, still piloted by Flt. Lt. Jones, also arrived from Blackpool in the coupé Moth,—the official G-EDCA Moth being laid up for repairs,—and confessed himself converted to travelling in a coupé though he has always stood out for open machines.

The Official Opening.

Then Lord Thomson, our alternative Secretary of State for Air, arrived from no stated point of origin, in a London Aeroplane Club Moth, piloted by Major Travers, the Club's chief instructor,—who remarked that he hoped that his wheels had stopped spinning when he landed.

Thereafter Lord Thomson hied himself to the microphone of the loud speaker and in a few of his usual well-chosen words declared the aerodrome officially opened and wished it long life and prosperity. Mr. Nigel Norman, replacing Lord Thomson at the microphone, said how much honoured he and his partner Mr. Muntz were to have their aerodrome opened by the Secretary of State for Air, and promised a hearty welcome to all good aviators and fealty and allegiance to the Air Ministry and all its regulations.

And then the Chairman of the local Urban District Council, including Beaversfield, said how happy they were to have this new Social Centre established in their midst. And so everybody was pleased.

When these ceremonies were over the loud speakers announced that the leading competitors had left Birmingham,—with Mr. Stack well ahead pursued by Lieut. Richardson, R.N., Mr. Atcherley, Mr. Fielden and the leaders of the Moth Brigade.

THE FINISH.

Just about when the winner ought to have been coming in, a cloud which looked very like a rain-storm blew along from the direction in which they were expected. The worst of it blew over before the first machine appeared. To everybody's surprise, instead of Mr. Stack's Avian the leader showed up as a Grebe,—obviously Mr. Atcherley's.

A few seconds after it a light aeroplane was spotted and people began to think that the Grebe had caught the Avian in the last mile of the course. But instead of the aluminium with a black nose of Mr. Stack's machine this showed up as black all over with a white deck, and was recognised as Lieut. Richardson's Moth,—whereat there was great jubilation among private owners at seeing one of their own number putting up such a good show and getting second place in the big race besides winning the coveted Siddeley Trophy.

Hardly had the winner and the second machine landed before two more light aeroplanes showed up close together. The bright scarlet of the leader announced him as Mr. Hope and the beige with the red stripe of the next machine showed it as Mr. Alan Butler's.

Here one recommends to owners the use of a distinctive colour scheme. All these machines could be recognised by their own colours long before anybody could pick out the racing numbers on their tails or the registration lettering on their sides.

A Sporting Effort.

After Mr. Butler had landed there was a gap, and then Miss Spooner's Moth appeared. As usual, she had put up a magnificent show. With a standard machine merely streamlined a bit for the occasion she had averaged over 105 miles an hour, which was the fastest speed of any of the light aeroplanes except those which were deliberately made into racing machines for the occasion.

Unfortunately, this time Miss Spooner gets nothing for her trouble, because the Siddeley Trophy, plus £75 presented by Mr. Alan Butler, goes to Lieut. Richardson, and the second prize of £25 from Mr. Butler goes to Mr. Lawrence Hope. And if there had been a third prize in the Siddeley Trophy Race Mr. Butler would have won it himself.

A Tale of Woe.

The sixth arrival was Mr. Stack. As he came in to land over the crowd his engine could be heard firing obviously only on three cylinders, if that. After he had landed he

THE OFFICIAL OPENING OF THE AIR-PARK.—Left to right: Mr. Nigel Norman, Mr. Alan Muntz, Lt.-Col. Mervyn O'Gorman, Lord Thomson, Sir Sefton Brancker, Major R. H. Mayo, and Mr. Harold Perrin.
—(*"Aeroplane" photograph.*)

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WILL BE AT THE

INTERNATIONAL AERO EXHIBITION AT OLYMPIA

As a prominent example of American aircraft built solely for commercial work, the Ford tri-motored, all-metal transport monoplane offers much of interest.

It is designed to seat fourteen passengers in addition to crew of two and to give the general excellence of performance, stability and maneuverability needed in commercial flying — as contrasted with military requirements which accentuate one feature at the expense of others. Its high speed is 135 miles an hour; cruising speed 115 miles an hour; landing speed 60 miles an hour. Its service ceiling is eighteen thousand feet. Its weight light is 7600 lbs.; all up weight, 13,500 lbs. The disposable load is 5900 lbs. The radius of action, five to six hours.

The entire structure and covering of the Ford plane is metal, all exposed surfaces being "Alclad" alloy which is non-corroding. Aside from the obvious advantage of freedom from rotting, splitting, tearing, and warping, all-metal construction assures the perfect fit of all replacement parts, and its strength may be pre-determined with accuracy.

The power is provided by three Pratt & Whitney radial Wasp engines of 425 horse-power each. The Ford plane will fly and climb, with full load, on any two of its engines.

Independently operated hydraulic brakes on the wheels and the tail wheel instead of the skid provide motor-car control of the plane on the ground, and remove any need for a handling crew either while taxi-ing or testing the engines.

Ford planes are operating in regularly scheduled transport service over thousands of miles of airways in North, Central and South America. While accurate figures are not obtainable, we believe there are more Ford planes being used in the Western Hemisphere than all other tri-engined transports combined.

The price of the various models of Ford tri-motored transports, at Dearborn, Michigan, U.S.A., ranges from £8670 to £11,355.

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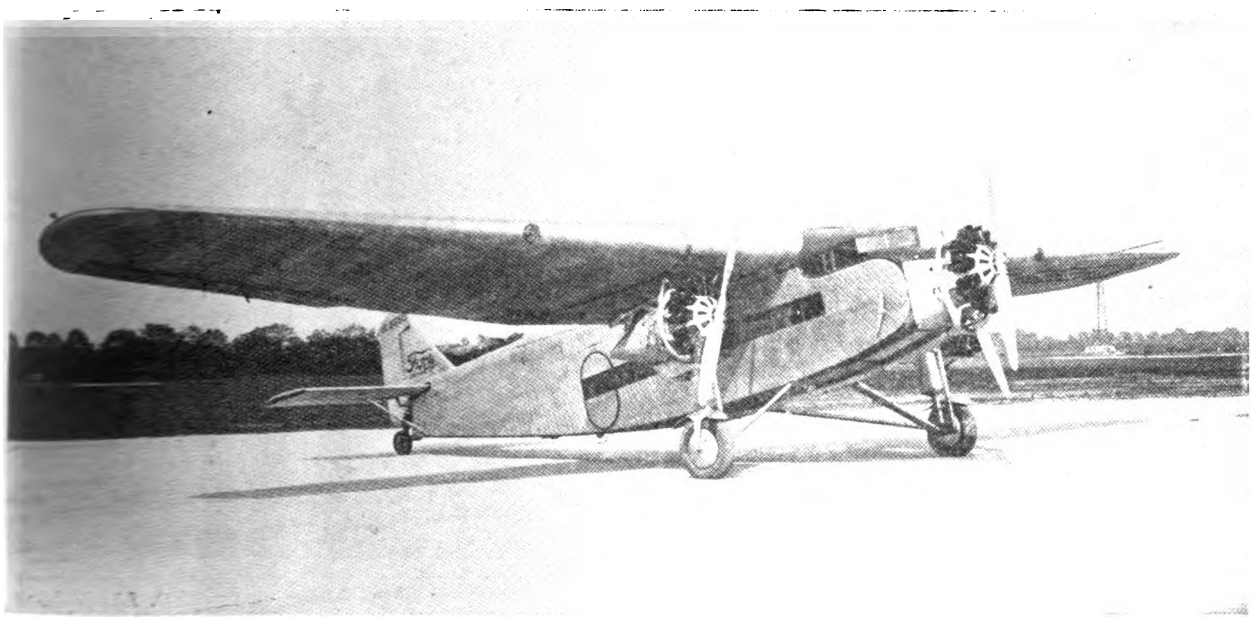

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CROSSING THE LINE.—The winner arriving.
—(" *Aeroplane* " *photograph.*)

THE WINNING CREW.—Mr. R. L. R. Atcherley (left) and Flt. Lt. G. H. Stainforth.—(" *Aeroplane* " *photograph.*)

explained that something went wrong in the engine after leaving Birmingham,—where he had an easy ten or fifteen minutes in hand if he had only maintained his speed round the rest of the course. Which shows that the handicappers were not so very far out in their estimates of his machine and engine, and were in fact not in the least optimistic.

The first thing he noticed after the obvious cutting out of one cylinder was that his oil pressure went down, and the engine began throwing out clouds of oil. Consequently he made for the R.A.F. Aerodrome at Bicester,—which was only a trifle off the course. There he landed and prayed for oil.

A very willing airman explained what Mr. Stack knew perfectly well, of course, that he could only get oil from R.A.F. store with a written permit from the Orderly Officer of the day. So the Orderly Officer had to be found by telephone from the aerodrome to the station office. And by the time he had arrived and given the necessary order and the oil had been put into the machine, thirty-five minutes had passed, and Mr. Stack had lost the race. If he had been able to get the oil in ten minutes instead of thirty-five he would just have won.

The odd twenty-five minutes was nobody's fault. Aviators cannot expect to drift down into a Service aerodrome and be supplied with oil for cash across the counter any more than a passing motorist can expect to pull up at a Roy Army Service Corps Mechanical Transport Repair Depot ar have a mechanical repair made on the instant. At a small Service aerodrome with a single squadron possibly tl twenty-five minutes might have been saved. But such a the fortunes of war and racing.

A.D.C. Aircraft Ltd. have very sensibly issued a full e planation of why the Hermes broke down. That is so muc better than hushing it up and pretending that it was nothir but bad luck. As a matter of fact, it *was* bad luck, and tl Hermes put up an extraordinarily fine show considering th it was its first public appearance.

Anyhow, Mr. Stack got £50 for being first at Blackpoc which is more than most of the people got who stood gallantly such a hammering all the way round the course.

Just after Mr. Stack the other Grebe arrived, and M Fielden explained that within a few miles of Birminghar when they were close behind Mr. Atcherley, they broke flying wire and had to go easy as far as the control. Thei they fitted a spare flying wire which they were carryin and so finished the race. Which only shows how extraord narily silly it is to have a machine with flying wires

HISTORICAL MOMENTS, I.—Harold of England meets the Conqueror.—Mr. Atcherley and Flt. Lt. Stainforth in the winning Grebe are met by Mr. Harold Perrin, Secretary of the Royal Aero Club.

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break when aeroplanes can perfectly well be built without any wires at all.

The eighth machine was Flt. Lt. Trench's Avian (Cirrus III). The ninth was Capt. de Havilland's Gipsy-Moth. The tenth was Mr. J. D. Irving's Gipsy-Moth, and the eleventh was Mr. Jackaman's Gipsy-Moth, all close together and all practically off the same mark at the start, showing how very little there is in it between the speeds of the standard machines.

The twelfth machine to finish was Mr. Thorne's Avian (Cirrus II).

The thirteenth was Mr. "Woolworth," who explained with something like pride that a standard Widgeon will maintain 90 m.p.h. air-speed on four cylinders of a Genet engine. He had broken a rocker-arm leaving Bristol and had flown the whole way to Blackpool on four cylinders at that air-speed.

The fourteenth to finish was Mrs. Butler, and the fifteenth was Wing Cdr. Manning. The sixteenth was Mr. Schreiber and Flt. Lt. Bonham-Carter,—who saved their insurance after all.

The seventeenth machine was that of Mr. and Mrs. Chalmers, who, considering that they are absolute amateurs, had put up an astonishingly fine show in going through with the race after having such a knocking about on the first day. The eighteenth was Mr. Wallace, another private owner in a Gipsy-Moth.

The nineteenth was Mr. P. P. Grey in Mr. Ingram's Gipsy-Moth. And the twentieth was number 20, Mr. Broad, in the "pull-over" Moth entered by Sir Charles Wakefield.

AN UNPLEASANT ADVENTURE.

As the table on page 76 shows, there was only a small fraction of a mile an hour difference between Mr. Broad and Mr. Alan Butler on the first day of the race. But on the second day after crossing the Cheviots from the Glasgow side Mr. Broad ran into a heavy storm somewhere between Wooler and Alnwick. Knowing that he had high ground in front of him and being able to see nothing through the storm he was forced to land,—apparently quite near Chillingham Castle, the home of Lord Ossulston, an enthusiastic Moth owner and pilot.

A friendly farmer found him and gave him lunch, and discussed cattle and crops and sheep with him, what time Mr. Broad, knowing that he was by now out of the race, resigned himself to paddling home at his own speed, when the weather cleared. He came to the conclusion that Alnwick beer was good and that the life of a shepherd at £2 10s. a week with a free cottage and a free garden and various other free products of the earth was not at all to be despised after our strenuous existence,—and especially after the bumping he had had all through the previous day.

After Mr. Broad came Lady Bailey in her Coupé-Moth, and last of all Lieut. Kimmins, R.N., in Mr. Tiark's Moth.

The last twelve to finish knew perfectly well that they were out of the race in any case and merely finished out of sheer sportsmanship. So they deserve every credit for seeing the race through.

THE SIDDELEY TROPHY WINNER.—Lt. Richardson, R.N., receiving the trophy from Lord Thomson.
—("Aeroplane" photograph.)

THOSE WHO FELL OUT BY THE WAY.

Of those who did not finish Flt. Lt. Ashton stopped at Hamble and Mr. Leech stopped at Lympne because obviously their machines were too under-powered to get through to Blackpool in such awful weather.

Here the statement may be made that though there was a whole gale blowing on Friday the weather was beautifully clear and nowhere round the course was there any need for navigation, as such. Course-keeping was merely a matter of map-reading, except once or twice when pilots met sudden violent storms such as that which brought Mr. Broad down,—and then navigation would not have helped in any case.

After he left Blackpool nothing was heard of Mr. Staniland till next day, when word came that he had landed somewhere near Hamilton. Mr. Ashworth upset at Lympne. Mr. Dickinson started from Blackpool but returned with some form of trouble. Capt. Harold Balfour retired at Hornchurch on the outward journey. Flt. Lt. Bruce retired at Blackpool as he was then eighteenth and obviously out of the race. Mr. Boyes landed somewhere about Lydney in the Forest of Dean on the way between Bristol and Blackpool with engine trouble.

HOME AGAIN.—Mrs. Alan Butler greets Mr. Butler on landing. Mr. Reeves is in the front seat.
—("Aeroplane" photograph.)

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Mr. H. R. Law retired at Blackpool with magneto trouble. His opinion and that of his partner, Mr. MacDonald, on magnetos, is well worth hearing. One recommends that they be asked to lecture to some of the manufacturers of magnuisances, as dear old Cody used to call them. Apparently much of the so-called "engine trouble" in the race was magneto trouble of one sort or another.

Mr. Jackson retired with engine trouble at Ipswich. Colonel Sempill came down somewhere between Leeds and Birmingham, and all one knows is that he informed the World at large from 2LO that his machine would have to be got out of its landing place by mechanical transport and not by air power. Mr. Cazalet was forced to land near Hamble.

Mr. Lewis and Flt. Lt. Armour returned to Heston not very long after the start, reporting that they found a whole rabbit, *with* his fur, in the petrol tank. Which being interpreted means that they suffered from a choked jet in their carburettor full of that inexplicable fur which somehow grows in petrol tanks and finds its way through the best of filters. Flt. Lt. Armour's explanation, which seems reasonable, was that they must have filled up through a new chamois-leather instead of an old one which had been thoroughly washed.

Capt. Bailey broke his undercarriage landing at Norwich and retired. Mr. Brunton landed somewhere near Harrow, through some cause unexplained. Mr. Napier retired at Hamble. Flt. Lt. Rose found his oil supply disappearing somewhere between Sittingbourne and Maidstone, and sat his machine on the Downs where he left it tied to a hay-stack. Mr. Wheeler, in the Duke of Northumberland's S.E.5a, stopped at Blackpool. And that seems to account for the lot.

Indications of Progress.

On the whole the race was an extraordinarily good show. The three faked Moths, that is to say faked in the sense that the machines were cleaned-up to give extra speed and the engines were tuned up to give extra power, together with Mr. Stack's equally cleaned-up Avian with the Hermes engine, gave some idea of what ought to be got out of any aircraft designed according to advanced ideas, with similar power, in these days.

Apart from those machines the standard Gipsy-Moths and Avians put up quite a good show, but comparison with speeds of winning machines and fastest times in previous years indicate that we have made remarkably little progress since the first King's Cup Race in 1922.

For the rest, the entries were purely pathetic. The King's Cup is open for anybody to win with a British machine and a British engine. To see people entering ancient things like Grebes and S.E.5as would be funny if it were not so tragic.

Surely to goodness there must be somewhere in this bright little island of ours some manufacturer with enough loyalty or patriotism or common business sense to see that he ought to put up a really high-speed all-British aircraft for this race.

Even in the poverty-stricken years before the War firms which used to wonder where they could buy their next turnbuckle used to sit down and solemnly contrive real speed machines to compete for the Aerial Derby round London, long before His Majesty honoured Aviation by graciously presenting a Cup to be won, so to speak, from his own hands.

If the wealth of the British Aircraft Industry, which is spending its tens of thousands of pounds on showing its machines at Olympia, cannot put up a decent speed show in a race for the King's Cup then it is quite time that somebody in all due humility suggested to His Majesty that in future the race should be made International. Then free and independent Republics like the United States and France, with their deep attachment for anything which is closely associated with Royalty, would probably send over a few machines to show us how to fly.

So far as the management of the race was concerned it was excellent. Mr. Harold Perrin deserves every congratulation on the way in which the whole race was organised. For weeks before he had been going round the various clubs arranging for adequate officials at the turning points and for proper transmission of information from those points. And on the whole everything worked wonderfully.

The people at the Heston Airpark, whom Mr. Perrin had backed against the opinions of a good many people to get the place ready for the race in time, excelled themselves. Without exactly making a garden out of a wilderness, they had certainly made a very good aerodrome establishment out of a brick-heap within a few weeks, and had made farms and garden allotments into a very good aerodrome within a few months.

On the whole the Royal Aero Club is for once to be congratulated on having done a thing thoroughly well, and purely as an expression of personal opinion one believes that the Heston Airpark is going to be the real Social Focus of Sporting Aviation in the future.—C. G. G.

THE KING'S MESSAGE.

The following telegram of congratulations to the winner was received from Buckingham Palace:—

"To Secretary, Royal Aero Club, Heston Air Park, Hounslow.—Please convey to Flight-Lieutenant Atcherley the King's hearty congratulations on winning the King's Cup Air Race.—Private Secretary."

THE PRIZE-WINNERS.

King's Cup and £250 presented by Sir Charles Wakefield to the entrant of the winning machine: Sir Walter Preston, M.P. (pilot, Mr. R. L. R. Atcherley, R.A.F.). Second prize, £100 presented also by Sir Charles Wakefield: Lieut. L. G. Richardson, R.N., entrant and pilot. Third prize, £50, presented by Sir Charles Wakefield: Mr. W. L. Hope, owner and pilot.

Special prize of £100 presented by Sir Charles Wakefield to entrant of the aircraft completing the course in the fastest time: Sir Walter Preston, Gloster Grebe.

First machine at Blackpool, prize of £50 presented by Councillor F. W. Millington, of Blackpool: Mr. T. Neville Stack, Avian (Hermes).

Siddeley Trophy presented by Mr. J. D. Siddeley for competition among the light aeroplane clubs, and £75 presented by Mr. Alan S. Butler: Lieut. Richardson, R.N. Second prize, £25, also presented by Mr. Butler: Mr. W. L. Hope.

THE HAROLDISATOR AT HESTON.

Mr. Harold Perrin wishes it to be known that anyone who held winning tickets for the Royal Aero Club's Totalisator for the King's Cup Race, who has not yet drawn a dividend

AFTER THE BATTLE.—The tarmac and aerodrome viewed from the upper terrace of the Social Focus at the Heston Air-Park.

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can do so by applying to him at the Royal Aero Club, 3, Clifford Street, W.1.

A five shilling ticket for the winner returned a dividend of £3 4s. which is very much better odds than those offered by bookmakers at previous races.—G. D.

KING'S CUP WINNERS.

Year	Entrant	Pilot.	Machine	m.p.h
1922	Sir Samuel Instone	F. L. Barnard	D.H.4a (Eagle VII)	120
1923	J. D. Siddeley, C.B.E.	F. T. Courtney	Siskin (Jaguar)	149*
1924	Sir Chas. C. Wakefield, Bart.	Sir Alan J. Cobham	D.H. 50 (Puma)	106
1925	The Rt Hon Sir Eric Geddes, G.C.B., G.B.E.	F. L. Barnard	Siskin V (Jaguar)	141
1926	Sir Chas. C. Wakefield. Bart	H. S. Broad	Moth (Cirrus I)	90.4
1927	W. L. Hope	Entrant	Moth (Cirrus I)	92.8
1928	W. L. Hope	Entrant	Moth (Gipsy)	100.75
1929	Sir W. Preston, M.P.	"R. Llewellyn"	Grebe (Jaguar)	1 7.73

* And in a fog at that.

OUR PROGRESS IN EIGHT YEARS.

Fastest Times in the King's Cup Race since 1922.

Year	Entrant	Pilot	Machine & Engine	Av. Speed
1922	Sir Samuel Instone	F. L. Barnard	D.H.4a, Rolls-Royce Eagle VIII	123
1923	J. H. Siddeley, Esq.	F. T. Courtney	Siskin, Armstrong Siddeley Jaguar	149
1924	Sir Glynn West	Fl. Lt. H. W. G. Jones	Siskin III, A'strong Siddeley Jaguar	125.5
1925	Sir Eric Geddes	F. L. Barnard	Siskin V, A'strong Siddeley Jaguar	140 5
1926	Lt. Col. M. O. Darby	Fl. Lt. H. W. G. Jones	Martinsyde-ADC1,* ArmstrongSiddeley Jaguar	151.2
1927	Douglas Vickers, Esq.	Fl. Lt. F. R. C. Scholefield	Vickers Vixen III Napier Lion	141 6
1928	A. V. Roe, Esq.	Flg. Off. Summers	Avro Avenger, Napier Lion IX	150
1929	Sir Walter Preston	R. Llewellyn	Gloster 2-seat Grebe ArmstrongSiddeley Jaguar	147.7

* Martinsyde designed in 1918.

A COMPLETE TABLE OF TIMES AND RESULTS WILL BE FOUND ON PAGE 76.

MOTH SERVICE IN THE KING'S CUP RACE.

The arrangements made by the De Havilland Company at the King's Cup Race to "service" the Moths and the Gipsy engines taking part in the race, was even more complete this year than it was last year.

There were 16 Gipsy Moths and 5 Cirrus Moths competing in the race, besides an Avian and a Widgeon fitted with Gipsy engines. Additional to the De Havilland personnel with complete service equipment at every control, two roving service machines were in action over the Course with bits of Moth and Gipsy tied all over them, in the manner of the armament of war-time B.Es. Fortunately these machines had very little work to do, as the Moths and Gipsys in practice required practically no service whatever. The two service machines were a D.H.9J, G-EAAC, which was flown completely round the course by Mr. C. A. Pike, and the other was a Moth G-EBTD, flown by Mr. Tyler.

G-EAAC is now something of a historic machine, being the third machine ever registered when Civil Aviation began in this Country after the War, and is the oldest civil relic in existence.

It was used for many years by Mr. Alan Cobham as an air taxi and was actually flown by him in the first race for the King's Cup. It has on occasion been crashed and rebuilt and a few years ago it was fitted with an Armstrong Siddeley Jaguar engine in place of the original Puma, and taken over by the De Havilland School of Flying. [It ought to just about win the King's Cup next year, or at any rate do fastest time, if one may judge by the table of fastest times published in this issue.—C. G. G.]

G-EBTD is the Gipsy Moth which is now doing the Reliability Test, and previous to the Race, had already done 475 hours with its engine completely sealed by the A.I.D.

Pilots who flew Moths, or had Gipsy engines, testify to the completeness of the D.H. Service arrangements, and wherever they were, either at a control or on the various legs of the Course, they were hardly ever out of the influence of the De Havilland Service Arrangements.—G. D.

AEROPLANE PHOTOGRAPHS.

Copies of Aeroplane Photographs (indicated as such in the inscriptions under the pictures) may be had from:—THE AEROPLANE Office, 175, Piccadilly, London, W.1. Single prints 6 in. × 8 in., cost 2s. 6d. each, and 1s. 6d. per print for three or more. Larger sizes or larger quantities may be had at special prices.

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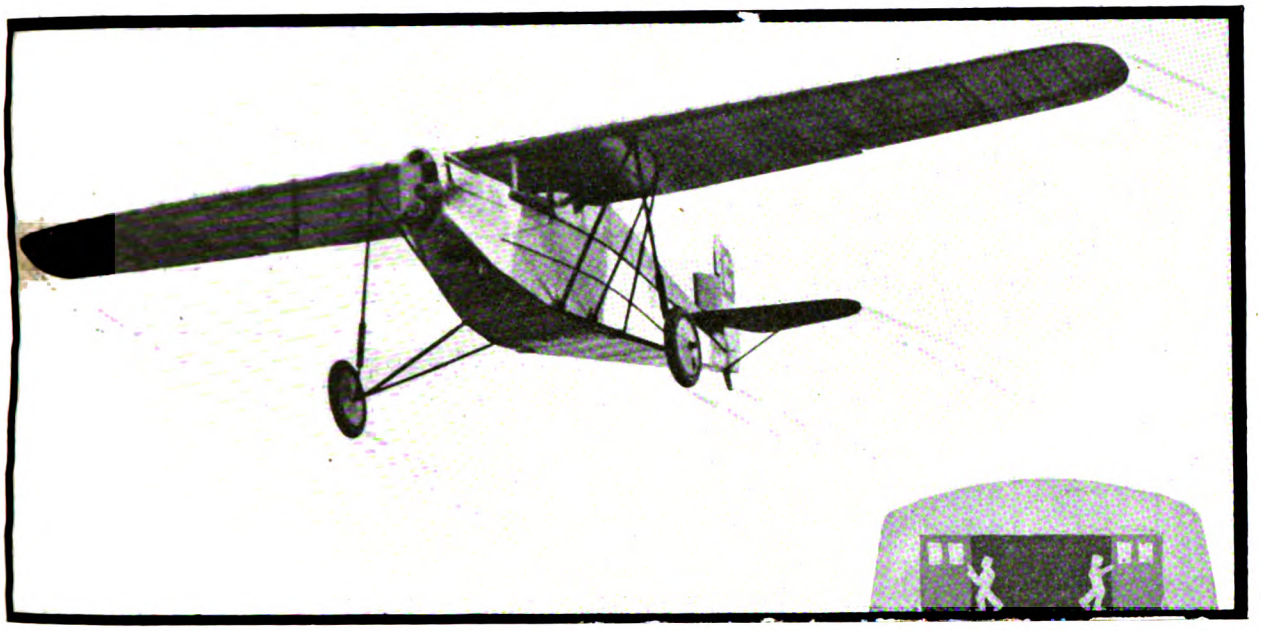

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The ideal light plane. Comfortable cabin accommodation for 3 people. A cruising speed of 86 m.p.h., perfect visibility for everyone. In no other plane but the D.A.C. can you get such performance and comfort at the price. It costs very little more to buy, and less to maintain, than an ordinary two-seater light plane, but how much more pleasurable for three to fly in the comfort of a fully enclosed cabin. Write for fuller particulars of this *unique light plane.*

We have adopted the Cirrus Mark III and Cirrus "Hermes" engines as standard for the D.A.C. Sports Coupe. This, in itself, is sufficient guarantee as regards the power plant.

Short Specification.

Span	36' 0"
Length	27' 0"
Height	7' 0"
Weight	980 lbs.
Loaded Weight ...	1,730 ,,
Fuel Capacity ...	21 gallons
Wheel Track ...	10' 6"

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KING'S CUP AIR RACE.

Racing No.	Registration Mark	Aeroplane and Engine.	Pilot.	Entrant.	Start Heston Section I h. m. s.	Arrival Blackpool h. m. s.	Speed 1st Day m.p.h.	Place 1st Day.	Start Blackpool Section II h. m. s.	Arrival Heston h. m. s.	Speed 2nd Day m.p.h.	Speed over Whole Race m.p.h.	Final Position.
13	G-EBOO	H.A.C.2 (Cherub III) ...	G. R. Ashton	C. H. Latimer Needham ...	8–00–00	[*Retired*	*at Hamble*]						
30	G-EAUM	Avro "Baby" (Cirrus I)	H. H. Leech	H. H. Leech	8–40–14	[*Retired*	*at Lympne*]						
26	G-AAGN	Spartan (Cirrus III) ...	C. S. Staniland	Lieut.-Col. L. A. Strange...	9–12–15	18–14–45	92·4	6	8–00–00	[*Landed*	*near Hamilton*]		
16	G-EBXJ	Avian (Cirrus II) ...	H. J. V. Ashworth ...	H. J. V. Ashworth ...	9–12–45	[*Retired*	*at Lympne*]						
5	G-EBTH	Moth (Cirrus II) ...	V. N. Dickinson	V. N. Dickinson	9–13–15	19–04–09	82·1	24	8–48–24	[*Retired*	*at Blackpool*]		
47	G-EBWX	Moth (Cirrus II) ...	H. H. Balfour, M.P. ...	H. H. Balfour, M.P. ...	9–13–45	[*Retired*	*at Hornchurch*]						
28	G-AAGY	Spartan (Cirrus III) ...	T. B. Bruce	T. B. Bruce	9–14–15	18–43–22	86·6	17	[*Retired*	*at Blackpool*]			
59	G-AAMC	Spartan (Cirrus III) ...	G. E. F. Boyes	J. G. Peel	9–14–45	[*Retired*	*at Lydney*]						
29	G-EBYJ	Moth (Cirrus II) ...	H. R. Law	H. R. Law	9–17–33	19–47–11	75·3	29	[*Retired*	*at Blackpool*]			
17	G-AAFP	Spartan (Cirrus III) ...	R. W. Jackson	J. Parkinson	9–17–33	[*Retired*	*at Ipswich*]						
41	G-AACC	Bluebird (Cirrus III) ...	Col. The Master of Sempill	Col. The Master of Sempill	9–21–17	19–39–41	77·1	28	9–30–50	[*Retired*	*near Leeds*]		
2	G-EBRN	Widgeon (Cirrus II) ...	Wing-Com. E. R. Manning	Wing-Com. E. R. Manning	9–22–15	18–54–19	85·9	20	8–47–15	17–26–55	96·7	90·90	15
10	G-EBRM	Widgeon (Cirrus II) ...	R. G. Cazalet	R. G. Cazalet	9–28–00	[*Forced landing near Hamble*]							
15	G-EBPO	Moth (Cirrus III) ...	Lt. L. G. Richardson, R.N.	Lt. L. G. Richardson, R.N.	9–28–30	18–15–53	96·1	7	8–14–08	16–26–30	104·6	100·23	2
11	G-AAHB	Moth (Gipsy)	Fl.-Lt. A. M. Kimmins ...	E. Tiarks	9–37–07	18–58–14	88·2	22	9– 4–57	19–18–13	76·7	82·09	22
60	G-AAIV	Moth (Gipsy) ...	B. E. Lewis	B. E. Lewis	9–37–07	[*Returned*	*to Heston and retired*]						
4	G-AAEW	Moth (Gipsy)	D. S. Schreiber	D. S. Schreiber	9–37–49	18–43–14	91·8	16	8–52–37	17–36–34	95·7	93·68	16
21	G-AACO	Moth (Gipsy)	J. W. P. Chalmers ...	J. W. P. Chalmers ...	9–38–19	18–59–50	88·1	23	9–08–43	17–38–43	97·1	92·35	17
38	G-AAHO	Moth (Gipsy)	P. P. Grey...	L. St. C. Ingrams ...	9–38–49	18–31–58	94·8	11	8–40–21	17–50–29	89·1	91·89	19
43	G-AADC	Moth (Gipsy)	W. R. Bailey	W. R. Bailey	9–38–19	[*Damaged*	*machine at Norwich*]						
58	G-EBVK	Moth (Cirrus II) ...	M. Brunton	G. Mackinnon	9–38–49	[*Landed*	*at Harrow*]						
48	G-AAAT	Avian (Cirrus III) ...	Fl.-Lt. C. F. Le Poer Trench	Lieut.-Col. J. Barrett-Lennard	9–40–28	18–29–05	96·0	10	8–39–05	16–54–15	103·7	99·66	8
27	G-EBQN	Avian (Cirrus II) ...	G. Thorne	P. N. G. Peters	9–42–07	18–42–57	92·9	15	8–54–35	17–13– 0	102·1	97·52	12
9	G-EBRQ	Widgeon (Genet) ...	J. "Wellworth" ...	J. "Wellworth" ...	9–42–07	19–04–40	87·8	25	9–16–18	17–13–22	109·7	97·47	13
35	G-AACL	Moth Coupe (Gipsy) ...	Mrs. A. S. Butler	A. S. Butler	9–44–44	18–47–21	92·5	19	9–00–34	17–17–34	103·2	97·47	14
12	G-AAHG	Moth (Gipsy)	A. F. Wallace	A. F. Wallace	9–46–56	18–57–53	90·1	21	9–16–16	17–47–49	98·9	94·21	18
3	G-AADE	Widgeon (Gipsy) ...	C. S. Napier	C. S. Napier	9–48–02	[*Retired*	*at Hamble*]						
33	G-AADX	Moth Coupé (Gipsy) ...	A. C. M. Jackaman ...	A. C. M. Jackaman ...	9–48–32	18–37–50	95·7	14	8–55–55	17–11–14	103·7	99·52	11
36	G-AAAA	Moth (Gipsy)	Capt. G. de Havilland ...	Capt. G. de Havilland ...	9–49–02	18–36–24	96·3	12	8–53–51	17–02–00	106·0	100·84	9
32	G-AAAL	Moth (Gipsy)	Miss W. E. Spooner ...	Miss W. E. Spooner ...	9–50–06	18–24–20	99·8	9	8–43–59	16–36–50	111·1	105·12	5
37	G-AADA	Moth (Gipsy)	J. D. Irving	J. D. Irving ...	9–50–06	18–37–24	96·4	13	8–56–53	17–05–09	105·9	100·81	10
6	G-AAEE	Moth Coupé (Gipsy) ...	The Hon. Lady Bailey ...	The Hon. Lady Bailey ...	9–51–40	19–10–11	88·8	26	9–31–12	18–30–16	91·7	90·20	21
1	G-EBTO	S.E. 5a Airdisco ...	Ft.-Lieut. T. Rose ...	W. L. Handley	10–03–35	[*Sat at Sittingbourne*]							
49	G-AAHJ	Avian IV M (Hermes)	T. N. Stack, A.F.C. ...	Lt.-Col. M. O. Darby ...	10–09–14	17–59–13	114·1	1	8–37–30	16–38–22	108·4	111·18	6
7	G-AAHP	Moth (Gipsy)	W. L. Hope	Capt. W. L. Hope ...	10–19–56	18–13–26	112·8	4	9–02–16	16–29–18	121·1	116·79	3
34	G-EBQH	Moth (Gipsy)	A. S. Butler	A. S. Butler	10–25–01	18–14–17	114·4	5	9–08–06	16–29–26	123·6	118·76	4
20	G-AAHR	Moth Coupe (Gipsy) ...	H. S. Broad	Sir Charles C. Wakefield, Bt.	10–29–56	18–18–21	114·7	8	9–17–00	18–25–32	89·5	100·64	20
31	G-EBQM	S.E. 5a (Viper) ...	A. H. Wheeler	The Duke of Northumberland, K.G.	10–39–18	19–18–04	98·7	27	[*Retired*	*at Blackpool*]			
39	J-7520	Grebe 2-seater (Jaguar)	R. "Llewellyn"	Sir Walter Preston, M.P. ...	11–21–41	18–09–09	142·9	2	9–58–40	16–25–59	153·0	147·73	1
40	J-7519	Grebe 2-seater (Jaguar)	E. H. Fielden	Squadron-Leader The Right Hon. F. E. Guest ...	11–21–41	18–10–26	142·2	3	9–59–57	16–40–48	144·4	142·26	7
51	G-EBNQ	Vickers 141 (Rolls-Royce F.II)	J. Summers	Sir Robert McLean ...	12–00–13	18–44–58	144·6	18	11–12–22	[*Retired*	*at Sherburn*]		

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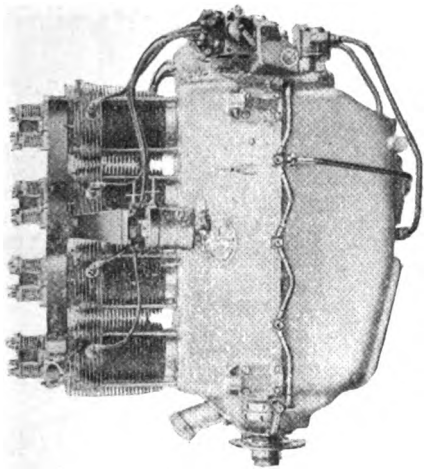

Except for the routine cleaning of filter and plugs, the checking of valve clearances and the correction of a minor defect in one magneto

NOTHING HAS BEEN TOUCHED

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THE ROYAL AIR FORCE.

The London Gazette.

July 2.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—The following Plt. Offs. are promoted to the rank of Flg. Off.:—O. G. Williams (Jan. 18); D. Menzies, J. D. Richardson, H. G. Hamilton (June 9); H. H. Leech, J. E. Allen, E. J. Hill (June 17); M. Lowe (June 30). The following Plt. Offs. on probation are confirmed in rank:—R. A. Chignell, C. Stephenson (Dec. 13, 1928); H. Bailey, V. S. Bowling, N. W. Creasy, E. D. Elliott, J. H. T. Simpson, W. R. Tope, L. E. A. Wright (Dec. 30, 1928); A. F. Britton (Jan. 21); J. B. Fyfe (April 30); G. C. Butler, C. W. F. Carter, D. B. McGill (May 9); F. A. R. Bishop (May 17); R. L. Bennet, A. K. H. Binley, J. H. Brown, F. C. E. Hayter, J. M. Israel, G. W. J. Jarrett, I. M. Smith, W. G. Stevenson (June 29).

Group Capt. P. F. M. Fellowes, D.S.O., Air Aide-de-Camp to the King, ceases to be seconded for duty as Director of Airship Development, Royal Airship Works, Cardington, with effect from July 1, 1929.

Flt. Lt. J. M. J. C. J. I. Rock de Bescombes is placed on the half-list, scale A (June 8). The following Flg. Offs. are transferred to the Reserve:—CLASS A.—C. Clarkson, I. W. C. Mackenzie, R. H. Holmes, W. L. McLaren, C. R. Cubitt, W. F. Parkinson (June 30); B. W. Barton (July 3). CLASS C.—A. L. Ottway (June 30).

STORES BRANCH.—The following Flg. Offs. are granted perm. comns. in this rank with effect from April 28, 1928, on completion of probationary service:—R. N. Hesketh, B. G. Pool.

ACCOUNTANT BRANCH.—Plt. Off. on probation T. C. Reep is confirmed in rank and promoted to the rank of Flg. Off. (June 11).

MEDICAL BRANCH.—A. C. Lysaght is granted a S.S. comn. as a Flg. Off. for a period of three years on the active list with effect from June 11 and with seniority of June 11, 1928.

RESERVE OF AIR FORCE OFFICRS.

GENERAL DUTIES BRANCH.—The following are granted comns. in Class AA (ii) as Plt. Offs. on probation:—A. C. Buck, C. P. S. Smith (June 20). Plt. Off. C. R. S. Smith is promoted to the rank of Flg. Off. (June 13). The following Plt. Offs. on probation of the Special Reserve are confirmed in rank:—J. F. Bristow (Sept. 8, 1928); R. C. Newton (Dec. 31, 1928).

Flt. Lt. A. J. G. Anderson is transferred from Class B to Class C (July 1); Flg. Off. J. M. S. Taylor is transferred from Class A to Class C (June 8). The following Flg. Offs. relinquish their comns. on completion of service:—E. K. Clifford (June 27); G. C. Sclater, A. L. Harris (June 28).

Flg. Off. F. A. Pumphrey, D.C.M., relinquishes his comn. on account of ill-health and is permitted to retain his rank (July 3).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 600 CITY OF LONDON (BOMBING) SQDN.—The following Plt. Offs. to be Flg. Offs.:—E. J. Earnshaw (July 25, 1928); P. G. Stewart (Sept. 1, 1928).

No. 601 COUNTY OF LONDON (BOMBING) SQDN.—The following to be Plt. Off.:—N. R. W. Seely (April 9).

No. 602 CITY OF GLASGOW (BOMBING) SQDN.—The following to be Plt. Off.:—D. L. Lloyd (April 21).

No. 605 COUNTY OF WARWICK (BOMBING) SQDN.—The following to be Plt. Off.:—J. M. Abell (May 14).

PRINCESS MARY'S R.A.F. NURSING SERVICE.

Matron Miss Muriel B. Botwood is placed on the retired list at her own request (June 28).

The Half-Yearly Promotion List.

The following promotions are made with effect from July 1:—

GENERAL DUTIES BRANCH.

AIR VICE-MARSHALS TO BE AIR MARSHALS.—Sir E. L. Ellington, K.C.B., C.M.G., C.B.E.; Sir W. G. H. Salmond, K.C.B., K.C.M.G., D.S.O.

AIR COMMODORES TO BE AIR VICE-MARSHALS.—R. H. Clark-Hall, C.M.G., D.S.O.; A. E. Borton, C.B., C.M.G., D.S.O., A.F.C.

GROUP CAPTAINS TO BE AIR COMMODORES.—P. F. M. Fellowes, D.S.O., Air Aide-de-Camp to the King; P. B. Joubert de la Ferté, C.M.G., D.S.O.; R. P. Mills, M.C., A.F.C.; W. R. Freeman, D.S.O., M.C.; W. G. S. Mitchell, C.B.E., D.S.O., M.C., A.F.C.

WING COMMANDERS TO BE GROUP CAPTAINS.—G. I. Carmichael, D.S.O., A.F.C.; M. Spicer; I. G. V. Fowler, A.F.C.; G. P. Grenfell, D.S.O.; R. J. Bone, C.B.E., D.S.O.; S. Smith, D.S.O., A.F.C.; J. E. A. Baldwin D.S.O., O.B.E.; F. E. T. Hewlett, D.S.O., O.B.E.; C. H. K. Edmonds D.S.O., O.B.E.; R. E. C. Peirse, D.S.O., A.F.C.; H. R. Nicholl, C.B.E.

SQUADRON LEADERS TO BE WING COMMANDERS.—C. H. Nichols, D.F.C A.F.C.; J. C. P. Wood; G. S. M. Insall, V.C., M.C.; G. W. Robart M.C.; D. G. Donald, D.F.C., A.F.C.; N. C. Spratt, O.B.E.; R. M Bayley, D.F.C.; W. B. Hargrave, O.B.E.; L. T. Lloyd; R. Collishav D.S.O., O.B.E., D.S.C., D.F.C.; C. O. Modin, D.S.C.; Sir C. J. (Brand, K.B.E., D.S.O., M.C., D.F.C.; N. H. Bottomley, A.F.C.; H. (Smart, O.B.E., D.F.C., A.F.C.; F. P. Don; A. H. Peck, D.S.O., M.C G. C. Bailey, D.S.O.

FLIGHT LIEUTENANTS TO BE SQUADRON LEADERS.—A. P. Sanders; T. P. Moore; P. D. Robertson, A.M.; E. F. Turner.

FLYING OFFICERS TO BE FLIGHT LIEUTENANTS.—F. Porter; D. Mitchell, M.B.E.; W. H. Jinman, M.B.E.

LIEUTENANTS, R.N., FLYING OFFICERS, R.A.F., TO BE FLIG LIEUTENANTS.—R. A. Peyton; A. P. Colthurst.

CAPTAIN, R.M., FLYING OFFICER, R.A.F., TO BE FLIGHT LIEUTENANT A. B. Woodhall.

STORES BRANCH.

SQUADRON LEADER TO BE WING COMMANDER.—J. A. Stone.

FLIGHT LIEUTENANT TO BE SQUADRON LEADER.—E. Meynell, D.C.M.

FLYING OFFICERS TO BE FLIGHT LIEUTENANTS.—E. C. Farman; H. Slei F. W. Taylor; R. T. Rich; J. E. Truss, M.C.; A. E. F. McCreary; G. Wilson; F. C. Griffin; A. J. Cox, M.B.E.; E. N. D. Worsley.

ACCOUNTANT BRANCH.

SQUADRON LEADER TO BE WING COMMANDER.—H. F. Fuller.

FLIGHT LIEUTENANTS TO BE SQUADRON LEADERS.—J. S. Griffiths; P Farmer.

FLYING OFFICERS TO BE FLIGHT LIEUTENANTS.—J. L. Armstrong; B. Drake; E. C. Green; F. M. Hall; J. H. S. Richards; R. T. Car J Charles.

MEDICAL BRANCH.

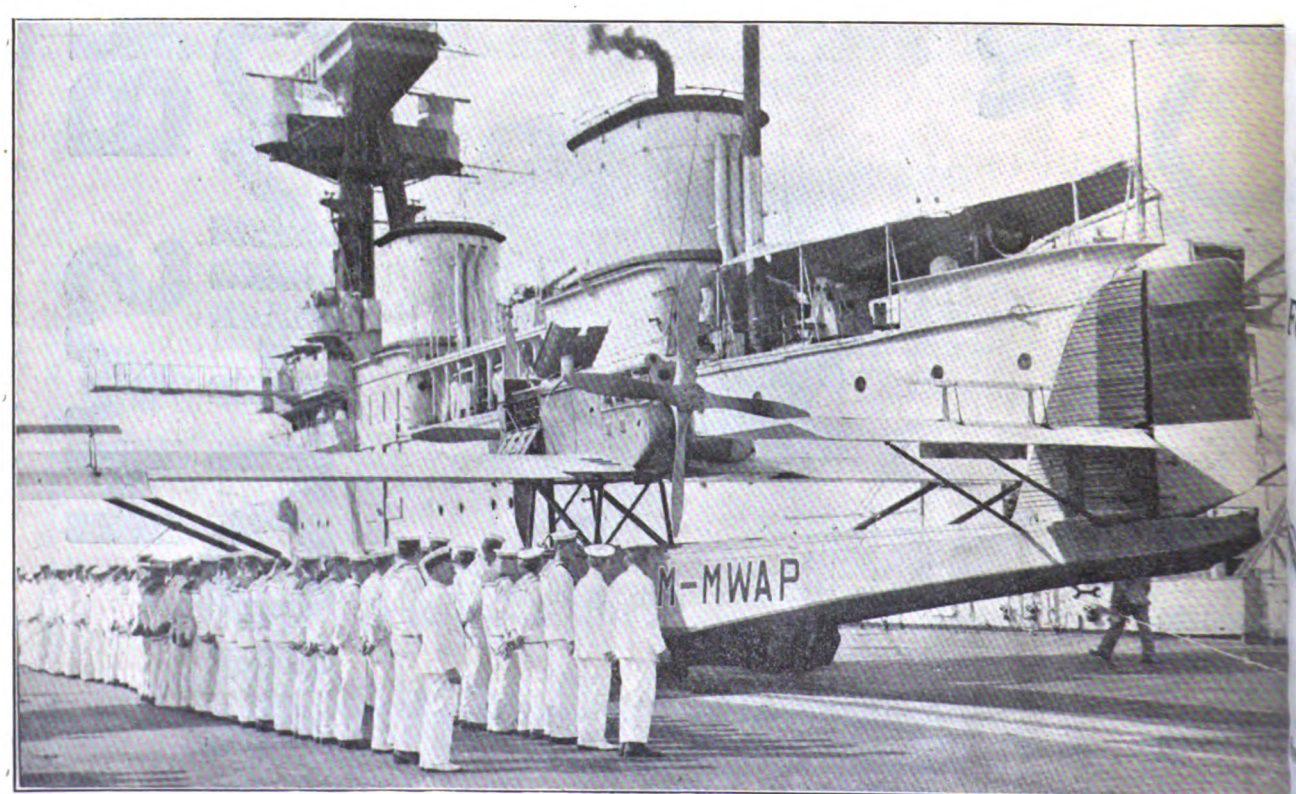
GROUP CAPTAIN TO BE AIR COMMODORE.—J. McIntyre, M.C., M M.A.

WING COMMANDER TO BE GROUP CAPTAIN.—James MacGregor, M M.D.

SQUADRON LEADER TO BE WING COMMANDER.—Percival Maurice Ke D.P.H.

FLIGHT LIEUTENANTS TO BE SQUADRON LEADERS.—John Kerr Ri Landells, M.B.; Edward Demetrius Dalziel Dickson, M.B., F.R.C.S D.L.O.

FLIGHT LIEUTENANT TO BE HONORARY SQUADRON LEADER.—Ernest E Isaac.



RESCUED.—The Spanish Dornier Wal flying-boat "Numancia," M-MWAP, on the deck of H.M.S. "Eagle" after she was rescued with her crew in the Atlantic.

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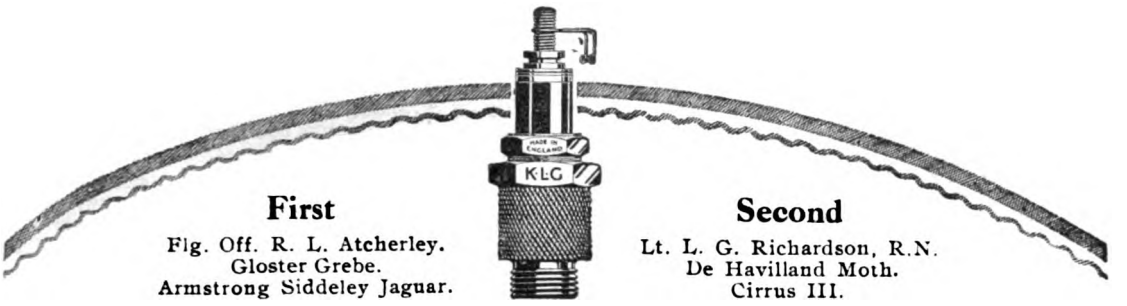

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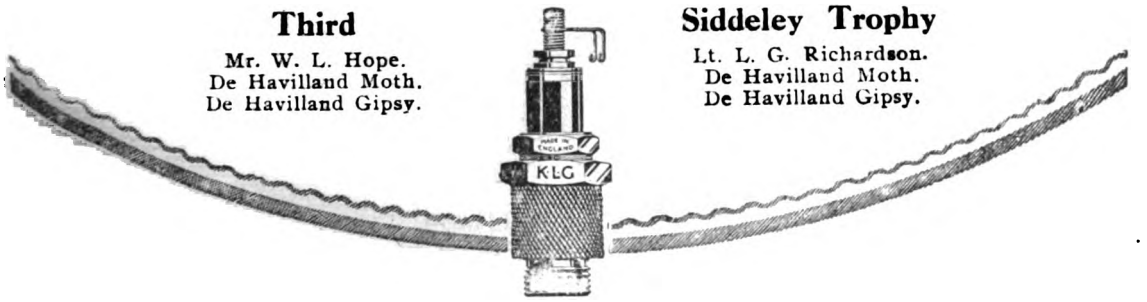

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PRINCESS MARY'S ROYAL AIR FORCE NURSING SERVICE.

SENIOR SISTER TO BE MATRON.—Miss Winifred Eveline Molesworth (Acting Matron).

Appointments.

Week ending July 8.

GENERAL DUTIES BRANCH.—Flight Lieutenants B. A. Malet, D.F.C., to E. and W. School, Flowerdown, 7/6. F. G. S. Mitchell, to No. 1 F.T.S., Netheravon, 3/7.

Flying Officers A. H. W. J. Cocks, to E. and W. School, Flowerdown, 1/6. I. J. Fitch, to E. and W. School, Flowerdown, 25/5. F. S. Hodder, to Home Aircraft Depot, Henlow, 7/6. D. I. Stewart, to School of Naval Co-operation, Lee-on-Solent, 25/6. L. B. McGoverne, to No. 84 Sqdn., 'Iraq, 8/6. F. G. Fairhead, to No. 30 Sqdn., 'Iraq, 7/6. G M. Buxton, to Home Aircraft Depot, Henlow, 25/5. S. H. Hardy, N. C. Pleasance, B. H. Ashton and H. V. Forbes to Home Aircraft Depot, Henlow, 7/6.

Pilot Officers D. Menzies, to No. 47 Sqdn., Middle East, 12/6. P. K. Robertson, to No. 14 Sqdn., Middle East, 13/6. C. V. Howes, to No. 45 Middle East, 9/6. J. K. Flower and J. Wilson, to No. 216 Sqdn., Middle East, 12/6. C. E. W. N. C. Pelly, to No. 216 Sqdn., Middle East, 12/6. The following Pilot Officers are all posted to R.A.F. Depot, Uxbridge Supernumerary, for a short disciplinary course on appointment to S.S. Comns. (on probation) with effect from 28/6: G. E. Agard-Butler, N. Alexander, F. C. Allen, C. A. Ball, G. Bearne, G. Calvert, N. J. Capper, D. I. Carlyle, I. A. Critchley, C. H. Glover, D. H. A. Golege-Steel, W. E. Grant, D. C. Harrison, W. J. Hodge, A. H. Houghton, G. M. Ievers, F. J. B. Keast, D. W. Lydall, I. L. S. McNicol, C. W. Marriott, T. G. Mellor, C. E. Morse, J. T. Mynors, B. Paddon, H. G. J. Purcell, N. Stratton, J. M. Waddell, G. N. Warrington, G. E. S. Williams, and S. N. Wiltshire.

STORES BRANCH.—Flight Lieutenants S. D. Dennis, to R.A.F. Depot, Uxbridge, 24/6. R. G. Gore, to Air Ministry (D. of E.), 24/6.

Flying Officers C. S. Whellock and D. G. McDiarmid, to R.A.F. Depot, Uxbridge, 24/6.

ACCOUNTANT BRANCH.—Flying Officer G. H. White, to No. 501 Sqdn., Patchway, 17/6.

MEDICAL BRANCH.—Flying Officer M. Clancy, to School of Naval Co-operation, Lee-on-Solent, 15/5.

The Third Levée.

By Command of the King a Levée was held on July 2 at St. James's Palace on behalf of His Majesty. Among those in attendance upon His Royal Highness was Air Chief Marshal Sir John Salmond, Principal Air Aide-de-Camp. Air Commodore P. F. M. Fellowes, Aide-de-Camp in Waiting, was also present.

The following officers of the R.A.F. were presented to the Prince of Wales by the Secretary of State for Air:—Flt. Lt. D. Blackford, on appointment; Air Commodore F. Bowhill, C.M.G., D.S.O., on appointment as Director of Organisation and Staff Duties, Air Ministry; Flt. Lt. T. Brown, on appointment; Flt. Lt. N. D'Aeth, on appointment; Sq. Ldr. N. Douglas; Sq. Ldr. A. Durston, A.F.C.; Flt. Lt. A. Ferris, on appointment; Flt. Lt. R. George, M.C., on appointment; Wing Cdr. R. Knowles; Flt. Lt. A. MacDonald, on appointment; Wing Cdr. W. McClaughry, D.S.O., M.C., D.F.C., on promotion; Flt. Lt. L. Polter, on appointment; Flt. Lt. E. Reid, on appointment; Sq. Ldr. J. Sadler; Flt. Lt. H. Scroggs, on appointment; Flt. Lt. E. Searle, on appointment; Flt. Lt. F. Skoulding, on appointment; Sq. Ldr. J. Slessor, M.C.; Sq. Ldr. M. Thomas, D.F.C., A.F.C.; Flt. Lt. C. Walter, on appointment; Flt. Lt. C. Weedon, on appointment.

A Fatal Accident.

The Air Ministry regrets to announce that as the result of an accident near Netheravon to an Atlas Machine of No. 1 Flying Training School, Netheravon, on July 2, Plt. Off. Ronald Yule Bootes, the pilot and sole occupant of the aircraft, was killed.

Flying Instructors.

The following officers of the R.A.F. have been categorised as "B" Flying Instructors and are thereby entitled to six months' antedate under para. 10 (ii) (g) of Weekly Order 103 of 1928:—

Flt. Lt. J. S. T. Fall, D.S.C., A.F.C., Flt. Lt. G. E. Wilson, Flt. Lt. J. W. Baker, M.C., D.F.C., Flt. Lt. J. Bradbury, Flt. Lt. C. Crawford, Flt. Lt. C. T. Walkington, Flt. Lt. A. L. Fiddament, D.F.C., *p.s.a.*, Flt. Lt. G. A. H. Pidcock, Flt. Lt. P. R. Chamberlain, A.F.C., Flt. Lt. C. B. S. Spackman, D.F.C., Flt. Lt. H. E. Forrow, Flt. Lt. J. Oliver, A.F.C., Flt. Lt. J. E. Kingston McCloughry, D.S.O., D.F.C., *p.s.a.*, Flt. Lt. F. W. Long, Flt. Lt. F. Wright, Flt. Lt. C. R. Steel, D.F.C. *p.s.a.*

Vacancies for Aircraft Apprentices.

Six hundred aircraft apprentices, between the ages of 15 and 17, are required by the R.A.F. for entry into the Schools of Technical Training at Halton, Bucks, and at Cranwell, near Sleaford, Lincs. They will be enlisted as the result of an Open Competition and of a Limited Competition which will be held in the near future by the Civil Service Commissioners and the Air Ministry respectively. Successful candidates will be required to complete a period of twelve years' regular Air Force service from the age of 18 in addition to the training period. At the age of 30 they may return to civil life or may be permitted to re-engage to complete time for pension.

Full information regarding the dates of the respective examinations, the methods of entry and the aircraft apprentice scheme generally can be obtained if early application is made to the R.A.F., Gwydyr House, Whitehall, London, S.W.1. In this connection the sons of officers, warrant officers and senior N.C.O's. of the three Services receive special consideration.

Vacancies for Stores Officers.

The Air Ministry announces that about eight vacancies for permanent commissions in the Stores Branch of the R.A.F. will be offered for competition among young men of between 23 and 25 years of age on Jan. 1, 1930, who have had not less than five years' business experience in a firm of standing. This will be the fourth competition under the scheme inaugurated in 1926 for the purpose of obtaining men with a business training to control and administer the supply of the highly valuable and complex equipment of the R.A.F.

Application should be made to the Secretary, Air Ministry (S.7), Kingsway, London, W.C.2, for the regulations and for application forms. Completed application forms should

DEPARTING KINGS.—The ex-Ameer Inayatullah walking to his car from the R.A.F. machine which flew him to Peshawar after his 24 hours' reign at Kabul

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First Light Aeroplane Flight to China

made on

GOLDEN SHELL OIL AND SHELL PETROL

MR. Wen Lin Tschen, a Chinese aviator, and Mr. C. L. Johannsen in their Avro Avian light aeroplane, fitted with a "Cirrus Mk. 111" engine, have successfully accomplished their flight from Croydon Aerodrome to China, using Shell spirit and Golden Shell oil throughout.

For Reliability, Speed, Power and a clean Engine, standardise on both Shell Oil and Petrol.

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reach the Air Ministry by Aug. 15 next, or at the latest by Sept. 1.

British Officers Honoured.

On July 4 Major Franco, Major Gallarzo, Capt. Ruiz de Alda and the mechanic, Serjt. Madariaga, together with Captain Laurence, Commander Robson, Engineer-Commander Paffett, R.N., Wing-Commander Field, R.A.F., and Lieutenant Kilroy, R.N. (Flg. Off. R.A.F.), of H.M.S. *Eagle*, were the guests of the Spanish Ministers of War and Marine, representing the Government, and Mr. Alexander Adams, Commercial Attaché, representing the British Embassy at Madrid.

Scenes of the greatest enthusiasm greeted their arrival at the Capital, and the crowd took matters into their own hands, climbing over trains and buildings and breaking down all barriers to get close to the party at the station. Government employees were excused work until 11 a.m. to allow them to take part.

The Marqués de Estella presided at a banquet in their honour at the War Office, and they had lunch with the Queen of Spain on the following day.

After a banquet at the Aero Club on July 6 Captain Laurence and his officers left for Seville, where they are being joined by other officers from the *Eagle* to visit the Exhibition and they will then return to their ship by way of Algeçiras.

On Saturday morning Captain Laurence and his officers were decorated with medals of Naval Merit by the Minister of Marine. The full list of honours comprises all ranks on duty when the crew of the flying-boat were rescued.

Celebrations similar to those in Madrid have been arranged at Algeçiras and also at Barcelona, where the *Eagle* will spend three days on her way to Malta.

The King of Spain, attended by the Spanish Naval Attaché, Captain Juan Pastor y Tomasety, was received by the First Lord of the Admiralty and the First Sea Lord at the Admiralty on July 3. His Majesty expressed, on behalf of the Spanish Nation, his appreciation and thanks for the services rendered by the Royal Navy on the occasion of the rescue of the Spanish aviators by H.M.S. *Eagle*.

The Dornier Wal is now on its way from Gibraltar to Cartagena in the Spanish steamer *Rionavia*, where it will be overhauled.

Spanish Awards.

Five officers of the aircraft-carrier *Eagle*, which rescued the crew of the Spanish Atlantic seaplane *Numancia*, were invested with the Spanish decorations awarded to them at a ceremony at the Ministry of Marine, Madrid, on July 6.

Captain N. F. Laurence, D.S.O., Captain of H.M.S. *Eagle*, received the Grand Cross of the Order of Naval Merit.

Lieutenant-Commander H. A. Taylor, Engineer-Commander W. F. Paffett, and Wing Cdr. R. M. Field, R.A.F., received the Medal of the Order of Naval Merit (second class).

Lieutenant R. A. Kilroy (Flg. Off., R.A.F.), of No. 402 (Fleet Fighter) Flight, R.A.F., received the Cross of the Order of Naval Merit (first class).

Wing Commander Norton.

Wing Commander E. W. Norton, D.S.C., whose appointment to command No. 58 (Bomber) Squadron is dated April 18, was born in 1893 at Newtown, Montgomery, and was educated at the Modern College, Oswestry. He served in the Royal Welch Fusiliers from 1910 to 1914 and in the Montgomeryshire Yeomanry from February 1914 to May 1915, when he was appointed a Probationary Flight-Sub.-Lieut. in the Royal Naval Air Service after a course of flying at the C.F.S.

In August 1915 he was posted to No. 5 Squadron, R.N.A.S., Dover, and a month later he went to No. 1 Wing, R.N.A.S., at Dunkirk. He was wounded in action in March 1916. He was promoted to Flight Lieutenant in June 1916 and in October of that year he was awarded the Distinguished Service Cross for shooting down the Ostende kite balloon under severe anti-aircraft fire. A description of this incident is contained in Admiral Sir Reginald Bacon's book, "The Dover Patrol."

In June 1917 he was promoted Flight Commander and posted to R.N.A.S. Headquarters. In December 1917 he was promoted Squadron Commander. His foreign decorations include the Belgian Order of the Crown (Officer), the French Croix-de-Guerre (with palm) and the Belgian Croix-de-Guerre.

On the formation of the R.A.F. he became a Major and about the same time he was posted to Cranwell. In October 1918 he was posted to No. 5 Group, H.Q. British Expeditionary Force, and from there, a few days later, to No. 204 Squadron. In August 1919 he was appointed to a permanent commission in the R.A.F. with the rank of Squadron Leader.

In March 1920 he went to Halton to the Staff of the School of Technical Training (Boys). In October 1923 he was posted to No. 1 Flying Training School, Netheravon. In December 1924 he was appointed to command No. 6 Armoured Car Company, 'Iraq.

He was promoted Wing Commander in July 1925, and the following December he took over command of No. 70 (Bomber) Squadron, Hinaidi. In September 1926 he returned to England and attended a course at the R.N. Staff College, Greenwich. From July 1927 to December 1928 he commanded No. 58 (Bomber) Squadron at Worthy Down and since then has been on the Staff of Station H.Q., Worthy Down.

No. 501 (Bomber) Squadron.

The postal address of the newly formed No. 501 (Bomber) Squadron is Filton, near Bristol. The telephone number is Filton 4, and the telegraphic address "Aeronautics, Filton."

No. 501 (Bomber) Squadron is the new Cadre Squadron, the *personnel* of which include a number of the Special Reserve.

The Andover Pageant.

The Royal Air Force, Andover, held their annual At Home on July 5.

The programme of flying consisted of ten events, several of which were in the nature of a rehearsal for the R.A.F. Display at Hendon on July 13. These included an air combat between one Sidestrand of No. 101 (Bomber) Squadron and two Siskins of No. 19 (Fighter) Squadron. The performance of the Sidestrand recalled mildly those entertaining manœuvres which Sq. Ldr. Haig and Sq. Ldr. Longton used to perform in byegone years in the Bourges and the Bugle. One Siskin is demolished without delay and the second had to rely on every art known to an experienced Fighter pilot to avoid the same fate.

Another item from the Display Programme was the individual aerobatics by two Gamecocks of No. 23 (Fighter) Squadron. This pair won the open competition for the honour of performing at the Display and there is doubt whether their performance can be equalled by any two pilots in the World.

Six parachutes were released from three Vimys of the Home Aircraft Depot, Henlow.

Also, a Wing of Virginias and Hyderabads flew over the aerodrome. Their return as they wandered in to land impelled a leader of a fighter squadron to suggest that they were coming home to be milked.

No. 41 (Fighter) Squadron demonstrated their usual accuracy and efficiency in a converging machine-gun and bombing attack on a tank. In the Display the tank will be replaced by an encampment.

Events at Andover which will not take place at Hendon were some stunting by the Hawker Hornbill from the Royal Aircraft Establishment at Farnborough, and a Fly-past of different types of aircraft. In addition to the standard Service types the spectators saw the Hornbill, the Gorcock and Service types not often seen, the Flycatcher Mark I, and the Dart.

A Squadron of Foxes also took part in the Andover Pageant. They dived past followed by two formations of Bristol Bulldogs, which were so quiet that they seemed slower, though, one was told, they were in fact faster on the dive low down and, naturally, being supercharged, very much faster high up,—as single-seat fighters should be.

The high wind prevented close formation flying, and live drops with parachutes.

The Central Band of the R.A.F. played during the afternoon, and it was a good show, as usual.—C. G. G.

Lawn Tennis.

The R.A.F. Lawn Tennis Championships will be held at Queen's Club from July 29 to August 3. They will be run concurrently with the Championships of the Army. All applications for entry forms should be made to Sq. Ldr. N. F. D. Buckeridge, Hon. Sec., R.A.F. Lawn Tennis Association, Room 865, Air Ministry, Kingsway, W.C.2.

FIXTURES FOR THE NEXT FORTNIGHT.

Friday, July 12.—R.A.F. Dinner.
Saturday, July 13.—R.A.F. Display.
Tuesday, July 16.—Aero Show opens.
Thursday, July 18.—S.B.A.C. Banquet to Foreign Visitors to the Aero Show.
Friday, July 19.—The Civil Air Ball.
Saturday, July 20.—Aerial Garden Party at Heston.
Thursday, July 25.—R.Ae.S. Conversazione at South Kensington Museum.
Saturday, July 27.—S.B.A.C. Banquet at the Savoy (official closing of Show).

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1929

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"R. LLEWELLYN"

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THE PROGRESS OF THE "SOUTHERN CROSS."

The tri-motored Fokker (whirlwind engine) *Southern Cross*, piloted by Mr. Kingsford-Smith, which left Sydney on June 25 in an attempt to fly to England, left the Dum Dum aerodrome on July 3 at dawn, and landed at Allahabad soon after midday on the same day with magneto trouble.

The machine flew from Allahabad to Karachi on July 4. No further news of its progress after reaching Karachi was heard until it arrived on July 7 at Baghdad.

Lieut. Keith Anderson, who lost his life while searching for the *Southern Cross* in Australia, was buried at Sydney with full military honours on July 6. Twenty aeroplanes flew over the route of the funeral procession and dropped wreaths on the grave.

ANOTHER FISHING STORY.

The New York correspondent of *The Times* in a message dated July 4, states:—

At Lakehurst, New York, yesterday, Lieutenant Gordon, a naval airman, accomplished for the first time the feat of attaching his observation aeroplane to an airship. While the naval airship *Los Angeles* was cruising at a moderate speed Lieutenant Gordon came under the hull and, adjusting his speed to that of the airship, made contact through a hook between the upper wing of the aeroplane and a rigid trapeze suspended about amidships from the lower side of the airships hull. He hooked up three times, and each time detached himself and flew away. Aeronautical experts consider the test of great importance, as it will extend the range of bombing aeroplanes and give airships another weapon of defence.

As a matter of fact successful tests were made at Pulham, Norfolk, England, on Oct. 15, 1925, when Sq. Ldr. H. de H. Haig, flying a D.H.53, detached the machine from the airship R.33 in the air and re-attached the machine in the air. On this occasion the D.H.53 was slightly damaged. On Dec. 4, 1925, Sq. Ldr. Haig again made successful hooking and unhooking experiments with the D.H.53 from the airship R.33. Since then Flt. Lt. Ragg has performed similarly with a Grebe.

Successful experiments on similar lines were made on Sept. 18, 1923, at Langley Field, Virginia, when a Sperry Messenger biplane hooked and unhooked itself from the U.S. Army Airship D.111.

HOSPITALITY AT OLYMPIA.

Members of the Aero Clubs of all foreign nations are hereby notified that as members of the *Fédération Aéronautique Internationale* they will be welcomed as honorary members of the Royal Aero Club while in England. They will thus be entitled to all the privileges of membership of the Royal Aero Club, in Clifford Street, and also at the special Club Quarters which have been arranged for members of the Royal Aero Club at Olympia,—where the R.Ae.C. has taken a much larger room than that which has been used by the Club at previous exhibitions.

"PEACE HATH HER VICTORIES."

A *Reuter* message in *The Times* of July 5 states:—

When an aeroplane piloted by the president of the Canadian Aviation League, Major-General J. H. MacBrien, made a forced landing at a farm near Sydney, Nova Scotia, the tail-skid of the machine ploughed up a *cache* of 20 barrels of rum.

MORE ATLANTIC ATTEMPTS.

On July 3 a Sikorsky amphibian, named the *'Untin' Bowler*, piloted by Mr. Parker Cramer and Mr. Gast, and carrying Mr. Robert Wood, aviation editor of *The Chicago Tribune*, as passenger, left Chicago on the first stage of a flight to Berlin by way of Greenland. It arrived at Remi Lake, Ontario, after having stopped at Milwaukee and at Sault Ste. Marie to pass Canadian Customs.

On July 4 it proceeded to Rupert House on James Bay, a Southern extension of Hudson Bay, and left later for Greenland but was obliged to return on account of low visibility. It left James Bay again on July 5 and no further news of the machine has been heard since it announced by wireless that it was descending at Great Whale owing to poor visibility.

On July 8 Mr. Roger Q. Williams and Mr. Lewis A. Yancey left the beach at Old Orchard, Maine, in the Bellanca monoplane *Pathfinder* in an attempt to fly non-stop across the Atlantic to Rome.

These two pilots had previously attempted to take off in the Bellanca monoplane *Green Flash* at the time when the three Frenchmen and one American got away from Old Orchard in the Bernard monoplane *Oiseau Canari*, but their machine was damaged before getting off.

AIR-RAIL SERVICE IN THE STATES.

On July 7, Transcontinental Airways inaugurated a combined air-and-railroad service between New York and Los Angeles.

At 19.00 hours the "Airway Limited" left the Pennsylvania Station, New York, with sixteen passengers for Columbus. On the following morning these passengers left the Columbus Airport in two Ford three-engined monoplanes for Waynoka, Oklohama. At Waynoka the passengers transferred to a train for the night journey to Clovis, New Mexico. Here they again transferred to aircraft, and flew to Los Angeles.

By this means transcontinental passengers spend two nights in trains and two days travelling by air, the whole journey from coast to coast taking 48 hours—as against three and a half days by rail.

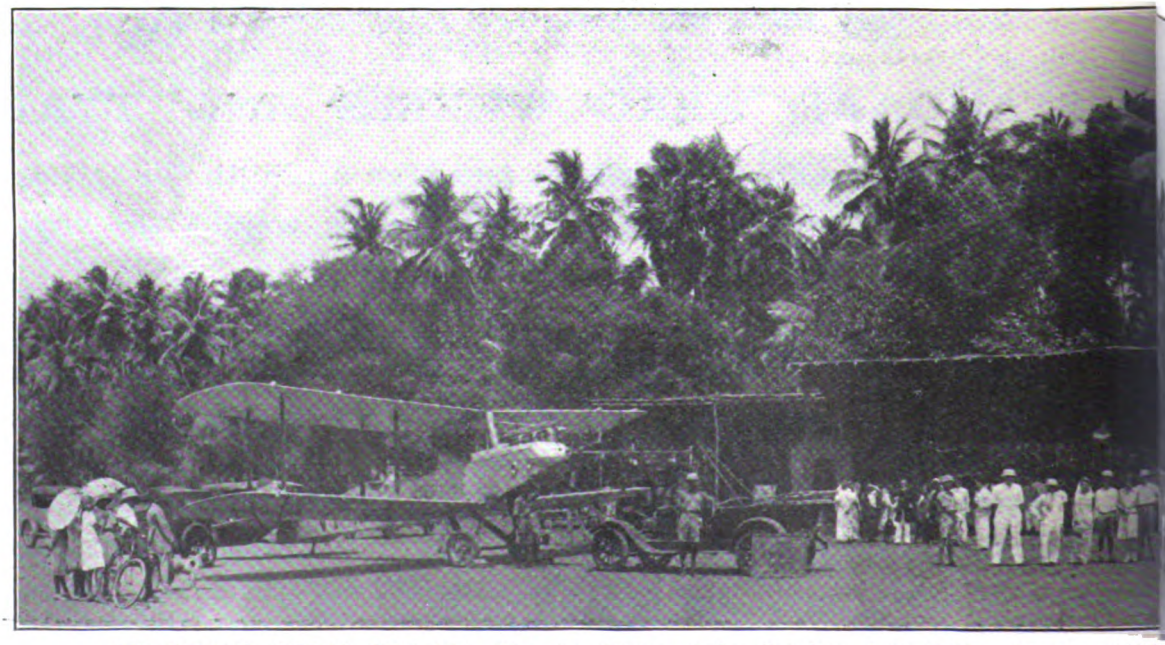
On July 8, the Los Angeles-New York service was inaugurated, the first eastbound aeroplane being flown by Colonel Charles Lindbergh.

MR. JOHN R. CAUTLEY.

On Tuesday, July 16, the opening day of the Aero Show Mr. John R. Cautley will arrive in England from the U.S.A and will be pleased to meet his many friends and acquaintances.

Mr. Cautley has long been associated with the Bendix Brake Co., and has had considerable experience of brake problems of all descriptions. Of recent years he has devoted his time to aeroplane brakes and he has been responsible for the development of the Bendix aircraft brake and wheel in the United States.

His present trip is being made at the request of Mr Herbert Clark, Managing Director of Bendix-Perrot Brakes Ltd., Birmingham. During his stay, his experience will be placed at the disposal of the technical staff of the British



BY INDIA'S CORAL STRAND.—The Aerodrome of the Bombay Aero Club. In the midd of construction. In the middle of the

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Company, so that the development of aircraft braking throughout the British Empire may be rapidly advanced.

Mr. Clark will be very pleased to put Mr. Cautley's many associates in touch with him. Letters should be addressed to Herbert Clark, Bendix-Perrot Brakes, Ltd., Westwood Road, Witton, Birmingham.

TWO OR THREE ENGINES.

An engineer writes:—

The Daily Express recently urged Imperial Airways to announce that—"no more twin-engined aircraft will be used for cross-Channel passenger traffic"—

Now the Press has the power of influencing many people in high positions and it certainly should not be allowed to make such statements as these unchallenged.

Twin-engined machines *can* be made to fly on one engine with full load and any mathematician will agree that by the Law of Probabilities chances of failure with such an aircraft are less than where three engines are used, and the machine requires two of them to remain in the air.

Twin-engined machines are undoubtedly quieter to fly in owing to the absence of slip-stream round the fuselage, and are easier to design from the point of view of the pilot's cockpit owing to the absence of the nose engine.

Therefore by limiting themselves to the use of three-engined aircraft Imperial Airways would be handicapping designers and retarding progress. Let them by all means elect to use only such twin-engined machines as can retain height on one engine with full load and scrap all those older machines which cannot, but to limit design in any way would undoubtedly be a retrograde step.—C. M. C.

[One proposes to deal at length with this question and others when the inquiry into the accident to the *City of Ottawa* is finished.—C. G. G.]

INSURANCE AND AIRWORTHINESS.

A recent note on the renewal of Airworthiness Certificates after inspection by representatives of the British Aviation Insurance Group was based on a misapprehension caused by the wording of the official notice on the subject.

That notice distinctly conveys the idea that some time in the not far distant future the British Aviation Insurance Group will definitely decide the renewal of Certificates and issue the necessary documents.

The arrangement with the Air Ministry is in fact that the British Aviation Insurance Group will maintain a staff of inspectors, probably drawn from present A.I.D. personnel, who will view machines every three months for insurance purposes. Once a year these reports will be considered by the Air Ministry, and if they are satisfactory the Air Ministry, as such, will issue a renewal of the Certificates on the strength of those reports.

If the owner of the machine does happen to disagree from the views of the inspector appointed by the British Aviation Insurance Group he or she will still, presumably, have *the right* to have the machine separately inspected by the Aeronautical Inspection Department.

The idea is ultimately that all aircraft shall be classified as Lloyds as are sea-going ships.—C. G. G.

THE HON. LADY BAILEY IN THE CITY.

His Royal Highness the Prince of Wales presided at a dinner given at the Mansion House on July 8 on behalf of the Royal Institute of International Affairs to welcome Sir Abe and the Hon. Lady Bailey on their return from South Africa.

In the course of a speech proposing the toast of Sir Abe and Lady Bailey, His Royal Highness said:—

> Before I submit this toast I have to say a word about Lady Bailey, who has up till now managed to avoid with typical feminine skill any celebration of her remarkable feat. She has been so quiet about it that it is hard perhaps to realise the scale and the pluck of her achievement. I, like many of you, have flown, or rather been flown, on various occasions, and we are always rather anxious before we go up to see that there is some fairly reliable outfit of maps in the machine; but Lady Bailey did not seem to worry very much about maps, and at one part of her journey her maps could have been contained in what a man calls his waistcoat pocket. They consisted of nothing more than the coastal outline furnished by the Union-Castle Company for the use of its passengers. But I must point out that Lady Bailey's achievement could never have been possible without a combination of high technical skill and great courage and endurance. Her performance will live long in the history of aviation, and as I once had the opportunity some months back of saying—I am very glad to say it again—Lady Bailey is a very gallant lady indeed. We all wish Sir Abe and Lady Bailey a long and happy life.

The Viscount Grey of Falloden joined cordially in the admiration which had been expressed for Lady Bailey's enterprise and courage.

Sir Abe Bailey, referring to his wife's flight to and from South Africa, said (according to *The Daily Mail*):—

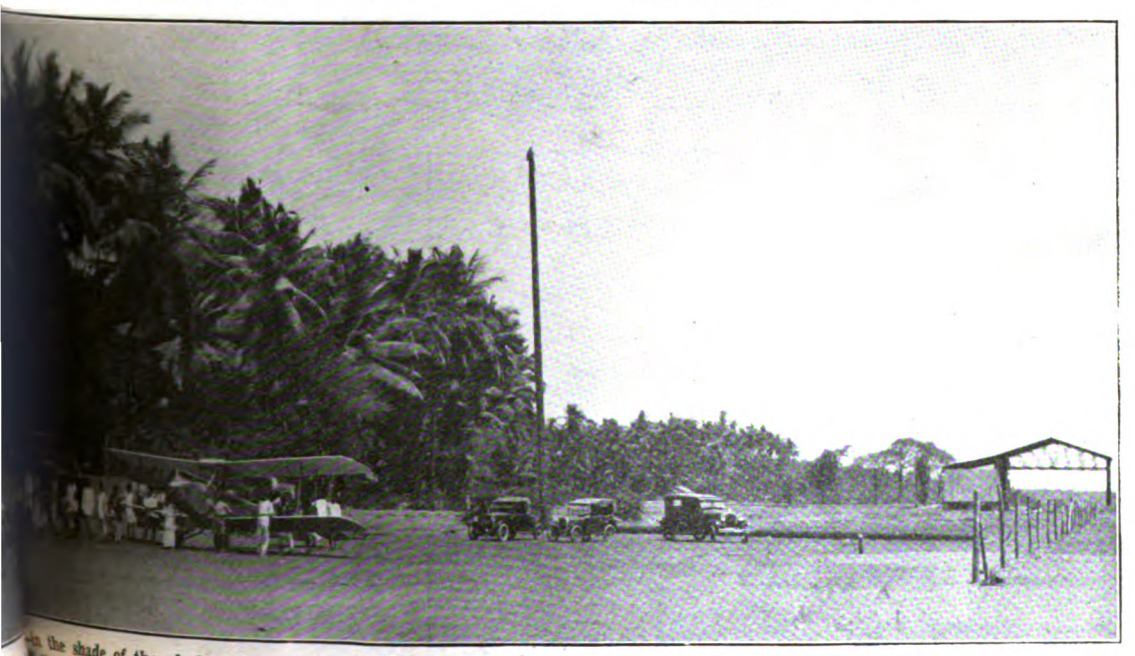
> Airwomen are contesting and questioning man's efficiency and supremacy, and no doubt we shall soon be told a man's place is his home, and that the hand-rocked cradle rules the world and must be rocked by him.
>
> The coming event as far as I am concerned has already cast its shadow, and I suppose I shall glide into the next world as the dirigible husband.

ANOTHER LOST CHANCE.

THE AEROPLANE is always drumming in the lesson that if our manufacturers of aircraft will not produce what British organisers of air-lines want, especially abroad and in the Colonies, these organisers will be able to purchase what they require from foreign constructors. Here is further evidence.

The news has just come in that a three-engined Junkers G31 and a Junkers W33-34, of the well-known Bremen type, have been bought by a large English-Australian concern for freight-transport. The people concerned were very anxious to buy their machines in this country and made a tour of inspection through the Industry with this end in view. Owing to high prices and the prospect of having to wait for a year or so while machines were specially built, if ordered, the prospective customers gave up the idea of "Buying Imperially" and went abroad to the firm who had supplied them with their original equipment and who had material ready for the job, at a decent price and in the right time.

Will nobody in the Aircraft Industry realise that if aeroplanes are as good and as useful as we all try to think they are, they have other uses than as instruments of war, and there is more scope in supplying the needs of Commerce than in furnishing arms for War. And what price disarmament any-way.—T. J.



...the shade of the sheltering palm,—and to the right is the new tin Temple of Aeolus in course ... the left-hand page is the first woman pilot in Bombay.

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AN HYDRO-AERODROME FOR HULL.

Hull's Municipal Aerodrome, a 200-acre site, four miles from the centre of the city, will be officially opened by H.R.H. Prince George on Oct. 10. The aerodrome has been leased to National Flying Services, Ltd., who will be ready to operate by the opening date. Two miles further east, on the river front, Hull has acquired a seaplane base. So, with accommodation for land and sea machines, Hull is going to make big strides in the future as an air port, and may justify Commander Kenworthy's claims for his constituency as an air port.

An Air Pageant is to be staged for the official opening in October. The main item on the programme will be a display by a squadron of R.A.F. fighters. Many famous aviators have been invited, and several of the aircraft firms have promised to send demonstration machines. The co-operation of the various flying clubs is being sought, and there will be a light aeroplane race for which three trophies and a special cup for Club entries are to be offered. There is also to be a landing-on-time competition as part of the Civil Rally, and two cups will be put up. The prizes will be presented by Prince George during the afternoon.

The full band of the R.A.F. has been engaged, and Hull hopes to start off its career as an air port in convincing style.

The Blackburn firm, whose works are at Brough, some way west of Hull, are giving their help, and are providing accommodation for visiting machines. The Air Minister has accepted the City's invitation to be present.

Further information about the Pageant and the club races will be willingly given by the Hon. Secretary, Mr. M. Goulden, *The Evening News*, Hull.

DELAYED CORRESPONDENCE.

Friends and enemies of The Aeroplane who have written to this office in the course of the past three weeks and have not had any answers to their letters will find the reason, not an excuse, when they see the Special Issue which will be delivered to subscribers, and can be got by ordering it from newsagents, on July 12, Friday of this week.

The production of that colossal issue has absorbed the whole time of most of the editorial staff, with the result that a small minority have had to deal with the various flying meetings of the past week-ends, and all the news of the World as well. Consequently ordinary correspondence has suffered.

Moreover, it is likely to go on suffering till after the end of the Aero Show on July 27. So if nobody gets any answers to their letters until somewhere in the week beginning July 29 they need not be surprised, and if they do get answers they will be lucky.—C. G. G.

FURTHER DETAILS.

Unfortunately when the notes on the Wythenshawe Meeting were published recently there was no possibility of learning the names of the two distinguished gentlemen on the right of the group in which appeared our new Under-Secretary of State, Mr. Frederick Montague. Actually, the person immediately next to Mr. Montague is Mr. F. Warbreck Howell, Town Clerk, and the one on the extreme right of the group is Sir William Kay, formerly Lord Mayor of Manchester.

Sir William is Chairman of the Corporation Committee on Water Works and carries much weight in Manchester. He is a firm believer in the future of aviation and has done a great deal to further the scheme for a Municipal aerodrome.

One learns from various directions that there has been a certain amount of tenderness, if not exactly soreness, in the Lancashire Aero Club about the Wythenshawe Meeting. Apparently tickets for the 2s. enclosure were sent to the members of the club because all the members could not be asked into the Special Guests' enclosure, as the Manchester Corporation, who after all own the aerodrome, wanted something over 200 tickets for an enclosure which would barely hold that number of people.

BEAVERSFIELD OR FLYINGFIELD.

The following letter is comforting, especially the inference that a Competent Disciplinary Authority has been installed at the Heston Air Park:—

Sir,—The letter appearing under the above title in your issue of June 26 has been our only intimation of local residents experiencing any inconvenience from aircraft using Heston Air Park. We have, of course, held an inquiry but have failed to establish any proof of low flying.

We are given to understand that the Beaversfield Estate is south of the Great West Road, whereas Heston Air Park lies 800 yards north of the Great West Road. Under the circumstances, we do not think it likely that any aircraft coming in to land could be within hailing distance of the Beaversfield houses.

However, we would like to take this opportunity of stating that we are exceedingly anxious that aircraft using Heston Air Park should not cause inconvenience to local residents.

We have made a point of equipping all our own machines with silencers and have given instructions that unnecessary low flying over the Great West Road and Southall housing areas is to be summarily dealt with by the Air Park disciplinary authority.

(Signed) Nigel Norman,
Alan Muntz,
Directors, Airwork Ltd.

THE GIANT DORNIER.

The Dornier Company has completed at Friedrichshafen its latest product, the Do. X giant flying-boat.

This craft has a span of 160 ft., a length of 130 ft. and a height of 33 ft. It has twelve 525 h.p. Siemens-Jupiter engines in tandem pairs above the wing.

It is arranged to accommodate 120 passengers for a flight of a normal range of 620 miles and 60 passengers on longer flights. The interior of the hull is arranged in three decks, the lowest containing the fuel tanks, the middle deck the passenger accommodation and the top deck the navigating room, pilot's cabin engine control station and the crew quarters.

The Do. X is estimated to have a maximum speed of 1[illegible] m.p.h. and a cruising speed of 120 m.p.h.,—which is sensibl[illegible]

A model of this machine will be shown at the forthcoming Aero Show at Olympia.

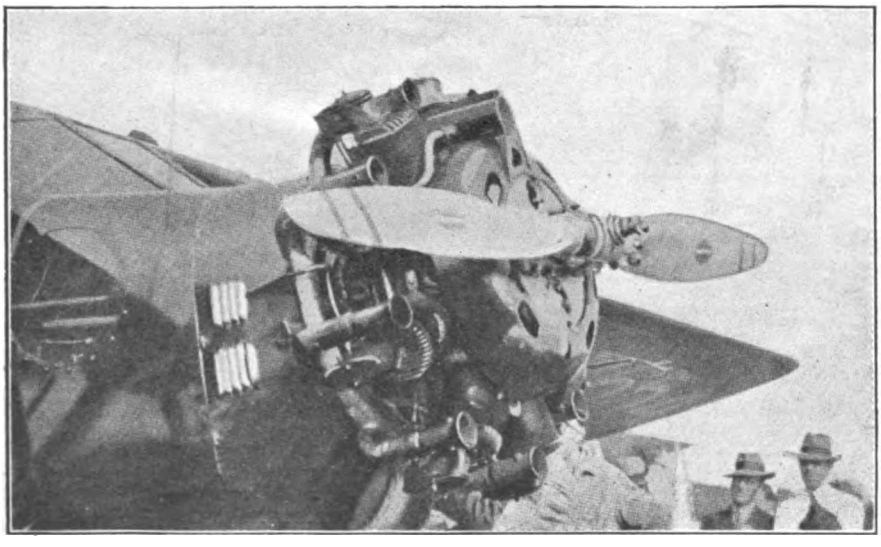
WHEN LUBRICATION IS NEEDED.

The Aeroplane is not much interested in motor cars and motor bicycles, but there are lessons to be learned from these low (in altitude) vehicles, even by exalted aviators. Some time ago there was a 24 hours' car race at a place called Le Mans in France,—a locality which really owes its place on the map to the fact that Wilbur Wright flew there twenty-one years ago. In this race British automobiles called Bentleys finished first, second, third and fourth.

Also recently there were some motor-bicycle races in the Isle of Man for a prize called the Tourist Trophy.

In all these competitions the vehicles concerned put up quite decent speeds, for surface transport, though of course they were deadly slow from the aviator's point of view. Nevertheless the tests were quite severe, and without first class lubrication the machines could not have stood such high performance.

Therefore there is interest in noting that all the Bentley cars were lubricated by the Tecalemit high pressure system, and that all the motor-cycles were fitted with ordinary Tecalemit greasers. And Tecalemit lubrication is also "as done" on all the best aeroplanes.



THE C.I. ENGINE AT LAST.

COMPRESSION-IGNITION.—The first appearance of the Packard Compression-Ignition Radial Air-cooled engine. The picture is taken from a print in an American paper as no pictures or descriptions of the engine are yet available from the Packard Co. There is however, good evidence that the engine had flown long distances and is highly efficient.

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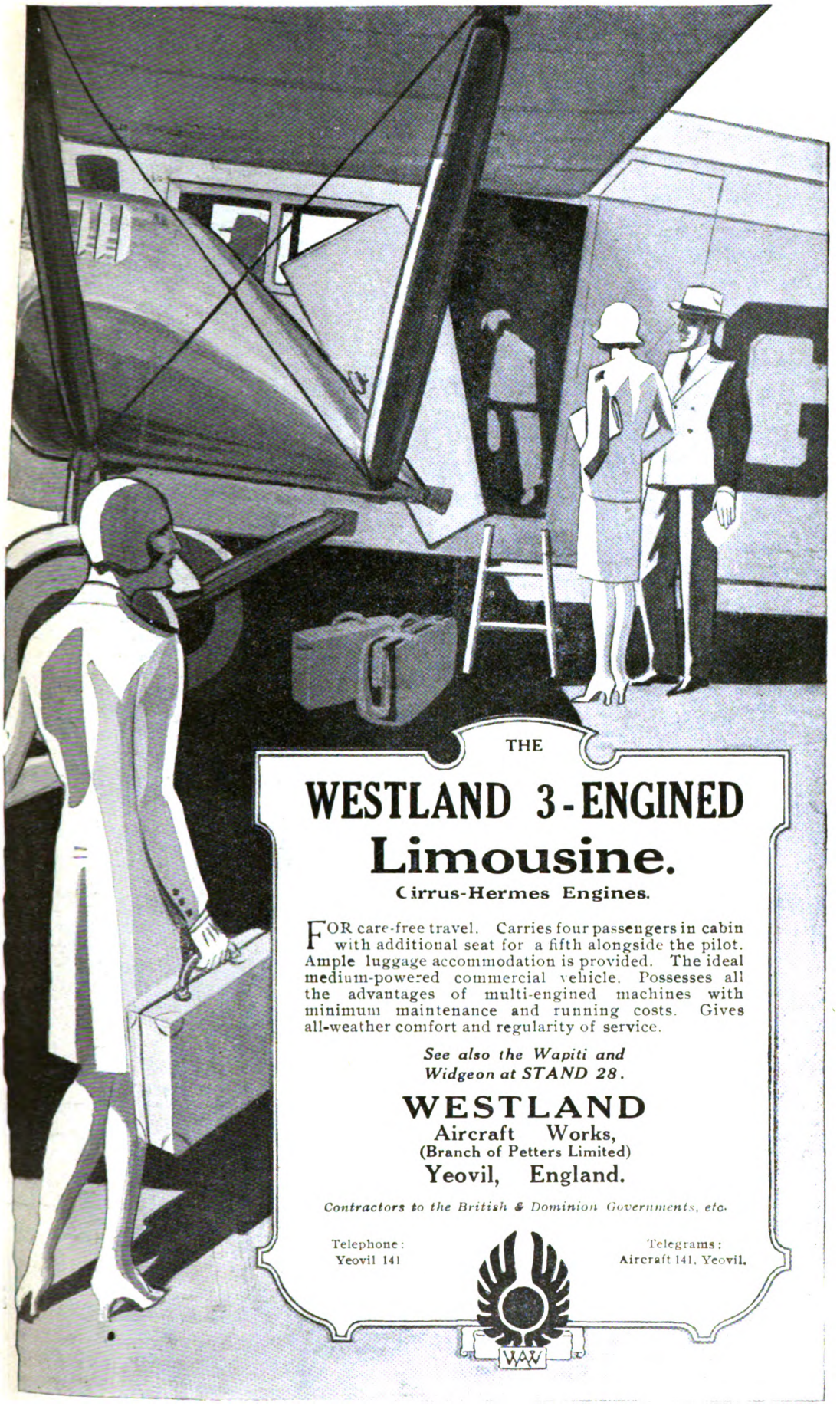

See the R.A.F. Pageant, July 13.

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VICKERS
[AVIATION] LIMITED

The Landplane shown above is the VICKERS "VELLORE" FREIGHTER.

PAY LOAD (in addition to pilot and fuel for 350 miles).
8 lbs. per horsepower.

Below is the first of Eight SUPERMARINE "SOUTHAMPTON" SEAPLANES
"Lorraine" Engines
constructed to the order of the
ARGENTINE NAVAL AIR SERVICE.

THE
SUPERMARINE AVIATION WORKS, LTD.
PROPRIETORS: VICKERS [AVIATION] LIMITED.

STAND No. 85,

INTERNATIONAL AERO EXHIBITION,
OLYMPIA,
16th—27th JULY, 1929.

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PYRAMID-BRACING.

Sir,—Referring to the article in a recent AEROPLANE on "Wings with Pyramid Bracing":—

Your correspondent stated that the stiffness of the wing to resist torsion is roughly proportional to the length of the shorter side of the base of the pyramid, *i.e.*, the distance between the two spars.

It seems to me too obvious to need any explanation that the governing factor for stiffness is the *height* of the pyramid —*i.e.*, the thickness of the wing, and not the spar spacing.

As regards the statement that the pyramid bracing as shown in Fig. 1 should be several times more stiff than that shown in Fig. 2, I have worked out some comparative figures for both systems on the following assumptions:—

(*a*) Neglecting the deflection of the spars;
(*b*) Neglecting Euler loads in the struts—*i.e.*, an equal stress in all members;
(*c*) All wires having initial tension;
(*d*) Wing thickness 18 per cent. of chord, other dimensions and loads as shown in Figs. 1 and 2.

The result is a torsional deflection for the *single spar system* (*Fig.* 2) *of* 58.7 per cent. of that of the two-spar system.

In actual practice the pyramid members of System 1 have to be designed for Euler loads developing a much lower stress, and, therefore, they will deflect less, but this only at the cost of extra weight.

In a case where stiffness is of greatest importance and not merely strength alone, initial tension advantageously halves the actual deflection.

The two systems of torsion bracing also differ in the following points:—

System Fig. 1.—The rigid pyramid produces end-loads in the bottom spar-flanges AB and CD which are additive along the spar, and also stresses one set of the drag-bracing. These end-loads are quite appreciable towards the centre of the wing, with a distributed torsion along the whole spar is larger than the sum of the deflections of the pyramids when calculated separately.

Owing to these end-loads, a pure twist on the structure produces also a drag deflection, or, what is more important, pure drag produces also a twist of the wing, which is rather undesirable at top speed.

Obviously, the two spars will help a little to reduce deflection, and also some of these points may be overcome to some extent by reducing the stress in the members—*i.e.*, increasing the weight. In addition, only one flange of the two spars is stabilised, and this means the introduction of braced main ribs.

System 2.—Each pyramid is an independent unit, there are no end-loads, all loads are equally distributed on both flanges of the spar. Neither drag nor bending produce twist. The wires are short, aproximately half the length of the drag-bracing of Fig. 1—they are, in comparison, more like spokes of a bicycle wheel. The tension members will develop full stress. Both flanges of the spar are stabilised at half the distance of that in Fig. 1.

By these remarks I do not intend to detract from the merits of either system. Their success depends very largely on how and where they are used.

(Signed) H. T. STIEGER.

THE LONDON CHAMBER OF COMMERCE.

On July 3, at a meeting held in the Council Room, the London Chamber of Commerce decided to form a Civil Aviation Section of the Chamber of Commerce.

The meeting was presided over by Lord Herbert Scott, president of the Chamber, who in the inaugural speech said that the section had the support of such bodies as the Society of British Aircraft Constructors, the Royal Aeronautical Society, the Royal Aero Club, and the Air League.

He went on to say that to-day British aviation was almost entirely dependent on the support of the Air Ministry, and that support was largely dependent on the favour of the Treasury. Outside the Air Ministry the demand for machines was restricted to a relatively small number of flying clubs and to Imperial Airways. The fact was that, as a nation, we had not been educated to the use of the new transport of the air. We had been taught to look "seaways," and we must now learn to think "airways."

He would not suggest that air transport would ever supersede sea transport for all purposes, but he was convinced that, in the not distant future, it would be the normal means of transport for the conveyance of passengers and mails over the great trade routes, where the immense saving of time would more than compensate for the additional cost. It was a development which was bound to come, and he appealed to the great shipping industries of the country to show again that foresight and enterprise which their predecessors displayed and to make of aviation an auxiliary and ally, instead of what it must otherwise inevitably become, a competitor.

Sir Harry Brittain was elected chairman of the section for the first year, and Mr. Alan S. Butler and the Master of Sempill were elected vice-chairmen.

The following were appointed members of the Standing Committee: Lady Bailey, Sqdn.-Ldr. Lord Edward Grosvenor, Sir Charles Wakefield, Sir John Cadman, Lt.-Gen. Sir George McDonogh, Sir Alan Cobham, Sir Samuel Instone, Sir Alliot V. Roe, Brig.-Gen. P. R. C. Groves, Lt.-Col. Ivo Edwards, Capt. P. D. Acland, Mr. Harold Perrin, Mr. T. M. Sopwith, Mr. C. R. Fairey, Maj. F. P. Scott, Mr. A. F. Sidgreaves, Mr. G. Woods Humphery, Mr. F. E. Powell, Mr. Samuel Samuel, M.P., Capt. A. G. Lamplugh, Mr. F. E. Bray, Mr. Lawrence A. Wingfield, Major K. M. Beaumont, and Mr. Ivor McClure.

Sir Samuel Instone said that the London Chamber of Commerce could do a great deal to further the development of civil aviation. It would be a great encouragement if greater advantage were taken of the existing services. The best answer they could give to the Government when they sought assistance would be to be able to point to a great demand for the conveyance of mails and goods.

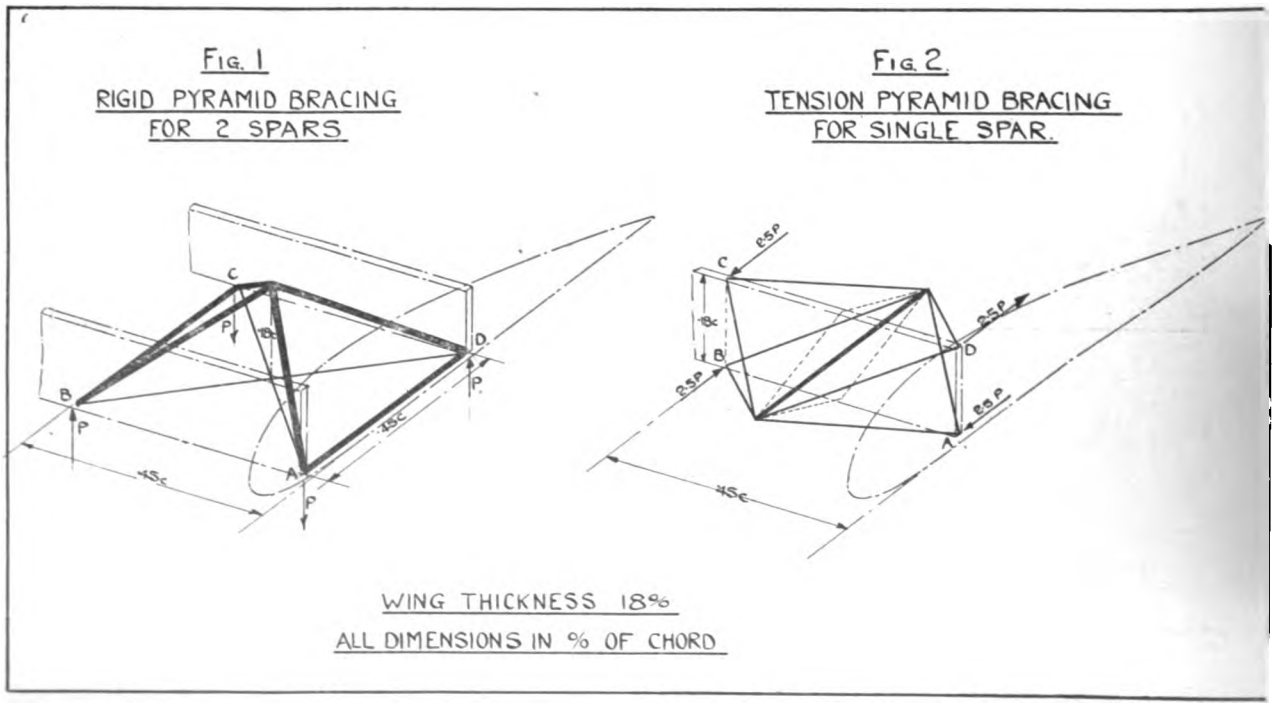
ORACULAR GROVES.

A correspondent writes:—

Throughout history there have been Oracular Groves which enjoyed popular notoriety. Oracular Groves were usually dark and gloomy and their utterances were confused, fatuous, and usually inaccurate.

Served by a drug-stupified priesthood who would not have comprehended the utterances from the Oracular Groves even if they had been intelligible, these Groves invariably became discredited after a short time.

If there were Oracular Groves in modern times (which Heaven prevent) they might easily become verbose upon Commercial Aviation. They would not, of course, know a thing about the matter, but their priesthood (in these days a stupid headline-hunting daily news-sheet of the lesser sort) would realise that as the public knew nothing at all about Aviation, it was a heaven-sent opportunity for Oracular Groves to talk through their topmost branches.



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ANOTHER REFUELLING RECORD.

On July 7, Messrs. R. L. Mitchell and Byron K. Newcomb landed at Cleveland, Ohio, after having remained in the air for 7 days, 6 hours, 59 seconds, in a Stinson Detroiter monoplane.

This time is 1 hour 28 minutes longer than the previous refuelling record.

A LOSS TO PROGRESS.

On June 8 Col. John Hambleton and Mr. and Mrs. van der Hayden were killed by the crashing of Col. Hambleton's private aircraft when flying from Baltimore to Wilmington, N. Carolina.

Col. Hambleton was Vice-President of Pan-American Airways, which runs the service from Florida by Panama to Peru and Chile.

THE ITALIAN AIR ESTIMATES.

The Rome correspondent of the *Manchester Guardian* points out that the Italian Air Estimates for the coming year are at the same high level of 700,000,000 lire (£7,550,000) as has been maintained since 1926. Although the figures appear low compared with England or France, it must be remembered that money buys more in Italy.

The Italian Air Force consists of 97 squadrons, which are organised into 31 groups; with one airship division to every three groups. Figures recently published by the Government though not stating the number of reserves, give a total of 1,600 machines, 2,300 pilots, and 20,000 men.

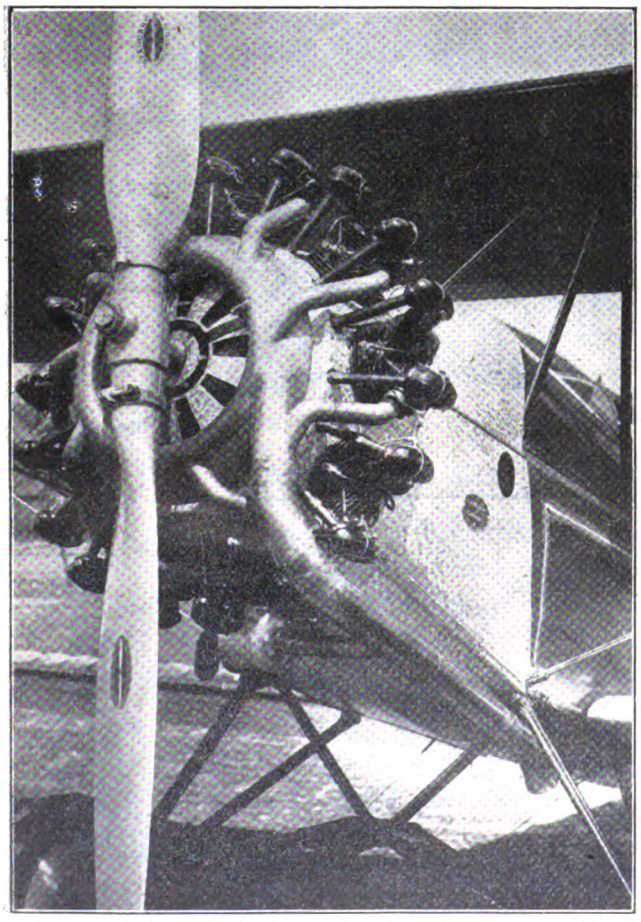
AERONAUTIC ENGINEERING.

The Journal of the American Society of Automotive Engineers for May contains a section headed *Aeronautic Engineering*. From this number onwards the new section of the journal will be devoted to matters of aeronautical interest.

America has no body of quite the same status as our Air Ministry, so the S.A.E., among their multifarious activities, have taken on the job of getting out standards for the American Aircraft Industry.

The S.A.E. stand at the Detroit All-American Aircraft Show in the early part of April of this year had a display of aircraft parts made to S.A.E. standards. There were crankshafts from a Curtiss Conqueror, from a Pratt and Whitney Wasp, and from a Wright J.6, each of these had an S.A.E. No. 30 shaft-end, with the result that the same airscrew hub (*anglice* boss) would fit all three.

The stand also showed a number of generators, fuel pumps, and inertia starters all with S.A.E. standard mounting flanges. Storage batteries for aircraft to S.A.E. standards were also shown.



A NEW AMERICAN MOTOR.—The 185 h.p. Lycoming air-cooled engine mounted in a machine. The engine was designed by Mr. Valdemar Cronstedt.

THE NORWICH NAVIGATOR.—Mr. A. J. Richardson, of Norwich, who learned to fly at the age of 67, and flew direct across the North Sea from Cromer to Rotterdam in his Klemm-Salmson recently.

THE REASON WHY.

The Aeroplane is always drumming in the precept that any new find of value to the Industry as a whole should be made common knowledge among the Industry.

When Mr. Trubee Davison, the U.S. Assistant Secretary of War for Aeronautics, was asked by a correspondent of *U.S. Air Services* why the new ethylene glycol cooling formula had been released to the public, he replied that the (his department) felt that anything the Army found of value to commercial aviation should be given out.

This ideal of frank and open sharing of new ideas is one of the reasons for the success and rapid development of the industries of the United States.

AN ALLIANCE OF PIONEERS.

Curtiss-Caproni, Inc., a new company organised by Curtiss interests and the Societa Aeroplani Caproni, of Milan, has been formed to manufacture large commercial aircraft of the Caproni type under Curtiss supervision in the United States.

As Mr. Glenn Curtiss and Sig. Caproni were just about contemporaries in the pre-historic days of aviation as experimenters with aeroplanes which did not yet fly, this alliance of their modern firms is interesting. But one wonders mildly what there can be in any Caproni design which is better than anything the Curtiss Co. can produce for itself.

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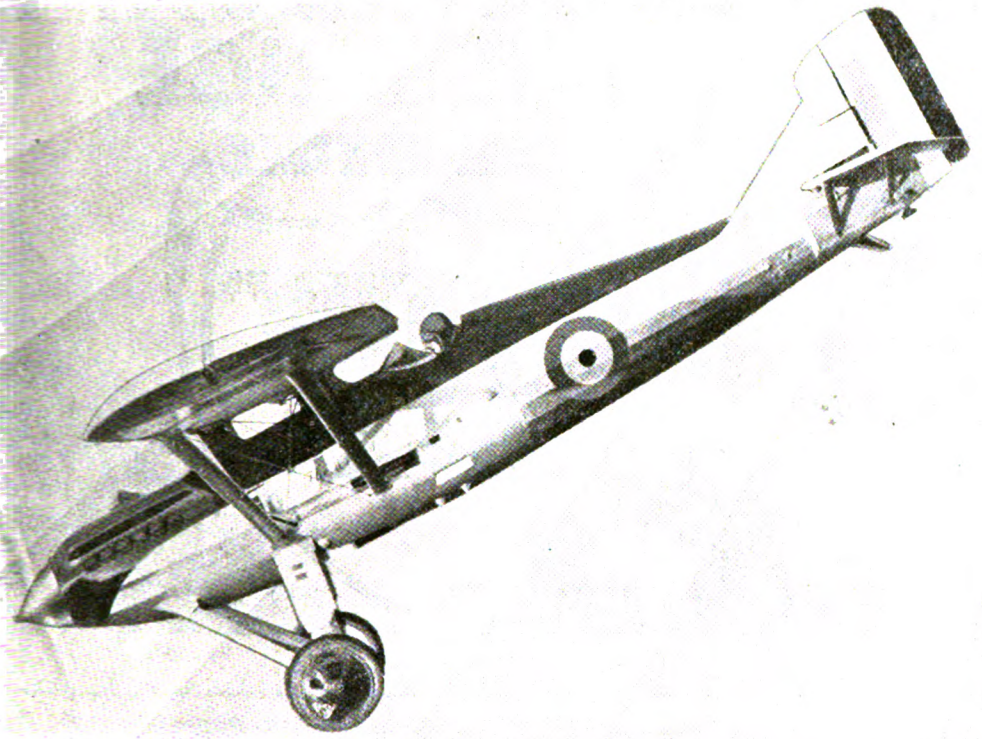
Westland Wizard
Rolls - Royce
F. Engine



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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

CHEAP TICKETS FOR THE R.A.F. DISPLAY.

In some of the recent club notices secretaries have reminded their members that as members of approved light aeroplane clubs they are entitled to buy two tickets for the R.A.F. Display at Hendon on Saturday next for 10s., instead of paying 10s. each.

Curiously enough the majority of club secretaries did not consider that such an announcement was worth their while. Therefore one takes this opportunity of reminding all members of all light aeroplane clubs that they can buy two 10s. tickets for one half-sovereign.

This very handsome concession only applies to members of light aeroplane clubs, and not to members of the Royal Aero Club as such. And these special tickets are limited to one such purchase per member.

THE STAG LANE ACCIDENT.

At the inquest on John Anthony Barnett and William John Williams, who were killed when a three-seat Avro aircraft in which they were returning from Shoreham-by-Sea crashed on landing at Stag-Lane, the jury found that the accident was due to an error of judgment.

The third occupant, Dermot Esler, was injured and lies in a critical condition at Redhill Hospital, Edgware.

The pilot, Mr. Barnett, who held both A and B licences, came into the aerodrome gliding slowly down-wind and in turning to face the wind stalled and spun to the ground from about 200 ft.

A ROMANY MANIFESTATION.

As has been previously announced in the editorial and advertisement pages of THE AEROPLANE, a De Havilland Moth with a Gipsy engine has for some time past been engaged on a Reliability Test to get data as to petrol consumption, oil consumption, and wear and tear of parts.

Up to Monday, July 8, 485 hours had been done at average speed of 88 m.p.h. during which time 42,680 miles had been covered. Petrol consumption has been worked out at 4.7 gallons per hour and oil consumption ½ pint per hour. During all this time no part had been replaced, with the exception of a magneto in the early part of the test. This magneto was only changed because a slight defect developed in the original one, which could have been put right within an hour or so. As, however, the machine was wanted urgently, another magneto was fitted.

42,680 miles without even decarbonising is an extremely fine record and there can be very few motor-cars which could put up such a mileage under such conditions.

THE HESTON GARDEN-PARTY.

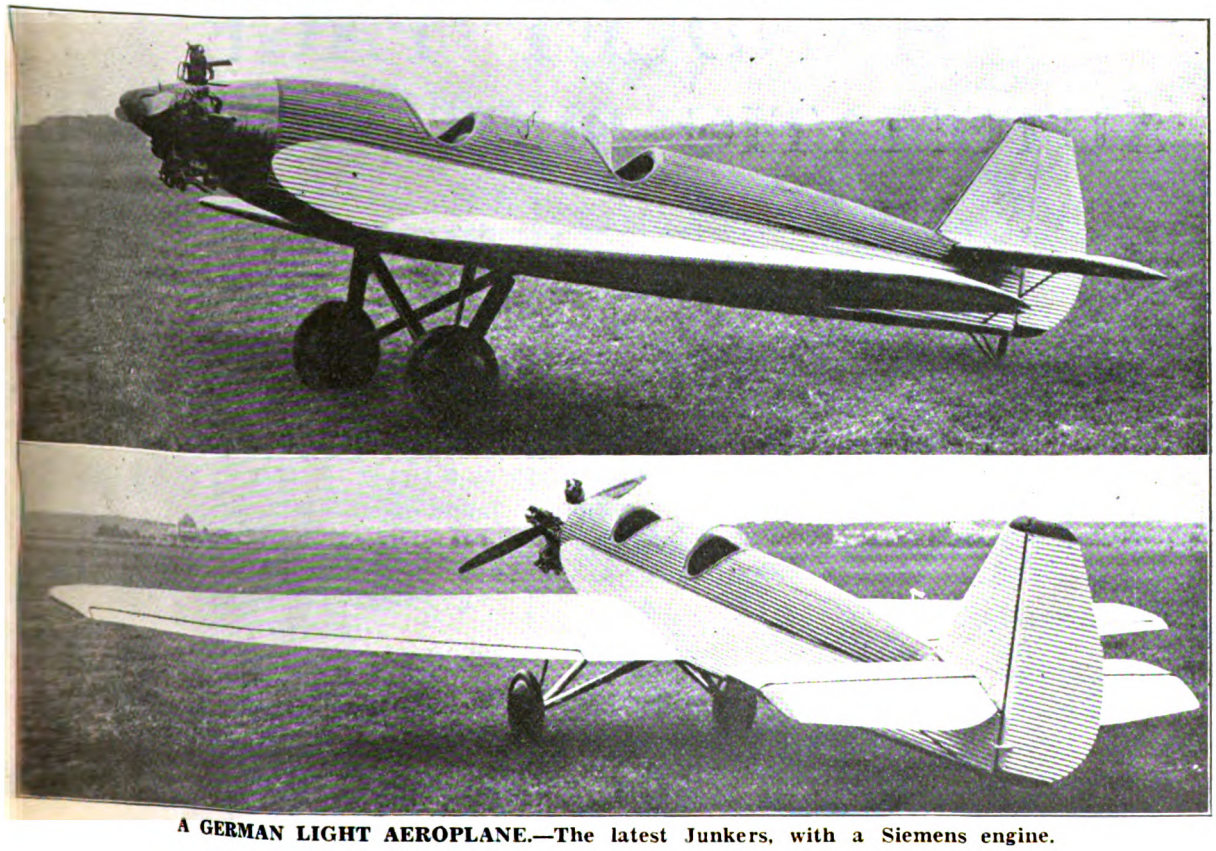
Saturday of next week, July 20, is a date to be noted and reserved. The Proprietors of the Heston Airpark, in conjunction with the Royal Aero Club, the Society of British Aorcraft Constructors and the Sport and the Trade generally, are giving a Garden Party at Heston Airpark in connection with an International Aerial Rally which the Royal Aero Club is working up energetically and in a hurry.

Invitations have been sent to all the Continental Aero Clubs, and though nothing official has been announced as yet there is a probability that prizes will be given for the Rally. After that there will be an International Aerobatic Competition in which the Aero Club hopes to induce the leading Continental pilots, such as Herr Udet and Herr Fieseler, to compete against our leading civil stunt pilots. After the International contest there will be an aerobatic Contest for pilot-instructors of the recognised Light Aeroplane Clubs, on Club machines. The best instructor is not necessarily the best aerial acrobat, by any means, but some of our Club instructors can stunt a bit, so this also ought to be amusing.

Apart from that there is the cheery atmosphere of the Heston Airpark to draw people thither, and all our foreign visitors to the Aero Show are being asked there, so altogether, given decent weather, it ought to be a very jolly afternoon and evening.—C. G. G.

BUSINESS AT READING.

The Phillips and Powis School, of Reading, seem to be doing good business. They have a new Gipsy-Moth for demonstration purposes on the aerodrome, as official Moth agents, and during the past month they have sold three secondhand Moths.



A GERMAN LIGHT AEROPLANE.—The latest Junkers, with a Siemens engine.

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PROGRESS IN NEW ZEALAND.

A correspondent in New Zealand writes that Air Pageants are being held almost every week in New Zealand these days. Auckland's Aero Club set the fashion and Hawke's Bay followed, and now Christchurch wishes to follow suit, with Wanganui—which does not yet possess an Aero Club—desirous of emulating the others.

So far about a dozen machines have assembled at each "Pageant" (mostly Moths, with an odd Avian). These same dozen machines seem fated to appear at every future meeting, and the pilots should be quite accustomed to air-racing by the time the "Pageant season" closes.

These air meetings are making the public quite air-minded, but what is more important, the Minister of Defence in the new Government is doing a lot of flying, particularly in the North Island, and almost daily he has some item on air matters for publication in the daily Press.

The Government is considering its defence policy along with its new year's estimates, and its air policy will be announced shortly. An announcement has been made that the Prime Minister will make a statement on air policy in the near future.

Apparently either the new Government is alive to the advantages of aircraft in any scheme of defence, or else the Salmond Report has forced a radical change in our local Ministry of Defence.

Mr. Chandler's forced landing in Cook's Straits caused quite a stir for a little while, and for the future of aviation in New Zealand it is fortunate that the affair was not a disaster. The pity is that the Wakefield gift machine should have suffered such a fate.

A CIVIL AVIATION MEETING IN SPAIN.

Some time ago there was held on the aerodrome at Getafe a successful aviation meeting under the patronage of the Spanish National Association of Civil Pilots.

A large number of prizes were offered by the President of the Council, by manufacturers, i.e., Sanchez Quinones, Loring, and Elizalde; by the air transport companies, Union Aerea Espanola, and Iberia; by newspapers and reviews, such as *A.B.C.*, *La Nacion*, *El Imparcial*, *Aerea*, *Alas*, and by private individuals.

The De Havilland Moth was very prominent, taking its share of the prizes, as well as attracting a lot of attention by exhibitions of aerobatics. It will be remembered that in January, 1928, three Moths were purchased by Spain, two for the Spanish Aero Club and one for the personal use o its President, the Duque de Estremera.

The Loring Trophy for Aerobatics was won by Senor Ansaldo on a D.H. Moth. The *La Nacion* Cup offered f the highest speed was won by Senor Coterillo on a Junke F.13. There were two prizes offered for general efficien for machines over 80 h.p., the *A.B.C.* Cups being won b Senor Tonda on a Junkers F.13 and the Renault Cup b Senor Ansaldo on a D.H. Moth. A prize was also offer for machines of under 80 h.p. and the Union Aerea Espanc Cup for general efficiency was won by Senor Rexach on Klemm monoplane.

Five prizes were awarded as follows in the handicap: T Marques de Estella's Cup to Senor Rexach on his Klem monoplane; the Corominas Cup to Senor Cotorillo on Junkers F.13; the Aerea Cup and a model of a Rohrba monoplane to the Duque de Estremera; the *El Imparcial* C to Senor Ansaldo on a Junkers G.24, and the Osiris prize Senor Tonda flying a Junkers F.13 monoplane.

A MOTH AIR MAIL SERVICE.

Mr. A. S. White, chief demonstration pilot of the Havilland Aircraft Co. Ltd. delivered early last month first of two Gipsy-Moths which are to operate a Swed night postal service from Malmo to Oslo.

On reaching Malmo night-flying equipment was install and with a Norwegian pilot as passenger Mr. White f to Oslo, by way of Gothenburg, a distance of 350 mi which was covered in just over 4 hours.

The Gipsy-Moth left again for Malmo with the first ma and returned to Oslo next morning with the mails fr Malmo.

This service will operate daily, making the Oslo-Ma journey each evening and the return journey each morni By air this will take about 4 hours, whereas the rail journey takes 14 hours.

WATER AND FIRE RISKS.

When a light aeroplane was taking off at Wind Ontario, the pilot was thrown out into the river. The craft continued to fly over the city on its own for a minutes, and then, fortunately, joined the pilot in the ri

On June 13 an aircraft belonging to Pan-American ways crashed at Santiago de Cuba and caught fire. wireless operator was burned to death, and General Tay an official of the company, was badly burned. Three of passengers were slightly bruised.

HANDLEY PAGE
AUTOMATIC SLOT CONTROL

"That the slotted wing has been found to be particularly useful in landing in water, is the opinion of the Director of the Provincial Air Service, who contends that a pilot is thus enabled to 'flatten out' ten or more feet above the surface, without resulting damage, in a 'pancake' landing. Among fliers it is generally conceded that unless there is a ripple to serve as a guide, it is practically impossible to judge distance accurately in landing on calm water."

"EVENING TELEGRAM,"
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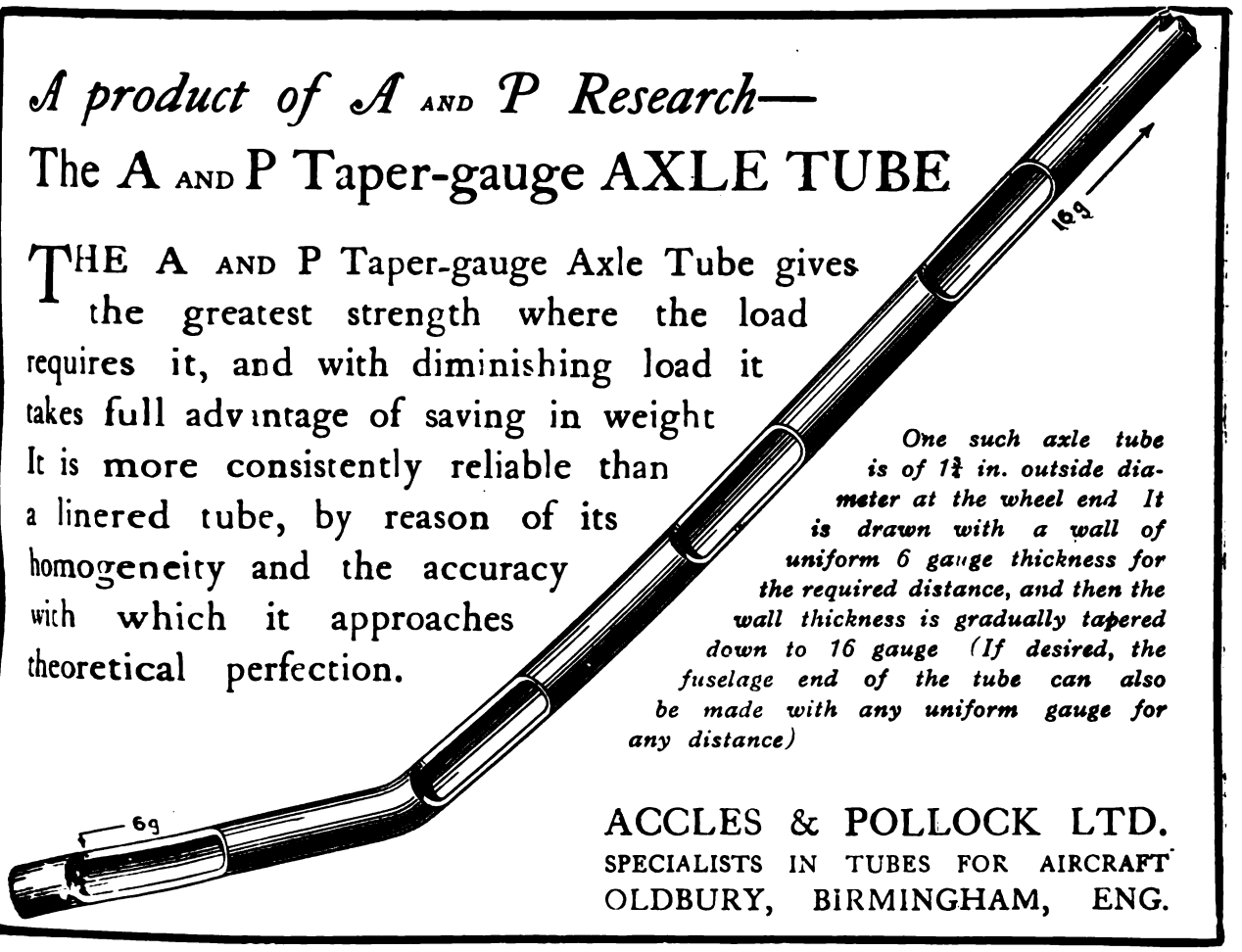

One such axle tube is of 1¾ in. outside diameter at the wheel end It is drawn with a wall of uniform 6 gauge thickness for the required distance, and then the wall thickness is gradually tapered down to 16 gauge (If desired, the fuselage end of the tube can also be made with any uniform gauge for any distance)

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 19; Monday, 45; Tuesday, 42; Wednesday, 41; Thursday, 39; Friday, 37; Saturday, 37.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 85, passengers 732, freight 27 tons. India Route: Inward, passengers 5, mail 675 lbs.; outward, passengers 6, mail 550 lbs.

AIR UNION:

Paris—London and return: Machines 56, passengers 278, freight 19½ tons.

K.L.M.:

Amsterdam—Rotterdam—London and return: Machines 61, passengers 241, freight 14½ tons.

SABENA:

Brussels—London and return: Machines 12, passengers 51, freight 4 tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London and return: Machines 26, passengers 47, freight 5¼ tons.

MISCELLANEOUS:

British machines 19, passengers 15.

Foreign machines 1, passengers 1.

Total number of trips by British machines 104, carrying 747 passengers. Foreign machines 156, carrying 618 passengers.

COMPARATIVE FIGURES.

Week ending July 6:

Machines, 260; Passengers, 1,365; Crews, 527; Total personnel, 1,892.

Corresponding week, 1928.

Machines, 230; Passengers, 1,542; Crews, 447; Total personnel, 1,989.

Corresponding week, 1927:

Machines, 168; Passengers, 1,048; Crews, 310; Total personnel, 1,358.

Corresponding week, 1926:

Machines, 161; Passengers, 1,051; Crews, 207; Total personnel, 1,258.

Corresponding week, 1925:

Machines, 172; Passengers, 851; Crews, 222; Total personnel, 1,073.

Corresponding week, 1924:

Machines, 173; Passengers, 741; Crews, 214; Total personnel, 955.

Corresponding week, 1923:

Machines, 111; Passengers, 542; Crews, 185; Total personnel, 727.

Corresponding week, 1922:

Machines, 145; Passengers, 326; Crews, 235; Total personnel, 561.

Corresponding week, 1921:

Machines, 115; Passengers, 426; Crews, 143; Total personnel, 569.

Corresponding week, 1920:

Machines, 108; Passengers, 232; Crews, 126; Total personnel, 359.

CROYDON NOTES.

Imperial Airways Ltd. have taken delivery of yet a third Argosy. Members of the staff are to be seen patting its flanks and offering it lumps of sugar. At present it merely snorts at these advances, but kindness will win.

K.L.M. expect the new three-Jupiter Fokker quite shortly. This aeroplane carries 18 passengers, two or three crew, and an adequate supply of petrol. It has a really roomy cabin.

The Antediluvian Order of Air Dogs (Duppas Hill Branch) are gravely considering the propriety of adopting coat armour. Several members already wear steel helmets and gilt spurs for cycling. Odds life and s'death! The days of chivalry are coming back. A certain knight who, by the way, breaks a pretty lance, or rather undercarriage, is rumoured to be consulting the Herald's office on the propriety of taking the words "*Je ne crache pas*" as a family motto.

A new and singularly viscid tarry compound has been sprayed over a portion of the grass at the edge of the tarmac apron. Our correspondent idly inspecting it recently found himself rooted to the ground just as a passing acquaintance offered him a drink.

One seems to remember daubing a similar compound on tree trunks at night to catch moths with the aid of a lantern. Light aeroplane owners should take heed.

A gentleman residing on the edge of the aerodrome has threatened to erect a steel mast 40 feet high armed with steel prongs. When he spears an aircraft a bell will ring in the kitchen, and when his mast gets struck by lightning his milk will turn sour.

The K.L.M. London—Berlin—Vienna service, leaving Croydon at 09.00, arriving Berlin 15.10 and Vienna 18.55 every day, is proving popular.

Organ P. Golley, the popular aeronaut to whom Lord Mayors bow the knee, seems somewhat abashed by the publicity given to his exploits in these columns. He refuses to tell us any more funny stories about himself.

The Fokker Works have produced a very useful freight-carrier, which the K.L.M. will make use of. It is a single-engined Jupiter job and is not unlike an improved F.VIIa. It will cruise at 96 m.p.h. and carry a pay-load of 2,733 lbs. with 970 lbs. fuel and 132 lbs. oil. This allows for a crew of two.

The pilot's cockpit is set forward and is not under the wing, and outside access to the cockpit is provided, so that the freight hold is larger and can be crammed from floor to roof.—SPRY.

NEW COMPANIES.

ALLISTON AVIATION COMPANY LTD.—Private Company. Registered July 6. Capital, £100 in £1 shares. Objects: To carry on the business of aircraft dealers, constructors and hirers, carriers of passengers and goods, storers and maintainers of aircraft and other vehicles, organisers and proprietors of aviation instructional schools and classes conducted on the club system of schooling or any other system, etc. The first directors are: W. Alliston, 13, Buckingham Avenue, Whetstone, N.20, motor garage proprietor. A. Alliston, 139, High Road, East Finchley, N.2, clerk. (Both permanent.) Secretary: A. Alliston. Registered Office: 139, High Road, East Finchley, N.2.

AEROTANK SYNDICATE LTD.—Private Company. Registered July Capital, £1,000 in 1s. shares. Objects: To acquire options to purchase patent rights for Great Britain, its Dominions, Colonies and Dependencies, and/or the U.S.A., numbered 189100, 240747, 27929, 259659 and 294424, or any of them relating to fuels and other tanks, pipes and the like, their linings or coverings and to adopt an agreement with P. Poberejsky. The subscribers (each with one share) are: H. Pizey, 110, Cannon Street, E.C.4, A.C.A. W. J. Kimmins, 16, Mortgrave Road, Penge, S.E., company secretary. Secretary: W. Kimmins. Solicitors: Ernest Salaman and Co., 62, London Wall, E.C.2. Registered Office: 65/70, Cannon Street House, 110, Cannon Street, E.C.

SATISFACTIONS.

DE HAVILLAND AIRCRAFT COMPANY LTD.—Satisfaction in full on May 10, 1929, of mortgage dated July 25, 1923, further charge dated July 1924, and mortgage dated Oct. 3, 1927, securing £12,000, £6,000 and £5,600 respectively.

PERSONAL NOTICES.

DEATHS.

BOOTES.—On July 2, at Netheravon, as the result of a flying accident, Ronald Yule Bootes, Plt. Off., R.A.F.

Mr. Bootes joined the R.A.F. with a short service commission March, 1928, and was posted to No. 1 Flying Training School, Netheravon, for a course of instruction.

de DOMBASLE.—On July 7, at a nursing home, Guy C. St. P. de Dombasle, O.B.E., Wing Commander, R.A.F.

Wing Commander de Dombasle was born in Calcutta in 1[illegible]. He joined the Gloucestershire Regiment in 1900 and saw service in South Africa. When War broke out in 1914 he was in Canada and immediately joined the 5th Canadian Infantry.

In February, 1916, he was seconded to the Royal Flying Corps as Observer. At the time of the Armistice he was Lieutenant-Colonel R.A.F., and in August, 1919, he was appointed to a permanent commission with the rank of Wing Commander. He was made an Officer of the British Empire in June, 1919, for distinguished services rendered during the War. In April, 1920, he was appointed to command No. 8 Wing at Marske and from there went to Group H.Q., Kenley.

In July, 1922, he was posted to H.Q., 'Iraq Command, for Air Duties. From October, 1923, to December, 1924, he was on the staff of the Station Commandant, Hinaidi. From January, 1925 to February, 1927, he commanded the R.A.F. Station at Northolt, and in August, 1927, he was appointed Inspector of Recruiting, R.A.F.

[Wing Commander de Dombasle, though not a young man, was one of the finest players of Lawn Tennis in the R.A.F. He never won a championship, but he was always there or thereabouts. He was a fine all-round sportsman, and won the affection and respect of those who served under or with him.—C. G. G.]

MARRIAGE.

ROPE—JOLLY.—On July 2, at St. Pancras, Ipswich, Sq. Ldr. I. Rope, R.A.F., son of the late Dr. Rope and Mrs. Rope, The Pr[illegible] Shrewsbury, to Lucy Doreen, daughter of Mr. and Mrs. W. O. [illegible], The Grange Kesgrave, Ipswich.

FORTHCOMING MARRIAGE.

GLENN—BEATH.—The engagement is announced between F[illegible] William Lowry Glenn, R.A.F., son of the late the Rev. William G[illegible] of County Tyrone, Ireland, and Mrs. Glenn, and Christian, daughter of David Leslie Beath, O.B.E., M.R.C.S., L.R.C.P., and [illegible] Leslie Beath, of Clan House, Bath.

BIRTH.

SUTTON.—On July 6, at Wellwick, Wendover, to Margaret Gri[illegible] wife of Wing Cdr. B. E. Sutton, D.S.O., O.B.E., M.C., R.A.F.—[illegible]

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All Advertisements for this column should arrive at this office by 6 p.m. MONDAY, to ensure insertion.
For the convenience of Advertisers, replies can be received at the office of THE AEROPLANE, Cannon House, Pilgrim Street, London, E.C.4.
Special PREPAID Rate—18 words 4/6, 3d. per word after. 13 insertions, 18 words, 4/-; 26 insertions, 18 words, 3/6; 52 insertions, 18 words, 3/-, 2d. per word after. Situations Wanted ONLY—18 words 1/-.

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Coley Ltd., Aircraft Surplus. Aeroplane landing wheels, new Palmer Cord Tyres, and tubes, 700 × 75 m.m. set two wheels and axle complete, 50s. carriage forward; KLG, F9 Plugs, new, in maker's boxes, doz. 9s. 9d.; Ogilvie Airspeeds, pressure heads complete, new 8s. 3d.; Smith's Indicators, 600-2,600 revs., 3 ft. drive, 22s. 6d.; Cross Levels, 1s. 6d.; Dashboard new spot lamps, 2 volts, length of wire, 1s. 9d. Above postage paid. Free list obtainable. Coley Ltd., Ordnance Works, Queen Elizabeth Road, Kingston-on-Thames. 'Phone, 0365.

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The Aircraft Operating Co. Ltd., 8, New Square, Lincoln's Inn, London (Holborn 8131), and Bulawayo, Southern Rhodesia; Cairo, Egypt; Rio de Janeiro, South America: Contractors to the Ordnance Survey. Laboratories and Subsidiary Company for aerial photography in the British Isles, Aerofilms Ltd., Colindale Avenue, Hendon (Colindale 6581).

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THE AEROPLANE

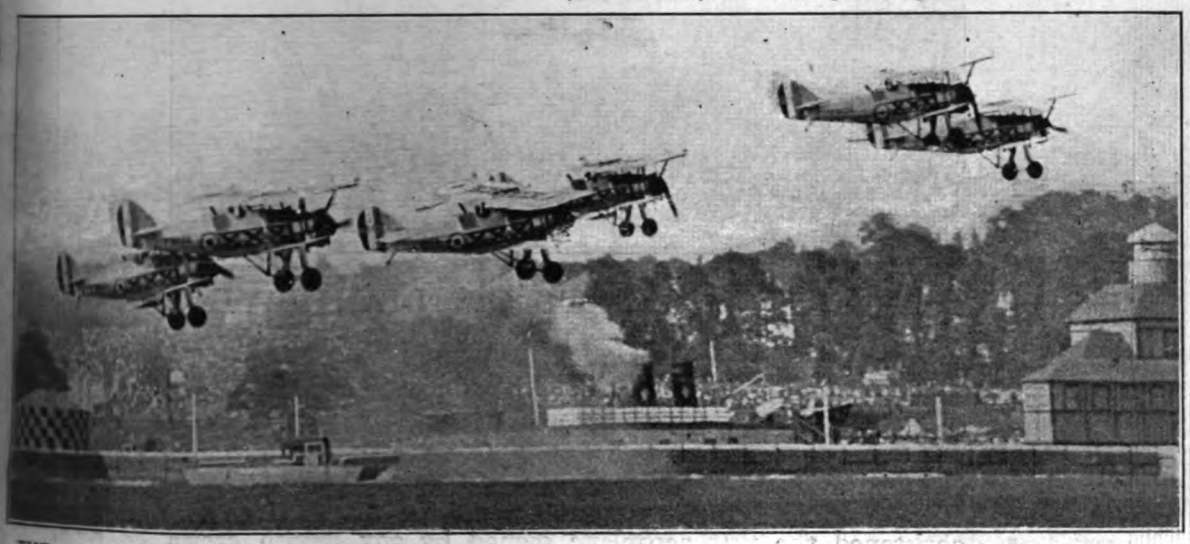
INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. G. Grey

Vol. XXXVII. No. 3. SIXPENCE WEEKLY. [Registered at the G.P.O as a Newspaper.

"CELER ET AUDAX."

(The Motto of No. 29 (Fighter) Squadron, R.A.F.



THE ENEMY APPROACHE :—No. 29 Squadron, Armstrong Whitworth Siskins (Jaguar engines), led by Sq. Ldr. M. L. Taylor, A.F.C., flying to the attack on the tarry, trouser-hitching seaport of Hendon, on July 13.

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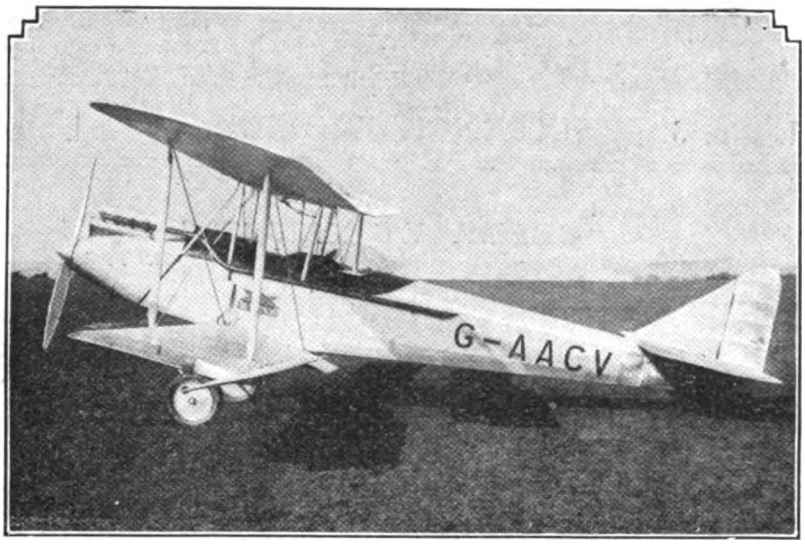

TANGANYIKA STARTS CIVILIAN FLYING WITH AN AVIAN

On March 16th a new page was written in the history of Colonial aviation. On that date the Governor of Tanganyika christened the first aeroplane owned by any British crown colony, protectorate or mandated territory and used for survey purposes only. Safety, dependability, ease in flying—all these factors had to be considered in the selection of the machine. The aeroplane chosen was an Avro Avian.

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Subscription Rates, post free: Home 3 months, 7s. 6d.; 6 months, 15s.; 12 months, 30s. Abroad, 3 months, 8s. 9d.; 6 months, 17s. 6d.; 12 months, 35s. Canada, 1 Year, £8. U.S.A., 1 Year, $8.50. Entered as second class matter at the New York (N.Y.) Post Office.

ON THE R.A.F. DISPLAY.

For several reasons the Royal Air Force Display of July 13 is notable beyond those which have gone before. To begin with, it was the tenth Pageant, Display, Review, or whatever the authorities like to call it, which has been held by the Royal Air Force. And Saturday proved that in those ten years the Display has become one of the great events of the London Season.

How many people and how many motor cars there were at Hendon on Saturday has not yet been declared. There were certainly many more than at any previous Display. Admittedly the beautifully fine weather had something to do with the increase in the crowd. But such a crowd could not be drawn unless the British Public had become widely interested in flying in general, and in the Royal Air Force in particular.

The depth of the Nation's airmindedness will probably be proved during the week by the attendance at Olympia. But at any rate the R.A.F. Display can now be accepted as an annual attraction ranking with the Royal Tournament at Olympia and the Aldershot Tattoo.

Another reason why this particular Display should mark a point in History for all who are at all intimately concerned with Service flying is that it is the last Display which will be held while Marshal of the Royal Air Force Sir Hugh Trenchard is Chief of the Air Staff. In effect the Air Staff as such does not organise the Display, but the organising is done by a Committee which is for all intents and purposes appointed by the Air Staff. And anyhow nothing happens in the Air Force without the knowledge of the Chief of the Air Staff. He is indeed, as His Royal Highness the Prince of Wales said at the R.A.F. Dinner on Friday night, the Father of the Air Force. And therefore there was a peculiar fitness in the fact that the last Display to be flown under his care should prove to be the most brilliant of all.

Some of the more superstitious of the Air Force looked forward anxiously to this particular day because it happened to be the thirteenth of the month. They consoled themselves with the thought that at any rate it was not a Friday also. But some of them said grimly that after so many years without an accident there must be a crash at the Display soon, and that surely it must come on the thirteenth. Happily they were all wrong, for in spite of the intricacy of the manœuvres, and the multitude of the machines, and the particularly bumpy air there was never anything which looked like being an unpleasant incident.

Reason for Repetition.

Naturally there were those who complained that there was nothing new at the Display and that we had seen it all before. But one firmly believes that the Display has got to such a point, like the Tournament at Olympia, that people would be disappointed if they did not see the same things again, or almost the same things.

Moreover, the old-timers who did these same things eight or nine or ten years ago must remember that now they are being done by pilots who were little boys at preparatory schools when they used to consider themselves star turn aviators. And there is much satisfaction in seeing that these little boys have now grown up not only to do the same things which the old-timers used to fancy themselves for doing, but to do them better and more cleanly on machines which are heavier, and carry more equipment, and are thereby more difficult to handle, and are, in some cases at any rate, faster. In other words, if the Air Force never did anything new at its annual Display, it would continue to prove that each successive generation of pilots is at any rate just as good as anything we have ever had in the past, and that there were no legendary giants in those days.

Manœuvres which in the early days of R.A.F. Pageants were looked upon as things which could only be done by

ROYAL INTEREST.—H.R.H. the Prince of Wales, K. G., who is a Group Captain in the R.A.F., watching the Display at Hendon on July 13. Immediately behind His Royal Highness are Marshal of the Royal Air Force Sir Hugh Trenchard, Chief of the Air Staff, and Lady Trenchard.

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men who had stared death in the face in war, and who consequently regarded any kind of peace-time flying as a reasonable risk, are now done as a matter of course by boys who only left school three or four years ago. And as a matter of fact nothing that is ever done at the Pageant is half so paralysing to watch as are the things which those same boys do over their own aerodromes,—especially when their particular Commanding Officer happens to be away on leave.

SEEING OURSELVES AS OTHERS SEE US.

On such an occasion as this, the description of our Tenth Display, there seems good reason for all of us who are on the inside of Service Aviation to see ourselves as others see us. One has therefore taken the liberty of lifting bodily from three of the papers which have somewhere about the largest circulations in this country and in the Empire,—and therefore probably represent between them the outlook of the majority of the people of this country,—articles which show how they regard the Display.

These papers are *The Observer*, which certainly represents the outlook of the good solid Englishman who is the backbone of the Empire; *The Sunday Express*, which may perhaps be taken as catering for those who want something rather more sensational; and *Punch*, which represents all that is best and sanest and most humorous in the English character.

Here is the editorial pronouncement from *The Observer*:—

WINGS AND THE MAN.

ARMS AND PEACE.

We write with the noise of planes in our ears. To-day is Air Force day, and never, surely, have conditions been more favourable to spectacular effect. The weather has given Lord Thomson a magnificent send-off. He left behind him a good record during his previous term of office. He now succeeds a Minister whom the Air Service held in deserved honour; we look to him to facilitate progress and to maintain efficiency.

There are critics who denounce the Hendon displays as militarist. We have no sympathy with them. So long as we continue to live in a world in which wars are theoretically possible, our Air Service must be a fighting service. The very conditions of our Empire, its long and disturbed Asiatic frontiers, its vast half-pacified African possessions, insist upon the development of the Service as a fighting arm.

THE AIR MINDED PREMIER.—The Rt. Hon. J. Ramsay MacDonald, M.P., Prime Minister, talking to the Rt. Hon. Arthur Henderson, Secretary of State for Foreign Affairs, at the R.A.F. Display.

CABINET INTEREST.—The Foreign Secretary and Mrs. Henderson and the Rt. Hon. Philip Snowden, Chancellor of the Exchequer, watching the flying at the R.A.F. Display at Hendon.

We yield to none in our zeal for disarmament in the air no less than on land and sea. But so long as air armaments are maintained, Britain cannot be content with second place. Our pilots and craftsmen are at least the equals of any in the world. In no State have they so vital a part to play in the general scheme of defence. That they should be crippled in their function by shortage of machines or inadequacy of equipment is intolerable. Our expenditure on armaments is high. That it should, nevertheless, leave us inferior in the essential element is a cardinal blunder in policy. Nothing short of air equality will serve our national and Imperial needs, and to attain it we are ready to face some abasement of our Naval Estimates.

We go further. Flight has now become an integral part of our civilisation. We are just beginning to realise the vast cultural importance of the air services which are bringing continents into touch. As an instrument of economic progress, too, the air survey has already proved its value in Canada and in tropical Africa. By its aid the preliminary work of years is reduced to weeks, and is accomplished with greater certainty and at a fraction of the cost. In the scheme of Empire development now at last launched, the Air Force will surely find great work to do.

But besides co-ordinating and amplifying man's activities, flight is widening the range of his knowledge. It is a striking thing, and significant of the essential unity of human history, that a new achievement which looks so confidently to the future should yet have potently contributed to the re-discovery of the historic past. Air archæologists have taught us the fact, not without comfort in a world so full of change, that where man's hand has once been busy its touch is never wholly obliterated. No civilised land has undergone more sweeping transformation than our own. How much survives to-day of the England of 1750? Yet the air is recovering for us the outline of the Britain which Rome laid out fifteen hundred years before the industrial revolution.

Let us not shut our eyes to the moral of these facts. They proclaim that if we are to retain our high place in the world we must be pioneers in the use of air machines. They remind us, too, that the air habit is breeding a new type of man with novel aptitudes and an outlook of his own. Official and voluntary agencies cannot do too much to extend this habit and to develop its consequences.

The Prime Minister has set a notable example. We congratulate him on his flight from Lossiemouth to London undertaken when men's nerves were shaken by a disaster. The attacks upon him for his use of Service machines have happily miscarried, have indeed brought us nearer the day when a plane will be permanently at the Prime Minister's disposal. And if the coming European conference should be held abroad, it is surely a matter of course that a flight of aeroplanes shall be at the service of the British delegation.

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What the Press says!

"The record of the Napier engine is really marvellous."
Graphic—11th May, 1929

"In reliability, lightness, power, compactness and versatility this engine excels any prime mover in existence."
Tatler—8th May, 1929

"No other engine in the World has put such a list of notable achievements to its credit within such a short space of time."
Times Trade & Eng. Supplement 25th May, 1929

"When Englishmen can make such engines as these we may still claim to be in the van of mechanical invention."
Morning Post—27th April, 1929

"It must rank as one of the engineering masterpieces of the decade."
Yorkshire Post 13th March, 1929

Some recent Napier Achievements

The first non-stop flight from England to India was accomplished by a Royal Air Force Fairey monoplane fitted with Napier engine—4,130 miles in 50 hrs. 38 mins.

The first formation flight from England to Australia was achieved by four Royal Air Force Supermarine "Southampton" flying boats each fitted with two Napier engines—180,800 engine miles without mechanical trouble.

The highest speed in the air was accomplished by Flight-Lieut. D. D'Arcy Greig with a Supermarine Seaplane with Napier engine—speed 319½ m.p.h.

The highest speed on land was set up by Major Sir Henry Segrave on his Irving-Napier special with Napier engine—speed 231 m.p.h. Capt. Malcolm Campbell set up world's land speed records for 5 miles (216½ m.p.h.) and 5 kilometres (211 m.p.h.) with his Napier-engined car.

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So wrote the editor of *The Observer* on the day of the R.A.F. Display for his readers on Sunday.

This is a notable pronouncement. It is slightly ponderous, as befits the dignified Englishman. But it does express very exactly that healthy Imperialism which deep down inside is as much part and parcel of the members of our Labour Government as it is of the oldest Die-Hard Tory.

With *The Observer's* reference to the Prime Minister all of us cordially agree. Mr. Ramsay MacDonald deserves every congratulation for taking to flying at his age, and for thus showing that he is as ready to trust his personal safety to the Air Force as he is to trust to it the safety of this nation to whose governing our King has been pleased to call him.

And the more our Labour Ministers see for themselves of our First Line of Defence the more they will learn to understand the spirit of the King's Armed Services. Learning the meaning of air-power in this way will do them all far more good than if they were merely carried about the country by taxi-planes even of the most luxurious.

Sensationalism.

The Sunday Express chose to commit its description of Hendon to Viscount Castlerosse, an Irish peer who supplements his income by writing Society gossip. Like so many ready-witted Irishmen Lord Castlerosse is more concerned with immediate verbal effect than with either good taste or accuracy,—and his witticisms are often of the kind best described as cheap. This may explain perhaps his appreciation and quotation of somebody who he says that he met in the Aero Club enclosure at Hendon, a man who in response to Lord Castlerosse's question "Well, what does this show cost?" replied without altering his expression or emphasising his voice "Three lives."

Lord Castlerosse's informant is reported as continuing:—

"Flying men lead a life that is just as humdrum as that of the motorist. All these people around me have turned up just to see these stunts because they think there is something wonderful, something magical in flying—something magical. And so there is, but we have just about touched bottom in the possibilities.

"I could not help feeling that in two years time we will see something that is nothing like what we watched to-day with heads upturned until our necks were almost out of joint.

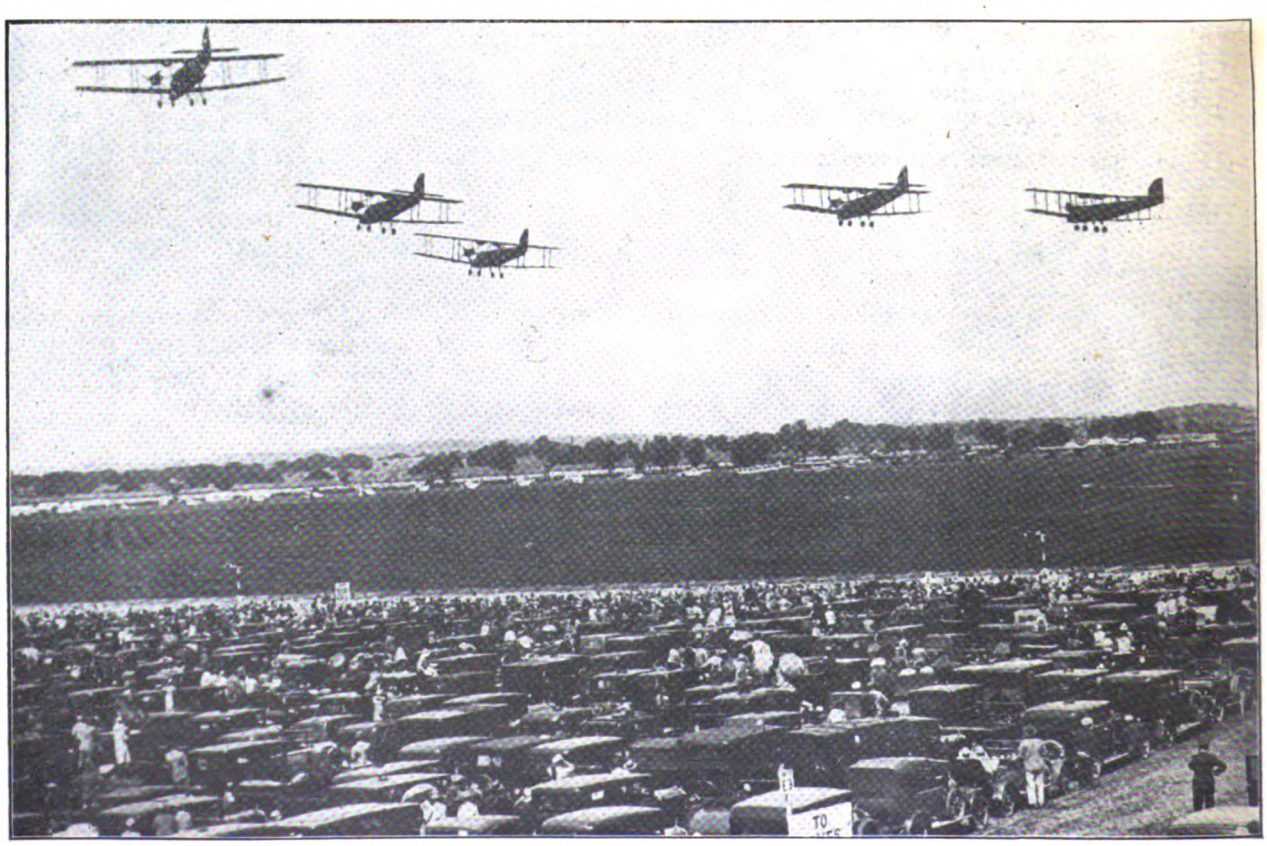
"Thirty years ago you could have collected an enormous crowd to see a motor-car travel at sixty miles an hour. That feat is too ordinary these days. It will be just the same with flying.

"What do these stunts such as we saw to-day really mean? They mean that the pilots are cutting down the margin of safety. What thrills us to-day will bore us to-morrow. Flying has already become one of the everyday episodes of life abroad."

There is just enough truth in this to be slightly dangerous. Three pilots were in fact killed while practising manœuvres in connection with the Display. But they would have been performing these manœuvres exactly the same if there had been no Display, for the Display is only the final stage of the Annual Training of the R.A.F. And they would have stood at least as good a chance of being killed while doing that training.

ROYAL ARRIVALS.—Their Royal Highnesses Group Captains the Prince of Wales and the Duke of York arriving at Hendon for the R.A.F. Display.

The manœuvres which are served up as exhibition stunts for the crowd are in fact a mild form of the manœuvres which every pilot would have to perform to save his own life in an air fight. As one has already said, what the pilots do at Hendon is nothing to what they do over their



NIGHT BOMBERS.—A Squadron of Handley Page Hyderabads (Napier Lion engines) coming in.

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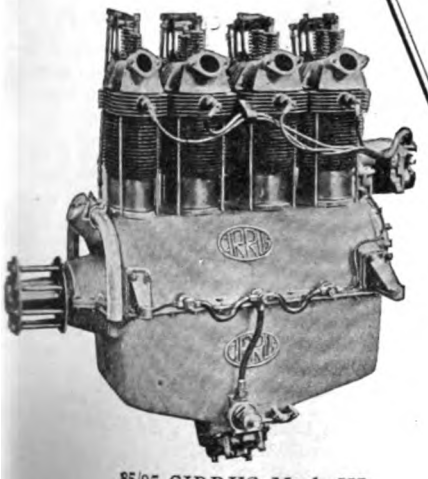

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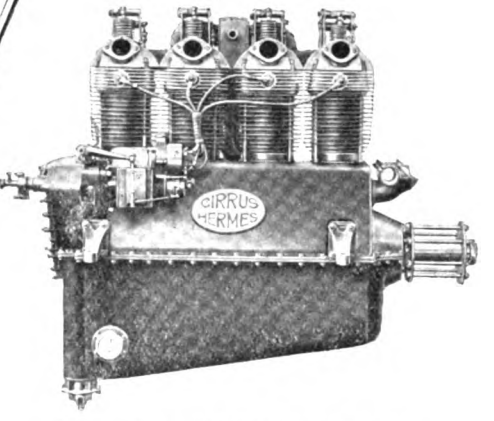

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own aerodromes. And so, to say that the pilots are cutting down the margin of safety at Hendon is sheer nonsense.

A little further on Lord Castlerosse quotes a pilot, who he says earned distinction during the War and added to his honour afterwards, as saying:

"These people are here to witness an accident. It is the same old game as the bull-fights in Spain and the gladiators in Rome. Now we have the airmen at Hendon. Every year they will cut the margin of safety down to please the multitude."

This again is a partial truth. There are people in the crowd who hope for an accident, but the vast majority are there because they admire the skill and address of the pilots. Moreover pilots say these things without in the least meaning them. One pilot remarked jestingly the other day that probably the best way to give a crowd really good value would be to drop a parachute with a dummy stuffed with strawberry jam quite close to the crowd and then arrange that the parachute did not open. But that was only his fun, and it is a particularly English form of humour.

The most truthful comment for which Lord Castlerosse was responsible is his statement that "Watching flying these days is like watching cricket. To appreciate its finer points one must understand the game."

So one recommends to *The Sunday Express* that it sends to the next R.A.F. Pageant somebody of better taste who does understand the game. By so doing it would make itself more popular with its readers and would perhaps do something to help the progress of those vehicles which it is pleased to call airplanes.

The Essence of England.

After that to turn to the little poem in *Punch* is pure joy. One suspects the writer of the poem as being very much on the inside of Service Aviation. Even so, the Editor of *Punch*, who is probably the finest judge of his fellow countrymen in the World, recognised it as representing the truth, the whole truth, and nothing but the truth, about the Display.

It is the worthiest thing that has been done about it. And even here one strikes our slightly grim British humour in the reference to "The brightest lines of *Locksley Hall*," one of the World's dullest poems but for that reference to the "ghastly dew" rained "from the nations' airy navies grappling in the central blue."

DISCRETION.—A Supermarine Southampton of No. 201 (Flying Boat) Squadron, R.A.F., from Calshot, decides not to alight on the blue waters of Hendon Harbour.

At Hendon.

The Air Display, it would appear,
Grows more exciting every year;
And we who gratefully descend on
The broad champaign of breezy Hendon
May witness with a pleasant thrill
Yet bolder feats and subtler skill.
With sullen dronings deep and gruff
The heavy bombers do their stuff;
The speedy seaplanes let it rip,
The saucy Siskins reel and dip
In mimic combats which recall
The brightest lines of *Locksley Hall;*
And every sort of agile 'plane
Gyrates about the vast inane,
Providing palpitating shocks
For pretty girls in summer frocks.

While wondering laymen press to see
This brave aërial pageantry,
The seasoned experts puff their pipes
And quiz the latest super-types.
Their sharp discriminating eye
Explores the wherefore and the why
Of gadgets which I must confess
To me are wholly meaningless.
Their countenances quickly kindle
At sight of some new slot or spindle,
Or they'll exclaim with lively joy,
"Observe that trunnion block, dear boy;
Now what could be more neat and snappy?"
And off they trot supremely happy.

Elsewhere (a long-awaited treat)
Old friends from distant Stations meet;
They slap each other on the back
And talk of evenings in 'Iraq,
Recalling with a pleasant glow
Binges and japes of long-ago.
Oblivious of the stunts and loops
They chat in animated groups,
Or seek the cool refreshment pav.
And ask each other what they'll have.

Thus out at Hendon everyone
Enjoys his own congenial fun.
The simple soul may stand and gaze
In admiration and amaze;
The Service veteran grins with glee
And greets a pal from oversea;
The keen technician smacks his lips
And resolutely gets to grips
With quadrant arms and pivot clips;
But they are all agreed on this—
That here's a show too good to miss.

C. L. M.

So much for ourselves as other people see us. Now let u return to the aeronautical family, so to speak, as it wer

THE PAGEANT BEGINS.

In an earnest endeavour to celebrate the Tenth Pagean or Display, by getting a front row place for the first tim for the editorial automobile we arrived at Hendon at 10.1 hours. A charming young officer informed us that onl about four cars had gone through the gates at that time.

That gate must have been unpopular, for when we g inside the cars stretched all the way along the front ro from the old main gate at Colindale Avenue right up to th Royal Enclosure. And there were at least three rows cars half way up the hill. But we did strike a front sea exactly in front of the R.A.F. ensign.

By 11.00 hrs. the cars were eight deep behind us and b midday all the southern end of the aerodrome was stuffe with cars. Any that came in after that must have bee pushed out to Edgware or somewhere in that direction.

By lunch-time the wide promenade between the front ro of cars and the double row of cattle-pens which are honorif cally called boxes was about as easy to penetrate as the foo path of Kensington High Street on the first day of th Summer Sales. Standing on the top of the hill one coul look straight down over the heads of the crowd, like moving sea. At one time a curious ripple like a wave slowl moved along the heads of the crowd. Looking closer th turne out to be a raising of hats extending from one sid of th promenade to the other, and then with glasses on made out the form of Sir Hugh Trenchard all alone strol ing down the hill and being greeted by all the past an present Air Force people in plain clothes. Somehow i reminded one of a battleship and its bow-wave.

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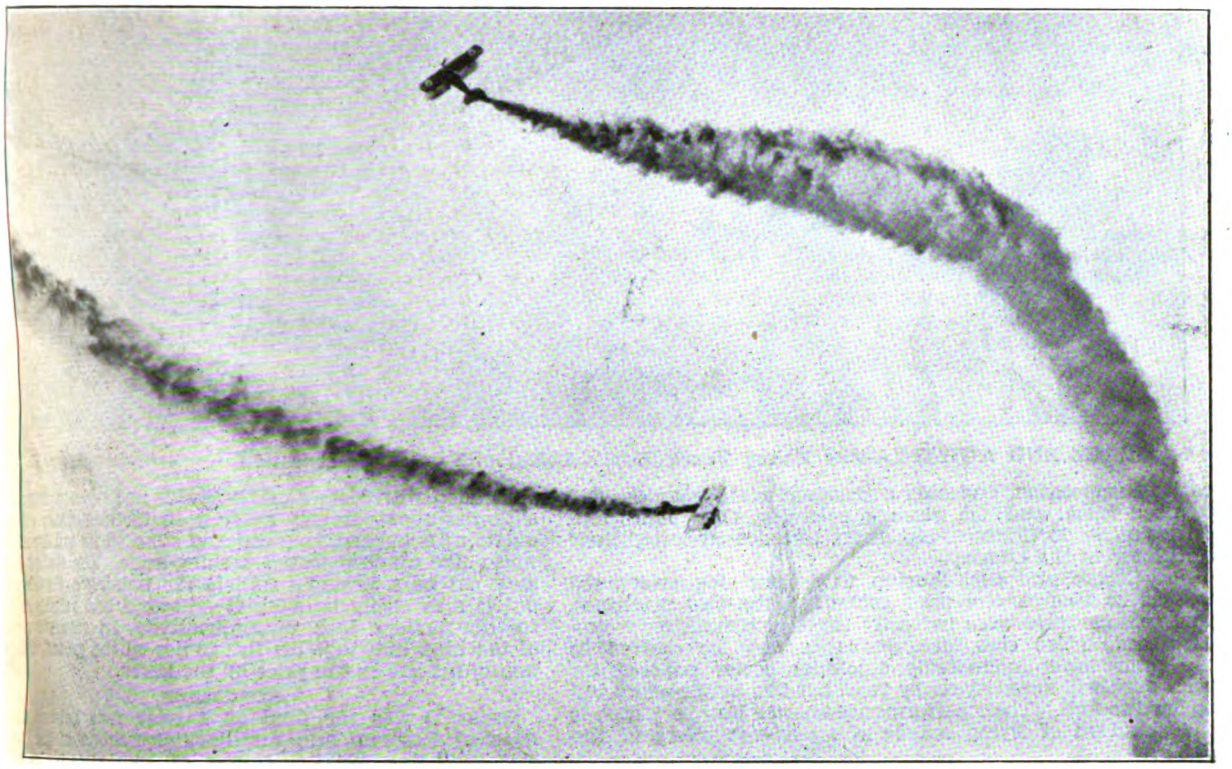


SMOKE WITHOUT FIRE.—Aerobatics with coloured smoke by two pilots of the Aeroplane and Armament Experimental Establishment, Martlesham, flying Gloster Grebes (Jaguar engine).—(*"Aeroplane" photograph.*)

THE FIRST FLYING.

At about 10.30 hours, long before the proper time for opening any programmes, the condemned kite balloon was sent aloft and a formation of Fairey Flycatchers commited an entirely unprovoked attack on it. Somebody in the Organising Committee must have felt that there were already so many people in the enclosures that some sort of show ought to be put up to entertain them.

Every fresh arrival seemed to think that he or she ought to have been the first on the ground and greeted those who had got front row positions for their cars by asking whether they had been there all night. If things go on at this rate we shall arrive at the point of parking our cars in Colindale Avenue and the new arterial roads the night before, like a theatre queue for a first night. And the crowd will have to be put in the aerodrome while the machines take off from the alleys which are now used as promenades.

Anyhow, it was all very jolly and everybody was in great form and during the couple of hours before the first part of the show began there was plenty of time to meet friends and talk over old times,—exactly as in the *Punch* poem. And then on the stroke of twelve up went the first machine in Event A.—C. G. G.

THE LETTERED EVENTS.

BY C. M. MCALERY.

The programme of the R.A.F. Display is divided into two sections, the Lettered or Morning Events and the Numbered or Afternoon Events. The original scheme for holding the Display between the hours of 3 and 6 broke down several years ago, partly because thousands of spectators insisted on arriving at Hendon soon after breakfast and the authorities decided that such enthusiasm ought to be rewarded, and partly because the activities of the R.A.F. are so varied that it is impossible to give the Public an outline of their range in less than six hours.

Because it would be discourteous to those members of the Royal Family who invariably honour the Display with their presence, to ask them to appear at the ninth item instead of at the first, the programme is arranged accordingly. The most important and spectacular events are supposed to be in the afternoon, so that the greatest number of spectators may see them. Certain of the events are shifted year by year with the result that those who cannot be there before 15.00 hours will eventually see everything if they only persist in their attendance. This year, for the first time, the message-picking-up by an Army Co-operation Squadron, was performed in the afternoon to the great interest of many who had not seen it before.

Those who think that nothing of importance happens in the morning should disillusion themselves. Several of the eight Lettered events equal in every way the fourteen Numbered Events of the afternoon.

THE RESERVISTS.

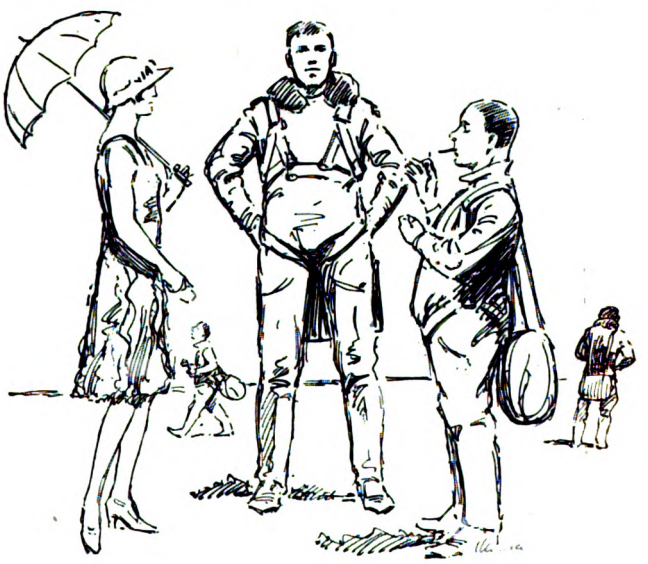
The Display started at 12.00 hours with the Reserve of Officers' Race. This Race was between pilots of the Reserve of Air Force Officers trained at the various training centres and schools. The course was aproximately 28 miles and the pilots flew standard training Avro Lynx aeroplanes. The result of the race depended on the skill of the pilot plus the efficiency of the mechanics in keeping their machines in first-class condition.

The competitors were:—Flg. Off. F. Ellam, Reserve Flying School of the De Havilland Aircraft Co. Ltd., Edgware; Flg. Off. E. V. Culverwell, Reserve Flying School of the Bristol Aeroplane Co. Ltd., Filton, Bristol; Flg. Off. R. N. Riddell, Reserve Flying School of Sir W. G. Armstrong Whitworth Aircraft Ltd., Coventry, and Flg. Off. H. T. Messenger, Reserve Flying School of the North Sea Aerial and General Transport Co. Ltd., Brough, Yorkshire.

The winner, most appropriately, was Flg. Off. H. T. Messenger,—who might now be known as Mercury.

STAR TURNS.

Event B was, in the opinion of a number of experts, the finest piece of flying in the whole day. It was described in the programme as "Individual Aerobatics." The pilots, Flg. Off. J. Clarke and Sjt. T. W. Morton, of No. 29 (Fighter) Squadron, were the runners-up in the Fighting Area Aero-



The return of the Bustle

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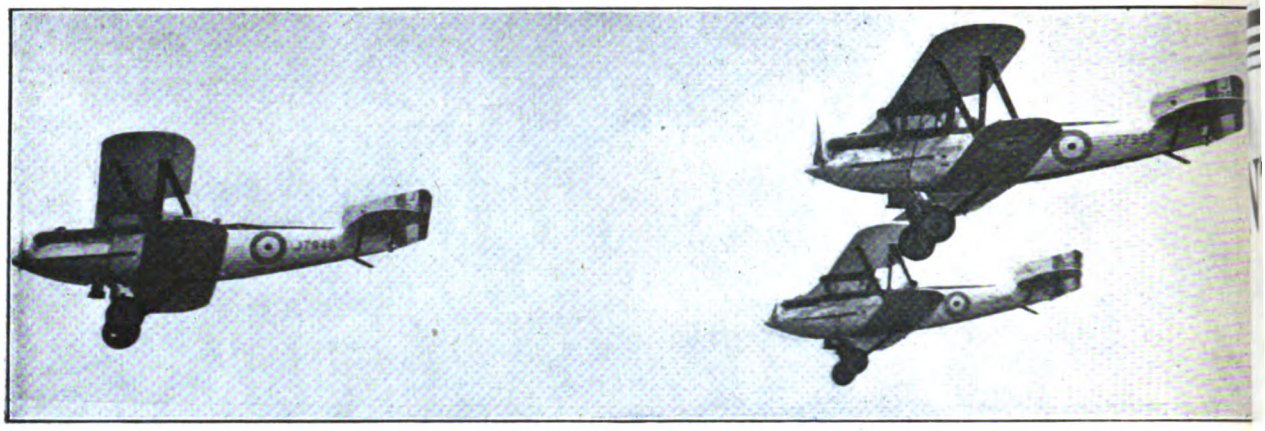


GRACE AND AGILITY.—The Fairey Foxes (Curtis D.12s) still provide a sensation. —(*"Aeroplane" photograph.*)

batics Competition, and only a Solomon could have decided between them, and the winning pair, Flg. Offs. Jones and Purvis of No. 23 (Fighter) Squadron, who demonstrated their skill later in the Display.

Mr. Clarke and Sjt. Morton flew their Jaguar-engined Siskins as though one pilot controlled the two machines. Their manœuvres were perfectly timed and faultlessly synchronised. More elaborate aerobatics may be evolved in the future and undoubtedly machines better adapted for such work will appear year by year, but two better pilots will be hard to find. Their performance showed how very high is the standard of flying among the post-war pilots of the R.A.F.

Every Fighter Squadron in the Service entered two pilots for the Aerobatics Competition after a series of eliminating trials within each Squadron. And even then the margin between the best Squadron and the worst was so narrow as to be indefinable to the ordinary inexperienced spectator.

No. 29 (Fighter) Squadron is living up to its distinguished past. The Squadron was formed in March, 1916, and in August, 1918, created a Squadron record for the Armies in France by destroying 51 enemy aircraft. The late Major J. T. B. McCudden, V.C., won the Military Medal and received a commission in the Field while serving with No. 29 Squadron. Aerobatic flying is an essential part of Service flying training, and skill in its performance is a sign of military efficiency.

THE ROCKING HORSE.

Event C was a demonstration of slow flying in a D.H. Gipsy-Moth fitted with slots by Sq. Ldr. D. S. Don, Officer Commanding No. 24 (Communication) Squadron. The Moth is now standard Service equipment for training and communications and Sq. Ldr. Don showed how easily it can be controlled with slots at slow speeds and when stalling. slithered about the sky defying all the elementary rule aviation; it bucked, bounced and stood on its tail for all world like an intoxicated rocking-horse. The slotted M may not be a valuable vehicle for training a Service p but it may easily be a kindly disposed and reliable mo for his nursery days, or alternatively, an emphatic me of teaching him that his future lies on the ground, with taking his life as the price of the lesson.

AUXILIARIES.

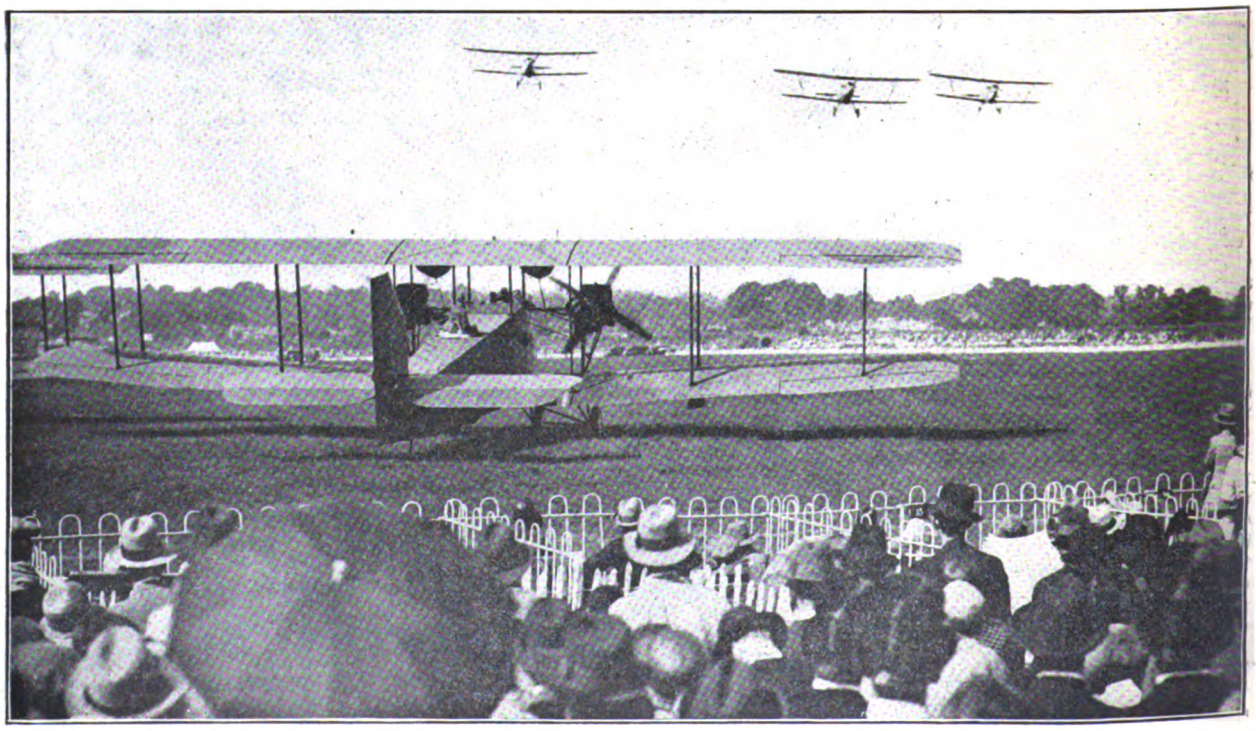
Event D was the final of a relay race between Ca (Special Reserve) and Auxiliary Squadrons of the R.A The race was over a course of approximately 14 m and each Squadron used three Lynx Avros.

The eliminating rounds of this competition were held fore the Display in three different districts. In the f round No. 601 (County of London) Squadron beat No. (City of London) Squadron. As a matter of fact No. Squadron won the race but was disqualified, one of the pil having failed to round a turning point properly. No. (City of Glasgow) Squadron had to race No. 603 (City Edinburgh) Squadron. The winner of this race was beat by No. 503 Squadron. No. 503 (Special Reserve) Squadr Waddington (Lincoln), beat No. 504 (Special Reserve) Squa ron, Birmingham.

The final of the Display, therefore, was between No. 6 Squadron and No. 503 Squadron and resulted in a win f the London Squadron. The winning team were Flg. O Carken, Flg. Off. Haward and Flg. Off. Schreiber.

GUNNERY-OBSERVATION.

Event E was a demonstration of Artillery Observatio This was intensely interesting for those who took the troub to read their programmes and follow what was going o



DAY AND NIGHT BOMBERS.—The Fairey Foxes comi ng in over a Hyderabad.

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PRODUCTION.—Westland Wapiti Fuselages in course of construction.

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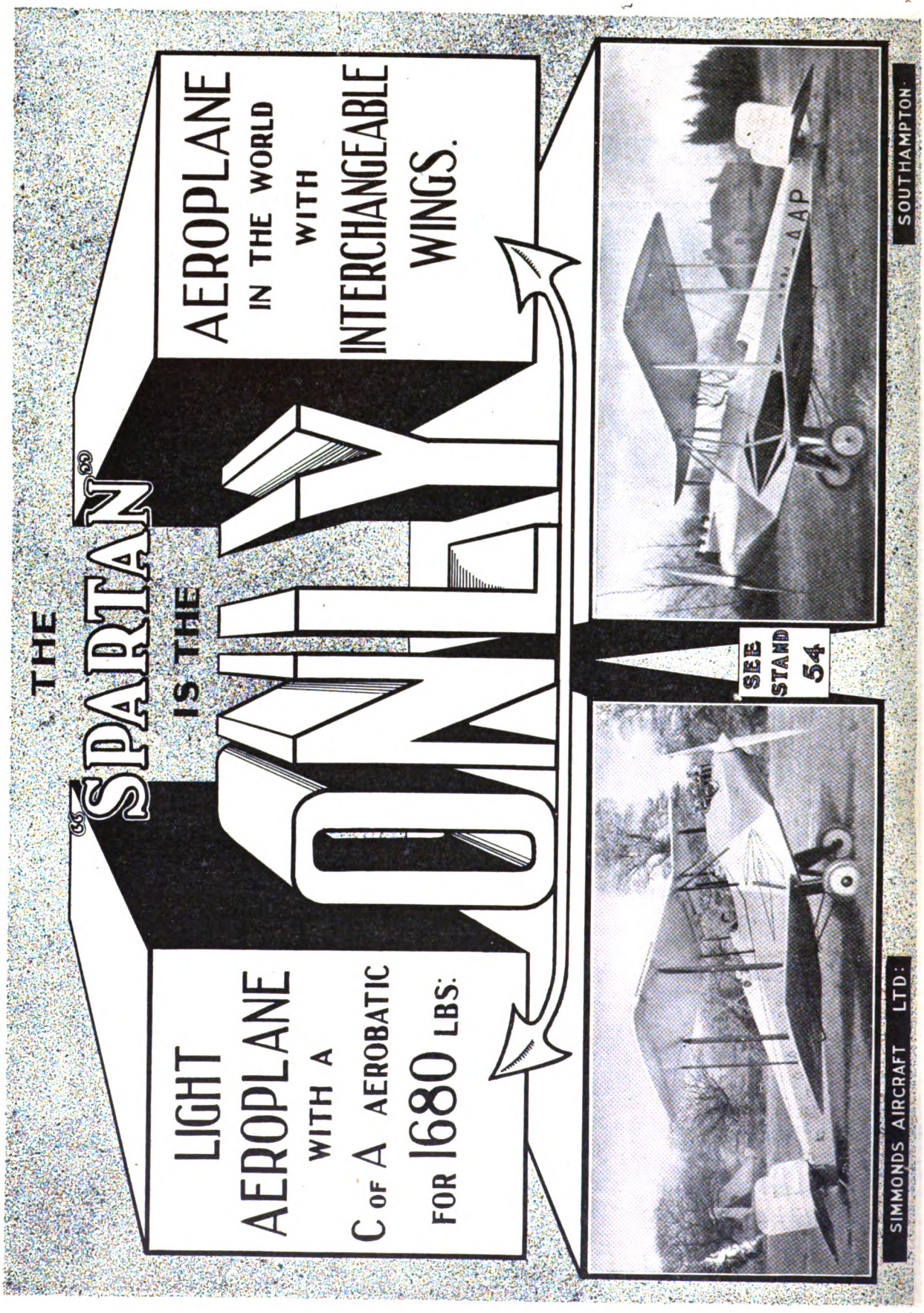

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Even for those who did not the battle between the reconnaissance and the fighter was particularly good.

The demonstration showed how the pilot of an artillery observation aeroplane communicates the position of a target to the guns. The target consisted of four ammunition lorries which were in the middle of the aerodrome and the aeroplane was an Armstrong Atlas (Jaguar engine) of No. 13 (Army Co-operation) Squadron. The pilot, Flg. Off. P. N. R. Hallward, communicated with the guns by wireless telegraphy and directed their fire on the clock-code system after informing them of the nature and position of the target.

In the middle of the operations the observation machine was attacked by an enemy Fighter, Flt. Lt. J. L. Airey, D.F.C., No. 3 (Fighter) Squadron, in a Bristol Bulldog (Jupiter engine). The Atlas, after a tremendous battle, drove off the Bulldog, which disappeared over Mill Hill trailing clouds of smoke, and resumed his corrections.

In the meantime two of the four lorries had escaped and the other two remained on the aerodrome "disabled" otherwise conveniently over the necessary explosion. Punctually to a second they were destroyed by gun-fire and the Atlas pilot, according to the programme, "continued his patrol," but according to any Infantryman "went home to his tea."

THE PEN-PUSHERS' HANDICAP.

Event F was the now famous Headquarters Race. Theoretically the spectacle of officers from the various Headquarters disporting themselves in assorted aircraft ought to be intensely funny, but in actual fact many of those who are temporarily in these jobs are equally as good as pilots as are those who are with squadrons or training stations. The suggestion that each Headquarters should be represented by an officer of not less than 50 years of age might add to the amusement of the irreverent, but would not be fairly representative of Headquarters Units. This year the Air Ministry was represented by Flt. Lt. W. J. Jones, in a Gamecock; A.D.G.B. by Sq. Ldr. H. G. Bowen, M.B.E., in a Grebe; Coastal Area by Flt. Lt. E. F. Waring, D.F.C., in a Flycatcher; Fighting Area by Flt. Lt. S. D. Macdonald, D.F.C., in a Fairey IIIF.; Inland Area by Flt. Lt. S. D. Earp, D.F.C., in a Gamecock; Wessex Bombing Area by Wing Cdr. W. A. McClaughry, D.S.O., M.C., D.F.C., in a Bristol Fighter; Cranwell by Flt. Lt. R. A. George, M.C., in a Siskin, and Halton by Flt. Lt. C. D. Adams, in a Siskin.

Thus the reader may see that no competitor was higher in rank than Wing-Commander, and so, as a young Squadron Leader remarked, it held out no hope of accelerated promotion.

The race was a handicap over a 28-mile course for a cup presented by H.R.H. the Duke of York, K.G. The winner was Flt. Lt. C. D. Adams, with Flt. Lt. R. A. George, M.C., second.

AN AFFAIR OF SMOKE.

Event G was a novel one for the Display. It consisted of an exhibition of individual aerobatics in Gloster Grebes by Flt. Lt. J. Bradbury and Flt. Lt. G. E. N. Guest, of the Aeroplane and Armament Experimental Establishment, Martlesham Heath.

The machines were equipped with the Savage Skywriting apparatus for coloured smoke. The pilots did all the usual aerobatics including some spectacular upward spins, the half-roll off the top of a loop, slow and flick rolls and half-inverted loops. During each evolution they trailed orange-coloured smoke with a highly spectacular effect.

Although the wind was blowing in stiff gusts the smoke hung long enough to outline most of the movements and if the day had been windless it would have hung about and impeded the view of the succeeding stunt. Some evolutions did not show up so well in the smoke as others, for instance all rolls left the smoke in a straight line. The possibility of each machine being equipped with two lots of different coloured smoke arises. This would show up horizontal manœuvres as well as vertical ones.

HUNTING THE HYDROGEN.

Event H was a demonstration of Balloon Chasing. A number of hydrogen-filled balloons were released and pursued by Flt. Lt. F. R. D. Swain and Sjt. J. G. Freeman, of No. 23 (Fighter) Squadron in Gloster Gamecocks. The skill of the pilots and the manœuvrability of the machines resulted in the wholesale demolition of the balloons.

This ended the Lettered Events and there was an interval of half an hour before the programme proper began.

A KIT QUESTION.

By this time the breeze had dropped somewhat and the air was distinctly hot. The possibility of authorising tropical kit at any rate for the R.A.F. personnel actually taking part in the flying, is one which might engage the attention of the Higher Command. On an official occasion like the Display full Service dress including puttees has to be worn under regulation flying kit and, judging by the comments of some of the pilots concerned, their condition was far from comfortable.

THE NUMBERED EVENTS.

BY C. G. G.

Event No. 1 of the afternoon was described as "Evolutions by Three Fighter Squadrons." There were No. 1, Sq. Ldr. E. O. Grenfell, M.C., D.F.C., A.F.C., No. 25, Sq. Ldr. L. G. S. Payne, M.C., A.F.C., No. 43, Sq. Ldr. C. N. Lowe, M.C., D.F.C. All were on Armstrong Whitworth Siskins with Jaguar engines,—27 machines in all with 450 h.p. each or 12,050 h.p. to take 27 little men into the sky. A bye-stander with a taste for arithmetic started to work out how many engine-revolutions this meant in the course of the evolutions but gave it up as a bad job when he saw the three lines of machines becoming apparently inextricably mixed in the sky.

The squadrons took off in formation and then strung out into flights astern, and to line ahead, so that they formed a

"GLORIA FINIS":—(The Motto of No. 43 (Fighter) Squadron).—No. 43 (Fighter) Squadron coming in to land over part of the crowd at the R.A.F. Display after taking part in the Evolutions by a Wing of Fighters.

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vast snake and played follow-my-leader all over the sky. But it was nothing like as sensational as was the performance last year when three squadrons flew in a ring over the aerodrome while a fourth squadron dived in formation through the middle of the ring. Nevertheless it was all very well done, and 43's formation seemed to keep station better than the others.

The Prince Arrives.

At 15.10 hours, during the Manœuvres by the Wing of Fighters, the Prince of Wales, and the Duke and Duchess of York arrived. The Royal Party were received by Marshal of the R.A.F. Sir Hugh Trenchard, Lord Thomson, Secretary of State for Air, and Senior Officers of the R.A.F.

Among those present in the Royal Enclosure were:—

King Alfonso and the Infante Don Alfonso of Spain, the Prime Minister, the French Ambassador, the German Ambassador, the American Ambassador, diplomatic representatives of Spain, Turkey, Portugal, Japan, Norway, Poland, Greece, Serbs, Croats and Slovenes, Persia, Chile, 'Iraq, Czechoslovakia, Brazil, Switzerland, Egypt, Austria, Latvia, and Lithuania; Lord Parmoor, Mr. Philip Snowden, Mr. Arthur Henderson, Mr. J. H. Thomas, Mr. Shinwell, Mr. C. G. Ammon, Lord De La Warr, Mr. W. Graham, and Mr. Tom Shaw.

The High Commissioners for India, New Zealand, South Africa, South Rhodesia, Canada, and the Irish Free State.

Lord Hailsham, Lord Salisbury, Lord Peel, the Hon. Frederick Guest.

The Maharaja of Rajpipla, the Maharaja of Rewa, the Maharaja of Alwar, the Sultan of Johore, and the Raja of Kalsia.

Lord Reading, Lord Lewisham, Lord Camrose, Lord Lucan, Lord Leigh, Lord Somers, Lord Hugh Cecil, Lord Weir, Prince of Purachatra of Siam.

Admirals of the Fleet Lord Wester-Wemyss and Sir Henry Oliver.

Generals Sir William Peyton and Sir Bruce Hamilton, Lieutenant-Generals Sir Hastings Anderson and Sir Webb Gillman.

Air Marshal Sir Geoffrey Salmond; Air Vice-Marshals Sir Sefton Brancker, Sir John Steel, Sir Philip Game, F. R. Scarlett, C. A. H. Longcroft, C. L. Lambe, F. C. Halahan, Sir Vyell Vyvyan, Sir Oliver Swann, D. Munro, R. H. Clark-Hall, H. C. T. Dowding, and A. E. Borton.

The following were presented to the Prince of Wales:—Wing Cdr. J. B. Graham, who has been associated for five years with the display; F-S. Wood, who has piloted an aeroplane on 500 occasions when parachute descents have been made; and Flt. Lt. Chick and Flg. Offs. Boyle and Johnson, who gave a display of flying upside down in Moths.

23 Squadron Again

Event No. 2 was "Individual Aerobatics" by the winning pair of pilots in the fighting Area Aerobatics Competition, Flg. Offs. C. H. Jones and H. A. Purvis of 23 Squadron in Gamecocks with Bristol Jupiters. Comparisons are odious so no effort will be made to compare their performance with that of the two pilots of 29 Squadron in the morning. Each in its way was a perfectly polished show.

23 Squadron has an advantage in that the Gamecock is nippier on its controls than the Siskin and so lends itself better to this class of work. Anyhow these two pilots were not called upon at Hendon to do anything which had any difficulties or dangers for them, and what they were called upon to do they did quite perfectly and proved themselves to be worthy of the old traditions of 23 Squadron which was quite one of the best things that ever happened in France.

The squadron was formed in March, 1916, so they were quite early in the game. They were one of the first squadrons to be equipped purely for fighting and they fought extremely well. A week or so before the Armistice one came across 23 in France equipped with Sopwith Dolphins and engines which had to be changed after every patrol because they had a nasty habit of setting fire to their own airscrews. They had a whole sugar factory laid out as a workshop where they used to rebuild their own engines in the field. They had Major W. J. Bryant, D.S.O., a Hussar officer as their C.O., and Major Pye-Smith another cavalryman as their Recording Officer, and they have held to the cavalry tradition ever since. Doubtless you remember the cavalry subaltern who defined the function of cavalry in war as being "to give tone to what would otherwise be a mere vulgar brawl."

Pandering to the Press.

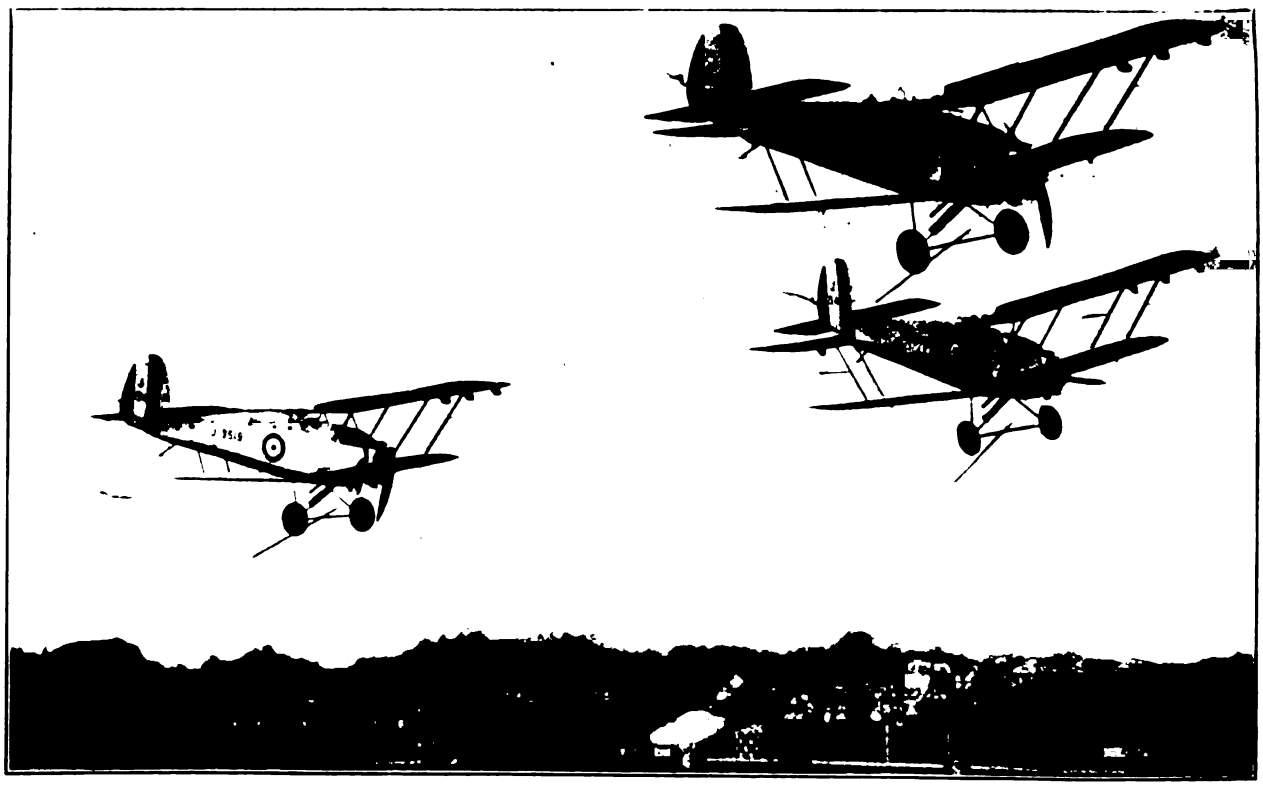
Event No. 3, "Parachute Descents," deserves to be heartily disapproved. It is the one event in the programme which does pander to the worst element in the crowd. The good Mr. Leslie Irvin may have got his parachutes up to 99 recurring per cent. reliability, but some time or other the one point is going to stop recurring and an accident is going to occur.

Apparently the only people who don't mind it are the parachutists themselves. If they did one would probably start a Society for the Prevention of Cruelty to Airmen.

The three ancient Vimies, dating back to a period when the Atlantic was still uncrossed by air, wallowed off the ground just before the two pilots of 23 Squadron took off for the previous event, with the six gallant airchutists each glued to his strut, and they went off for a tour over the surrounding country for a good quarter of an hour standing in the open thuswise. It was enough to give them the deaths of cold, only that they happened to have about the coolest job of the day.

Those men must train assiduously for the job, for the whole six came off at once like six corks out of six bottles. The drop was beautifully timed, for all six fell well with the aerodrome, although from the upper enclosures they seemed to be right over the top of the machines at the North end of the ground.

One man had evidently had too much lunch before starting for he came down rather faster than the others and so



COMMUNICATIONS I.—No. 26 (Army Co-operation) Squadron picking up a message from troops on the ground by means of grapnel hooks. The message is suspended in a bag on a cord between two lances whose butts are driven into the ground.—(*"Aeroplane" photograph.*)

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on top of a friend's parachute (perhaps after this one more insult he is no longer his friend). As the photograph shows, he did his best to spill the air out of his own parachute so as to slide to the side of the one on which he was sitting. And when the man below found that he was being sat upon he opened his supplementary parachute. But actually the lower one came to ground safely under the power of his first parachute and no harm was done.

THE MERRY, MERRY MARINERS.

Event No. 4, "Flying Boats," gave the Hendon crowd their first view of the seafarers of the R.A.F. over London. The boats were Supermarine Southamptons (Napier Lions) belonging to 201 Squadron, Wing Commander D. G. Donald, D.F.C., A.F.C. These boats flew up from Calshot, came in from the Harrow direction in very pretty formation and thence flew out over Hampstead, whence presumably they returned over West London.

One boat detached itself from the rest and came back, low down, in front of the Royal Enclosure just to pay the respects of the R.A.F. Coast Patrols to the Prince of Wales.

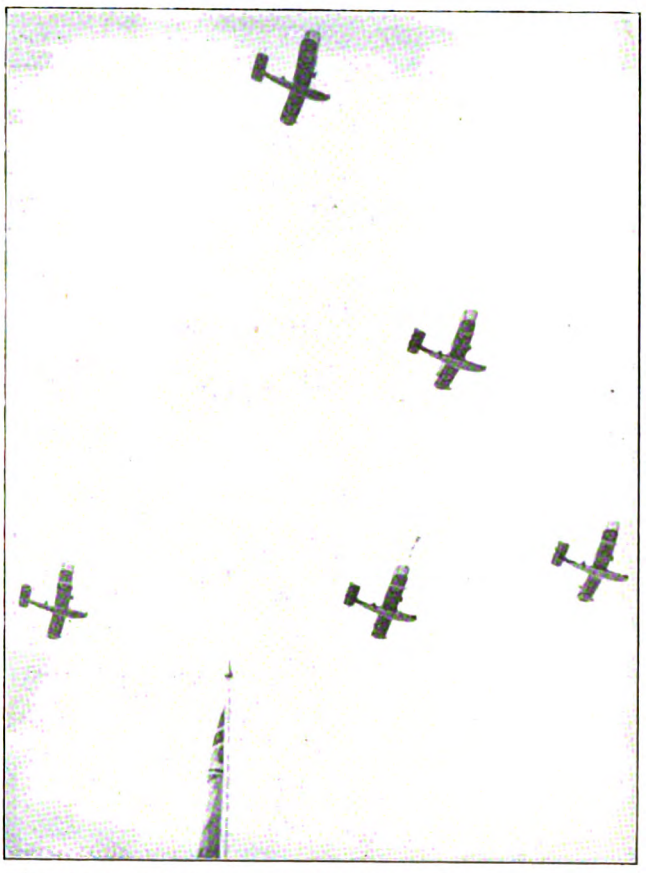
Actually this all-too-brief appearance was very impressive. Even the most hardened of us seldom see the big flying-boats in formation. And certainly they are a pretty sight. Their lines are so much better and cleaner than those of the ordinary twin-engined land-going aeroplanes. In fact, one believes that the Southampton gets off the water quicker carrying a bigger useful load and flying faster than any land-going aircraft of the same power.

Considering that the boats had to come all the way from Calshot, they did pretty well in arriving at Hendon a bare three minutes late. That is the way the R.A.F. times things.

CONVERGING BOMBING.

Event No. 5 was an "Attack on an Encampment by a Single-Seat Fighter Squadron." This was a variant of the old "Bombing the Tank," originated ever so long ago by 25 Squadron from Hawkinge,—commonly known as Peck's Bad Boys. This time instead of a formation of five machines doing converging bombing on one tank, 41 Squadron, led by Sq. Ldr. R. S. Aitken, M.C., A.F.C., in Siskin Jaguars, bombed a machine-gun and encampment by flights.

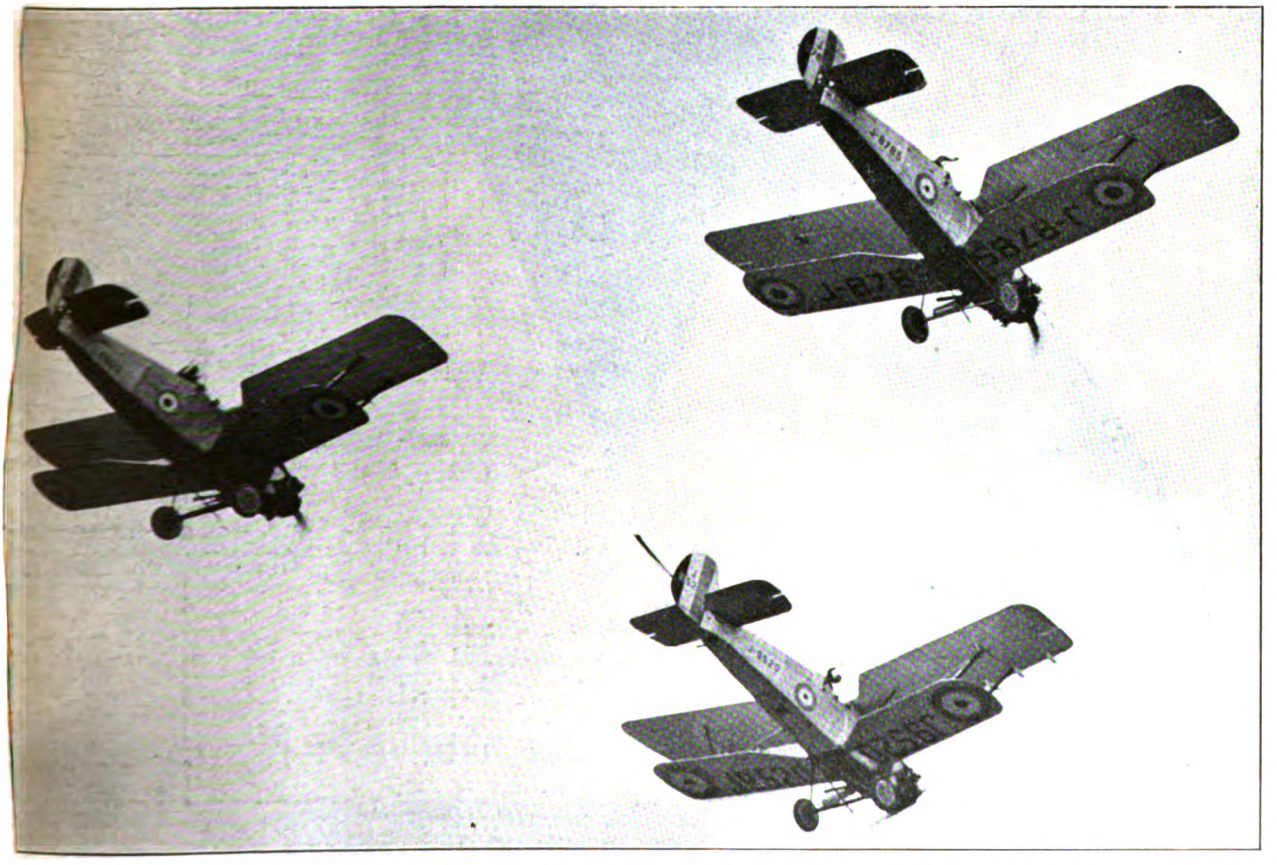
Taking off in formation the three flights broke away to different points of the compass and then attacked so that while the first flight was leaving the target the second flight was making its attack and covering the retirement of the first, the third attack covering the second, and the first flight coming round in time to make a fourth attack and cover the third, and so-forth. Whether they were attacking in V or in line ahead formation this event was quite impressive and went off very well,—and so did the tents, which blazed beautifully.



SEA-GOING CRAFT.—No. 201 (Flying Boat) Squadron in Supermarine Southampton Flying Boats (Napier Lion engines) flying past at the R.A.F. Display.
—("Aeroplane" photograph.)

THE TAME WARHORSE.

Event No. 6, an "Air Combat" between a Boulton and Paul Sidestrand (Jupiter engine) of No. 101 Bombing Squadron, Wing Commander J. C. P. Wood, and two Siskins



COMMUNICATIONS II.—A Flight of Armstrong Atlases (Jaguar engine) of No. 26 (Army Co-operation) Squadron throwing out message bags containing replies to the messages picked up by their grapnel hooks.
("Aeroplane" photograph.)

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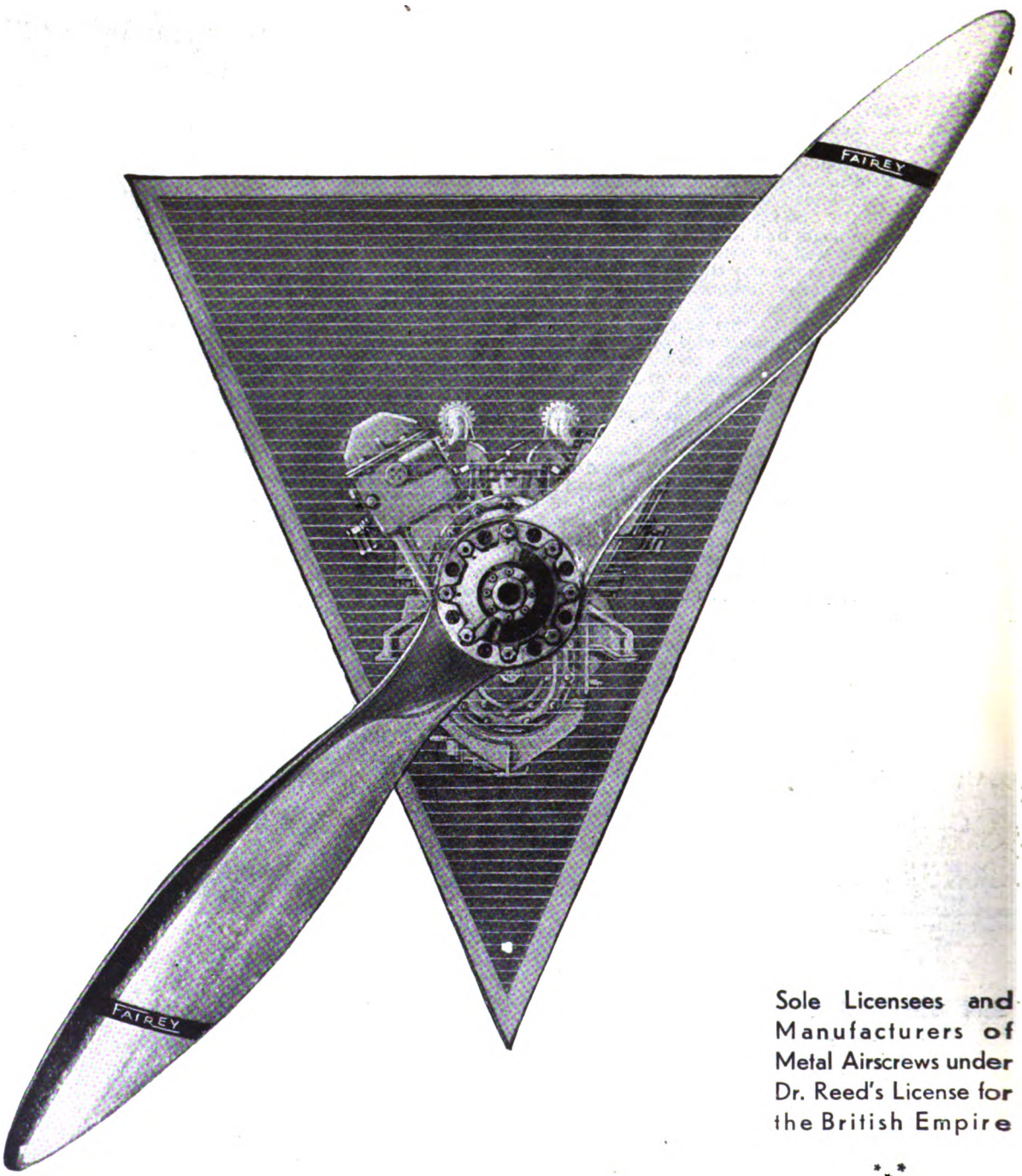
FAIREY

METAL AIRSCREWS



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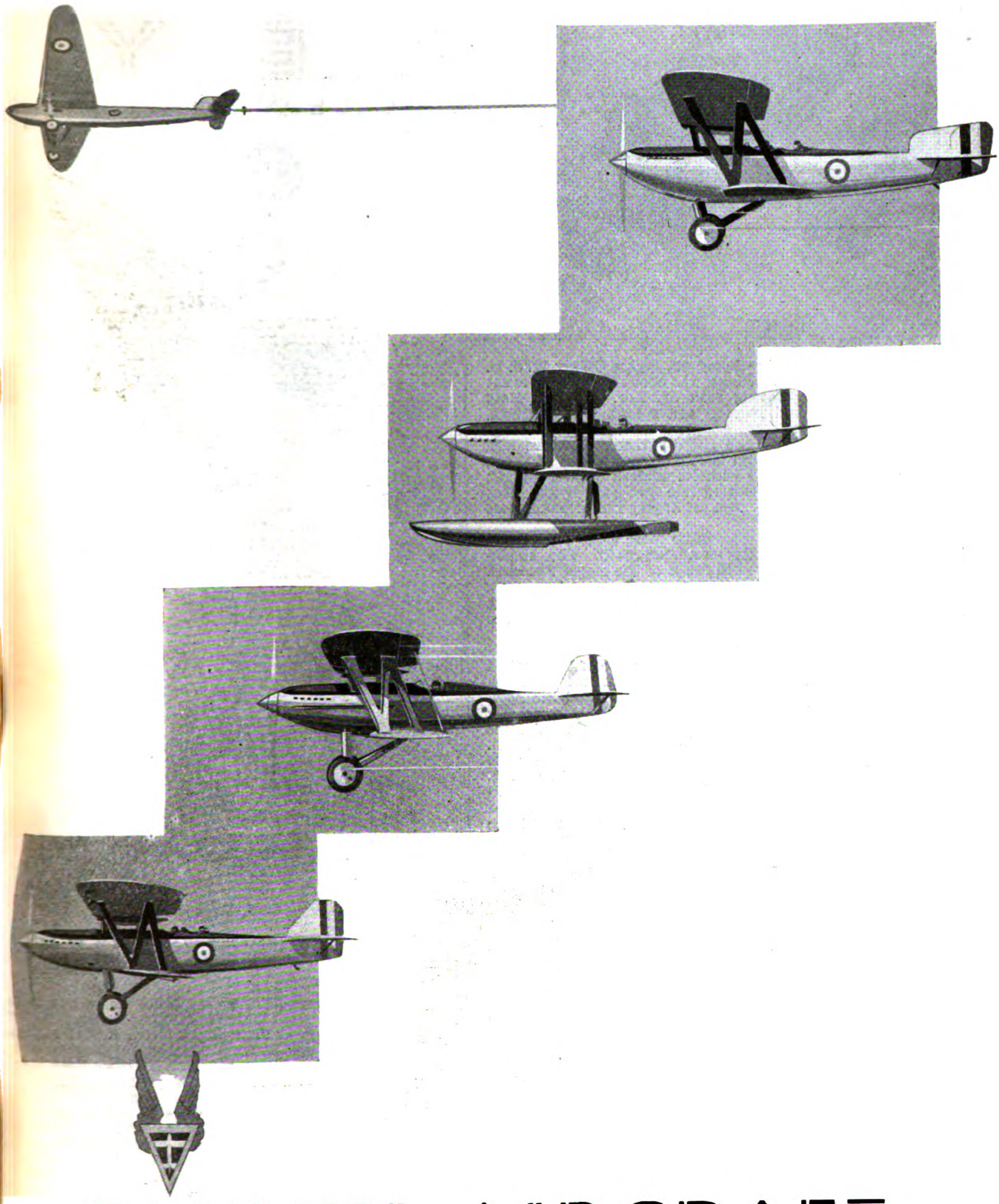

FAIREY AIRCRAFT

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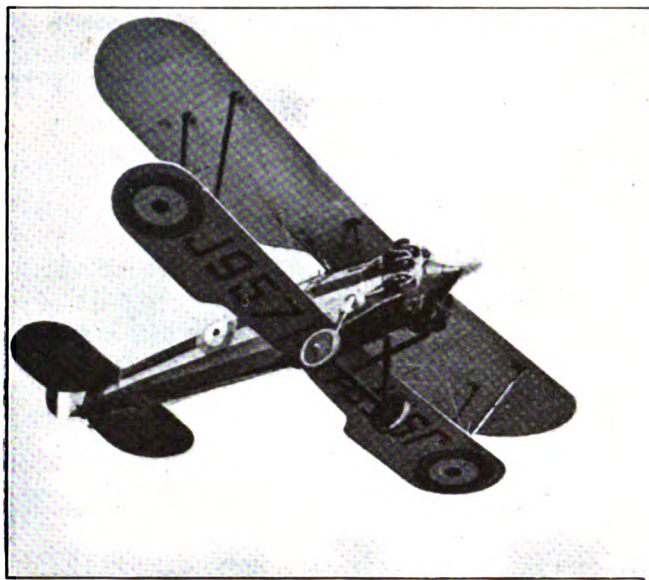


(Jaguars) of No. 19 Fighter Squadron, Flying Officer W. J. H. Lindley and Sergeant C. G. Lott, was about the tamest event of the whole show. Having seen Sq. Ldr. de Haga Haig turning cartwheels and looping and spinning on a Bugle, and having seen Sq. Ldr. Longton do the same things slightly more rapidly on the slightly faster Bourges, and knowing that the Sidestrand is faster than either of them, or at any rate ought to be with its modern Jupiter engine, one did expect to see something like first-class flying. But the Sidestrand might have been an Argosy full of passengers for all the pilot did with it.

Even his descent in flames was no more than a mild and ladylike glide on a slightly circuitous path. The single-seaters hardly ever went within range of the bigger machine. Apparently they began loosing off at about 400 or 500 yards, instead of sitting on his tail at about 25. Perhaps they were told not to. The best thing in this event was the landing.

COMMUNICATIONS.

Event No. 7, "Message Picking Up" was one of the neatest shows of the Display. The picking up of messages on fishing-rods by Army Co-Operation machines, and the hurling forth of return messages, can never be made exactly spectacular. But the Armstrong-Whitworth Atlases (Jaguars) of No. 26 Army Co-Operation Squadron, Sq. Ldr. R. L. Stevenson, M.B.E., did the whole thing with such machine-like accuracy and *verve* and *aplomb*, and so forth, that it was really pretty to watch. Three machines came in together, picked up their messages together, wheeled round and delivered their messages together like one man and one machine. When they came in to deliver their returned messages the men in the gun-rings hurled out their message-bags with streamers attached so that they looked as if they were drilled dart-throwers, or Hannibal's Balearic slingers.

A LESSON TO YOUNG MOTHERS.

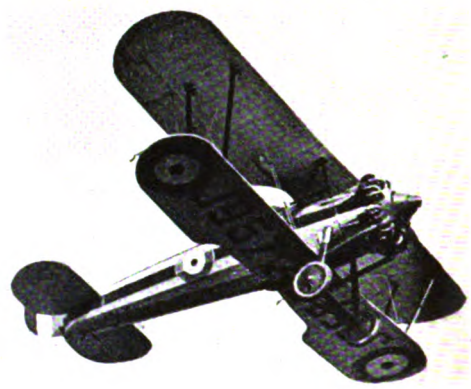
Event No. 8, "Flight Aerobatics," by instructors from the Central Flying School on De Havilland Moths with Genet engines, was one of the most perfect performances of the day. The Boyle-and-Atcherley partnership having been broken up by the Personnel Department, Air Ministry (Movements Sub-section), a new team of Moth-ers has been formed consisting of Flt. Lt. J. S. Chick, M.C., Fl. Off. D. A. Boyle and Fl. Off. W. E. P. Johnson. We have become more or less accustomed to Moths flying upside-down, or rather gliding upside-down, and once in a while a pilot gingerly goes round a curve upside-down. But these horrible people fly round in circles upside-down, and play follow-my-leader upside-down, and then they fly in formation with one upside-down and two upside-up, or two upside-down and one upside-up, till really, as the Babu said, "one doesn't know whether one is on one's topsy or on one's turvy."

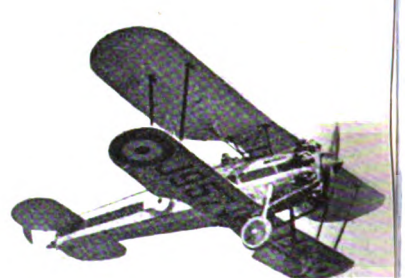
After that the usual slow rolling and spinning, and so-forth, seems quite tame. And anyhow, being at Hendon, in front of the British Taxpayer, they do not cut the daisies on the aerodrome, or sweep the dust off the tarmac, with their wing-tips in rolling as they are reported to do at home.

Some solemn person asked the ridiculous G. D. what was the military utility of this inverted flying. To him G. D. answered brightly, "There *is* no military utility, but it's nice when it rains." Anyhow, one holds that inverted flying is not good for staid old fathers of families, even if they can still play Rugger.

A SPECTACLE.

Event No. 9, "Low Attacks by Day Bomber and Fighting Squadrons," is one of those events which is put in purely for effect. Actually it is only an example of good formation flying. But it does *pour épater les bourgeois*.





THE R.A.F.'s NEW FIGHTERS.—A Flight of Brist Bulldogs (Jupiter engine) of No. 3 (Fighter) Squadro
("Aeroplane" photograph.)

No. 12 Bomber Squadron, Fairey Foxes (some with Ro Royce Fs and some with Curtiss D.12s), under Sq. Ldr. T Salt, A.F.C., and No. 3 Fighter Squadron, Bristol Bulld (Jupiters), under Sq. Ldr. E. D. Johnson, A.F.C., came dc past the Royal Enclosure as the Assyrian came down lik wolf on the fold, except that the Assyrian, no matter h much of an ass he was, never made such a noise.

Though hardened by over 20 years of aviation one c fesses to being thrilled even now by the howl of those div Foxes. One is convinced that the sound of them al would be enough to quell any tribal war in five minu And no matter what alterations happen in the fashion aircraft in the future one holds that we shall have to a very long way before we produce an aeroplane so clas ally beautiful as is the Fox.

The Bulldog in its own class is a very fine aeroplane, in it we have what is, one believes, the finest machine the World for fighting at high levels. From 17,000 upwards the Bulldog is said to have not only the heels every other aeroplane, but also to have the manœuvrabi in that thin air. Not having been up there to see, one gi this as hearsay evidence, but it is quite reliable. And us the Bulldogs for ground-strafing was silly. The format should have been shown off in a high-speed supercha climb out of sight.

GLOOM.

Event No. 10, "The Take-Off of Three Night-Bomb

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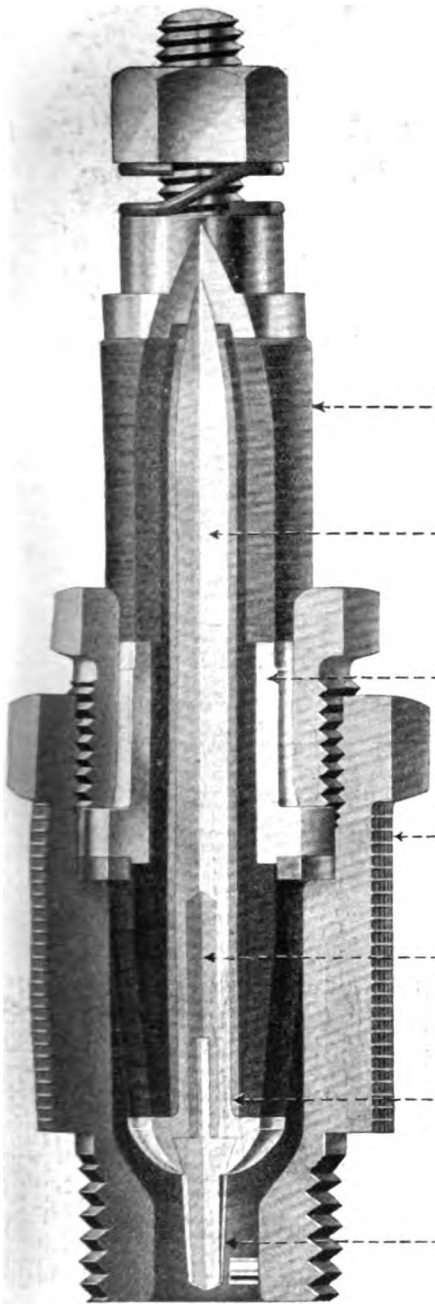

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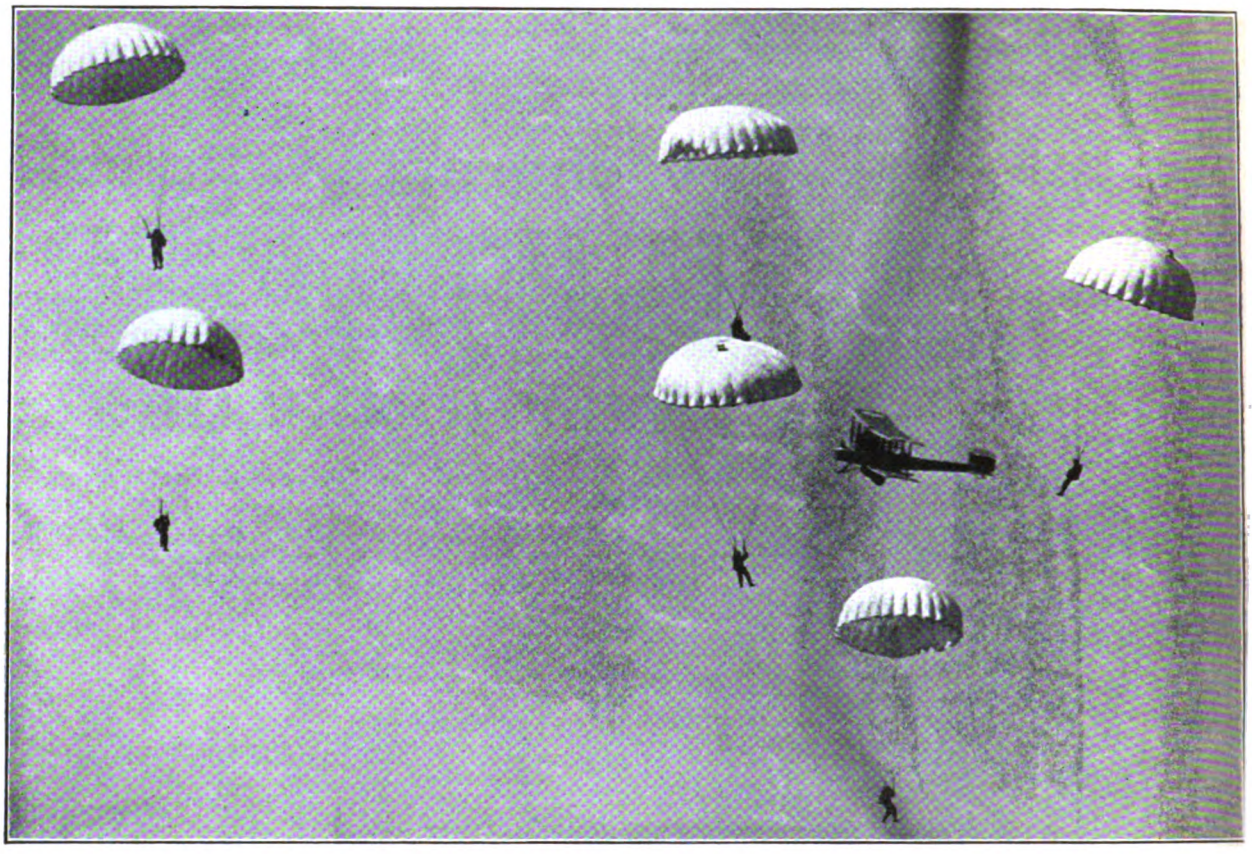


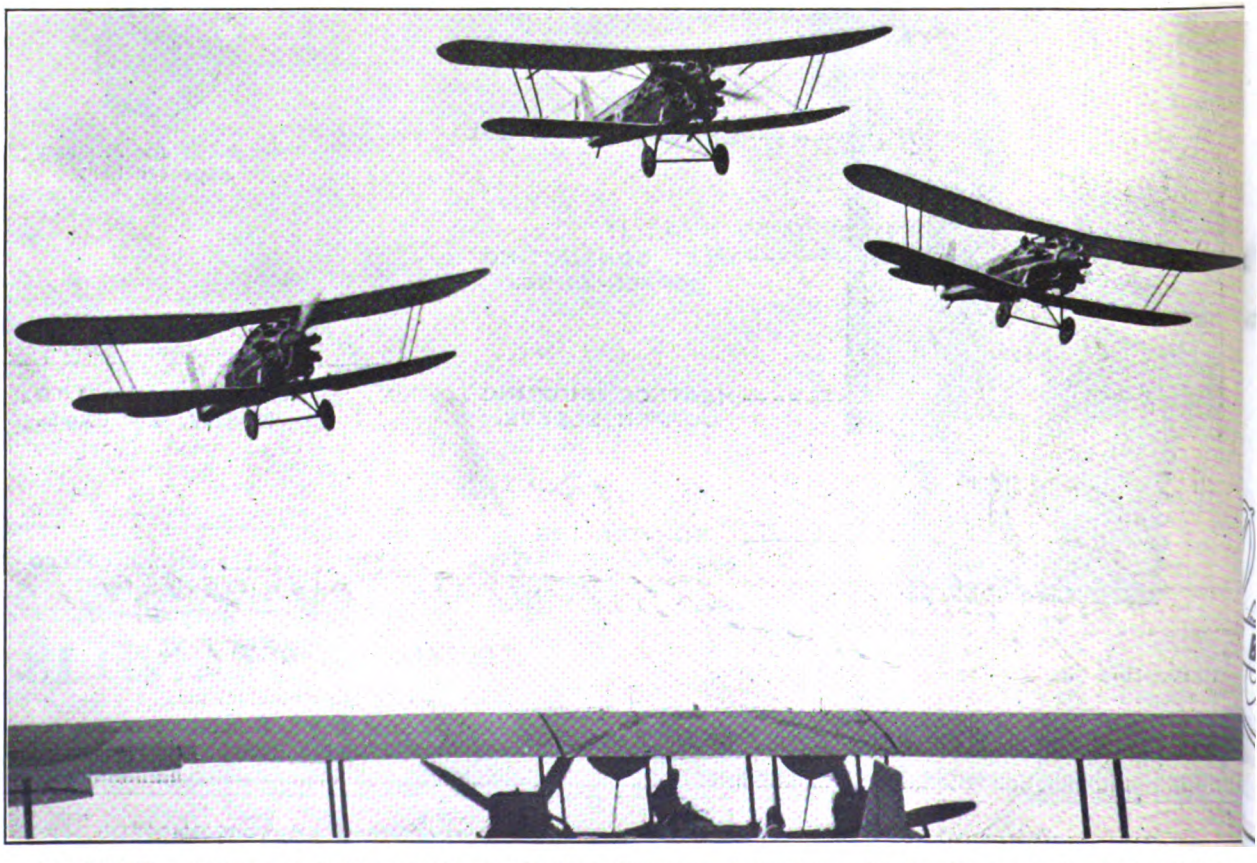
NAVIGATION.—The descent of the parachutists from the three Vickers Vimys. The man in the middle sitting on the parachute of the man below can be seen trying to get clear by spilling the air out of his own parachute.

Squadrons," had a solemnity all its own. In contrast with the silvery quick-moving Foxes and Bulldogs, the great dark night-birds looked almost like a funeral procession.

The machines were No. 7 Squadron (Vickers Virginias, Napier Lions), under Wing Commander E. R. Manning, D.S.O., M.C.; No. 10 Squadron (Handley Page Hyderabads, Napier Lions), under Wing Commander A. T. Whitelock, and No. 99 Squadron (Handley Page Hyderabads, Napier Lions), under Wing Commander B. E. Smythies, D.F.C. The take-off of these machines, which are somehow the aerial equi lent of the Army's tanks in their impressiveness, always g down well with the crowd. Having taken off, they tl disappeared in the distance and stopped there until th cue came for the Set-Piece.

THE CLOWNS.

Event No. 11, "Individual Aerobatics (Crazy Flyin was another excellent piece of stage management in p viding contrast and comic relief after the solemnity of t



FEROCITY.—A Flight of Bulldogs of No. 3 (Fighter) Squadron delivering a low-bombing attack at the R.A.F. Display on Ju In the foreground is a Handley Page Hyderabad Night-Bomber. —(*"Aeroplane" photogra*

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FIGHTER FORMATIONS.—Three Squadrons of Fighters in the air at the R.A.F. Display at Hendon. They are No. 1 (F.) Squadron, No. 25 (F.) Squadron, and No. 43 (F.) Squadron, all flying Siskin IIIas with Jaguar engines.—(*"Aeroplane" photograph.*)

night bombers. Flg. Off. G. E. Campbell, D.F.M., and Flt. Serjt. Brown, winners of the competition between the Flying Training Schools of the Home Establishment, in Avros with Armstrong Siddeley Lynxes, showed themselves to be in the direct line of succession to Sq. Ldr. Jack Noakes and the late lamented Sq. Ldr. Longton. And having machines with better controls, and much better engines, and squdgier undercarriages they cavorted about the ground just like a couple of clowns at a circus.

A Mixed Grill.

Event No. 12 was an "Air Combat" in which a Sidestrand (Jupiter) of 101 Squadron piloted by Flg. Off. J. G. Elton escorted by three Siskins of No. 32 Squadron, piloted by Flg. Off. C. H. A. Colman, Plt. Off. J. A. Greenshields, and Flt. Lt. J. N. Boothman, was attacked by a single-seat fighter (also of 32 Squadron) in which was Flg. Off. H. W. Charnock. According to the programme the single-seater shot down one of the escort fighters, the Sidestrand and one of the other fighters proceeded on their way, and there was a fight between Flt. Lt. J. N. Boothman and Mr. Charnock. The fight was quite good stuff.

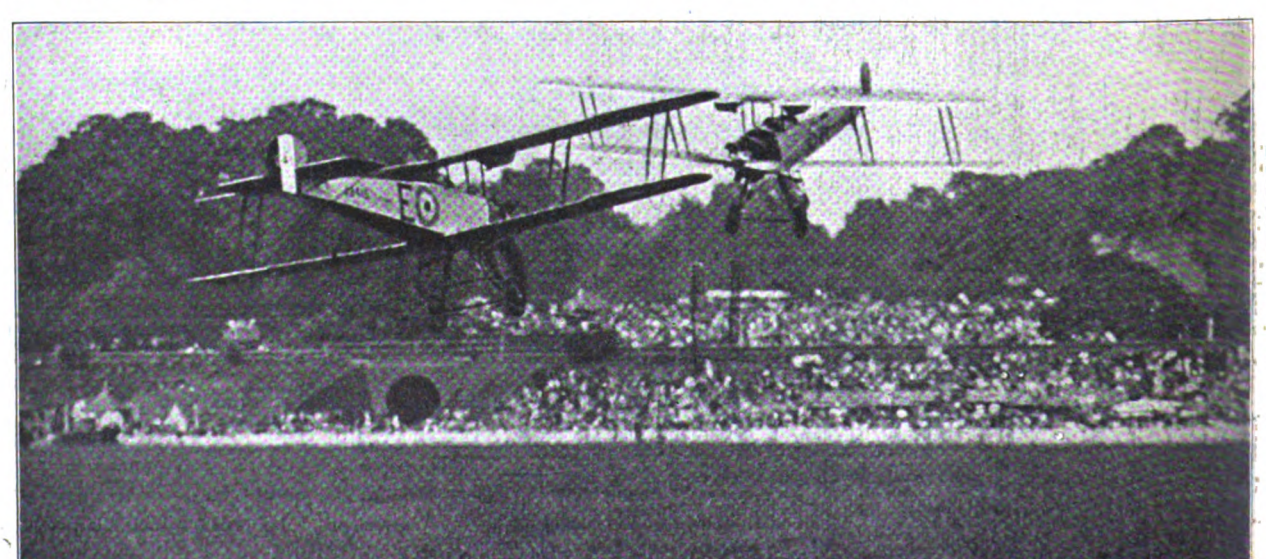
Squadron No. 101 have not had their Sidestrands lon and that may perhaps account for the fact that they see to be rather less agile in the air than the average Virgin or Hyderabad, and the Sidestrand's performance in th party was about as exciting as a cold tomato in a mixe grill.

Event No. 13 was a "Fly Past of Night Bombers" whic took off in Event 10. Just why it should appear in the pr gramme as a separate event is not very clear.

The Big Bangs.

Event No. 14 was the usual Air Battle and Set Piece an Blow-Up, with plenty of bangs and smoke and flame an steam, which really delights everybody and almost satisfie that primitive love of destruction which none of us eve outgrows.

This time the Set Piece represented a foreign port, t the extent of a quay with Custom House buildings and s forth at one end and a fort at the other. There was a troo transport alongside embarking troops and stores from lorri on a beautiful sea all made of blue (condemned) parachute which billowed elegantly in the wind.



OH! MONSTROUS!—Crazy flying by two pilots from No. 2 Flying Training School, Digby, at the R.A.F. Display on July 13.—(*"Aeroplane" photograph.*)

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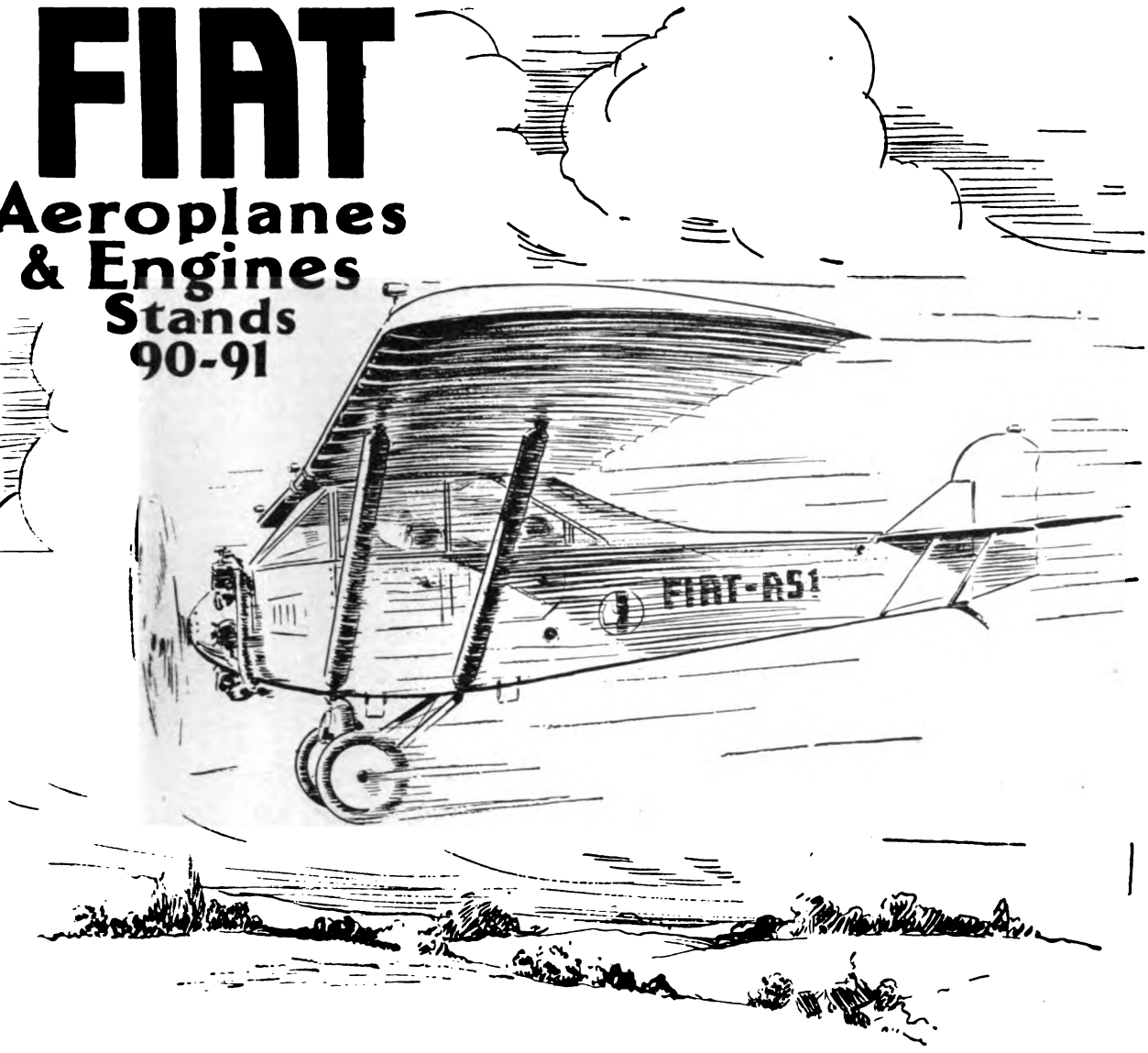

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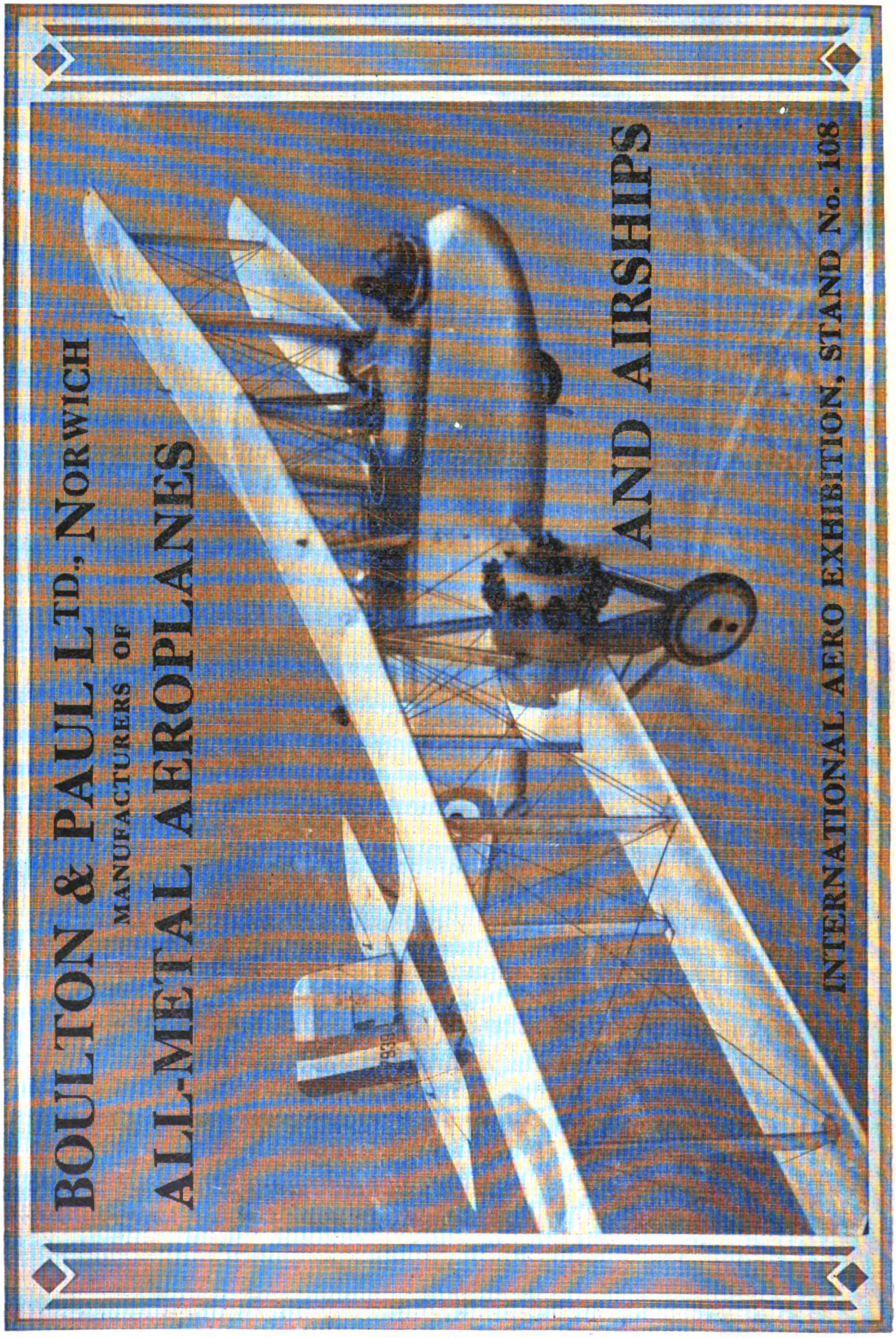

(Photograph by courtesy of "Flight.")

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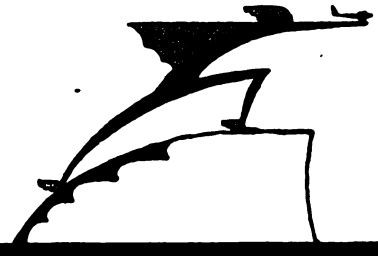

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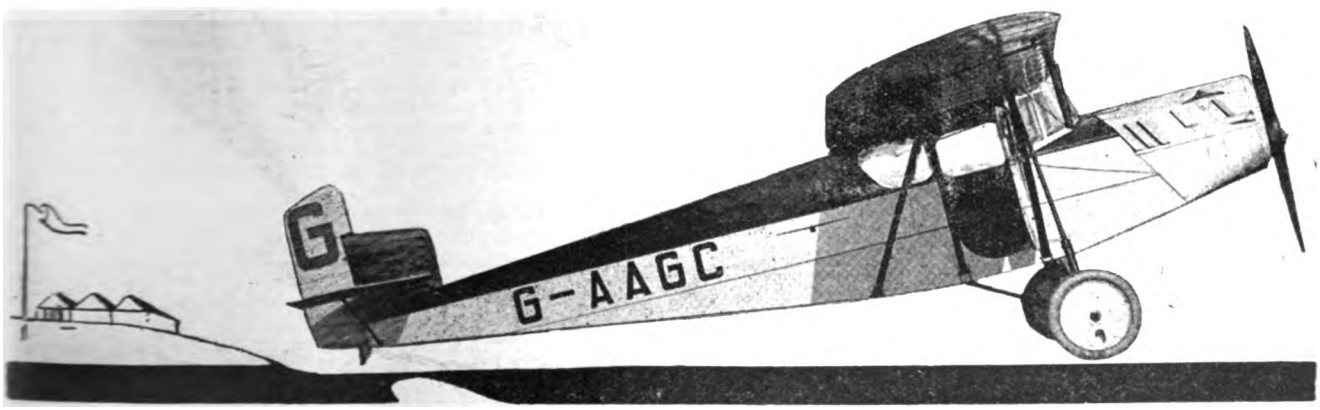

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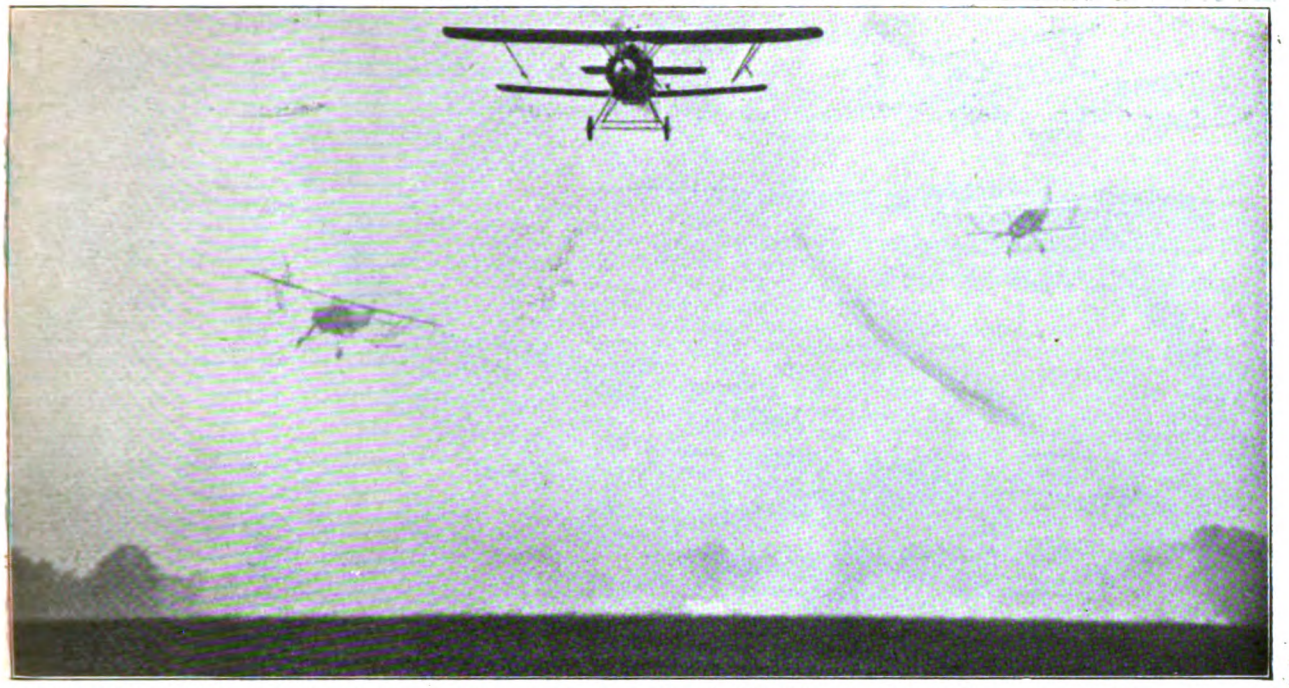

FRIGHTFULNESS.—Siddeley Siskins (Jaguar engine) of No. 41 (Fighter) Squadron, diving by Flights on the target of an encampment at Hendon on July 13.—(*"Aeroplane" photograph.*)

The first thing that happened was a British photographic reconnaissance machine, an Atlas piloted by Flg. Off. P. N. R. Halward, of No. 13 Sqdn., which came over the port and was attacked by Archie guns. The O.C. port then sent up a kite-balloon to look out for attacking machines—which on the face of it seemed a silly thing to do. But the programme included the supposition that certain of the British Forces were in a seaplane carrier, and that being so a kite-balloon would catch sight of the low hull of an aircraft-carrier quite a long way away.

A formation of Fairey Flycatchers (No. 405 Flight, Fleet Air Arm, under Flt. Lt. M. V. Ward) shot down the balloon and did some ground-strafing on the quay and on the transport. As they retired a Squadron of Siskins (No. 29, Sq. Ldr. M. L. Taylor, A.F.C.) dashed out in defence of the port and attacked a formation of British Bombers (No. 207 Squadron, Fairey IIIFs., Napier Lions, Sq. Ldr. E. A. Beaulah). After a little jousting between these two formations another enemy Squadron (No. 56, Siskins, Jaguar engines, Sq. Ldr. A. Lees) reinforced the port defences.

With them were mixed up No. 10 and No. 99 Night Bombers on Hyderabads under Wing Cdr. A. T. Whitelock and Wing Cdr. B. E. Smythies respectively. And the kite-balloon was under the command of Flt. Lt. C. W. Harrison, of the School of Balloon Training.

The Set Piece was built by a civilian contractor to a design submitted to and passed by the Display Committee. The lay-out and timing of the explosives was done by personnel of the Armament and Gunnery School, R.A.F., Eastchurch. The explosions were wired to an Eastchurch workshop lorry. The troops and dock hands were also Eastchurch personnel.

The blue waves lapping round the dock, which were so much admired, consisted of obsolete Michelin parachutes dyed blue and pegged to the ground.

This time the Set Piece went off to perfection. Sq. Ldr. Sandbags was not called upon to perform. Privately one heard that something had gone wrong with the release mechanism for the dummy. This was a pity, because the apocryphal Squadron Leader must by now have got so many Bars to his O.B.E. that he would have had to be promoted Wing Commander. Anyhow, when the kite-balloon was set on fire it did not set fire to anything else. It merely committed fell-in-the-sea,—as an Irishman once translated *felo de se*.

None of the bombs arrived before the machines which dropped them. When the bombs were supposed to fall in the water they created a splash and a fountain of mud and steam and liquid which indicated considerable excavations on the railway side of the aerodrome. And when the Custom House burned it suggested that it must have been used as a store for wood-alcohol by a boot-leg gang.

Altogether it was a most joyous proceeding. And when somebody remarked what a pity it was that we had no fast machines, as we had last year, to show our foreign visitors, a bright lad replied that we were keeping *that surprise* for the Solent in September. So that was that.

AND SO GOOD-NIGHT.

After which everybody went home. And as usual getting away took about eight times as long as getting in. There is in fact no way by which the clearing out of motor-cars can be improved. Even the worst of jambs does not really hold up anything, because as soon as a jamb occurs at one point the traffic on the outer roads is filled up by a spurt from another point.

And by now people know Hendon so well that they never

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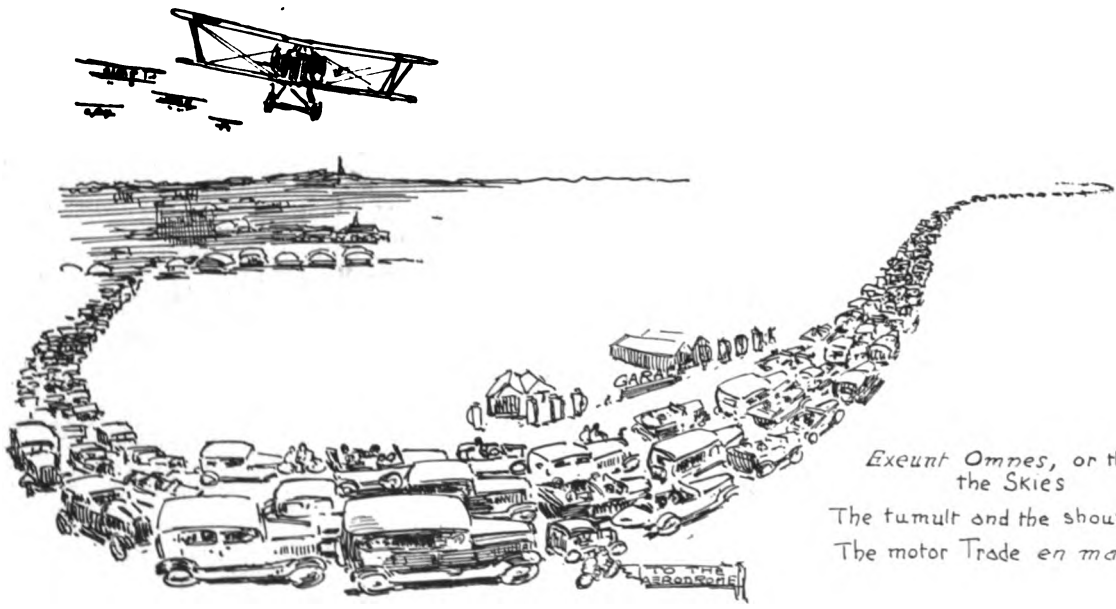

expect to get away for hours after the show is over. In fact if one is really in no sort of hurry there are very often better opportunities of meeting one's friends and having a chat after the show than before it. But waiting in a jamb to get away is sometimes a bit trying.

The heat and the glare on Saturday evening recalled that delightful story of the R.A.F. officer who, one or two Displays ago, is alleged to have sent in an application to the Air Ministry for field allowance, on the ground that he had spent the day at Hendon under canvas. Further inquiry discovered that the canvas to which he referred was the tent which sheltered the Bar in the R.A.F. enclosure.

Considering the topographical difficulties of Hendon the traffic was excellently handled both by the R.A.F. inside and by the police outside. The policemen had a particularly trying day sweltering in the sun from 08.00 hours till 20.00 hours and yet one never saw one of them looking other than good-natured, though many of them seemed to be on the verge of collapse.

Everybody concerned with the Display may well feel proud of themselves, from the Organising Committee all the way down through the Wing Commanders and the pilots and the mechanics of the Squadrons down to the apprentices who were selling programmes. The whole thing went without a hitch and was a splendid example of the all-round efficiency of the Royal Air Force.—C. G. G.

THE HESTON GARDEN PARTY.

Those who wish to entertain their friends, whether from overseas or not, will do well to remember the Aerial Garden Party at the Heston Air Park on Saturday next.

There will be an International Air Rally, organised by the Royal Aero Club, for which prizes will be given. Also there will be an International Aerobatics Competition, which will be followed by an Aerobatics Competition confined to Pilot Instructors of the Flying Clubs.

This will give all pilots a fine chance of showing their ability. And, given good weather, should provide everybody with a healthy afternoon in the country after stuffy days in the Show.

The Heston Air Park is now recognised as the Social Focus of British Aviation, and the best people go there as the done thing. Also the Air Park has been signally honoured by being made a temporary Customs Aerodrome by the Government,—which will be handy for foreign visitors.—C. G. G.

FOR CROSS-CHANNEL VISITORS.

All those who intend flying to the Aero Show from the Continent should take note that the Air Ministry has issued the following Notice No. 38 of the year 1929 to Airmen:—

1. Heston Aerodrome, Hounslow, Middlesex, is, with the concurrence of the Commissioners of Customs and Excise, approved as a Customs Aerodrome under paragraph 2 of Schedule VIII to the Air Navigation (Consolidation) Order, 1923.

2. The necessary Directions under the above-mentioned Order will be published in due course as the Air Navigation Directions, 1929 (A.N.D. 4) which will come into operation on the 9th July, 1929, and will cease to be in force on the 3rd August, 1929.

This means that for the duration of the Show and afterwards until Aug. 3, intending visitors can fly straight to London and land at Heston without having to pass the Customs at Lympne or Croydon.

DEMONSTRATIONS AT HESTON.

During the Aero Show a number of aircraft will be available at Heston Aerodrome for demonstration purposes.

Amongst these will be the Junkers K.37, a three-seat twin engined fighter, the Junkers K.47, a two-seat high-performance fighter, and the new Junkers F.13, a passenger limousine.

The Westland Works are having three machines there and these will be a Westland IV, a Wapiti-Jaguar, and a Widgeon.

The Glenny and Henderson Gadfly will be demonstrating the new Pearson rotary ailerons.

The Blackburn Company have brought down a Lincoln and a Bluebird.

George Parnall and Co. have sent up their new two-seat light aeroplane, the Elf, with the Hermes engine.

A new firm, the Civilian Aircraft Co., are demonstrating their new two-seat coupé monoplane with an A.B.C. Hornet engine.

The D.H. Hawk-Moth will also be available for purposes of demonstration.

MORE INHABITANTS FOR HESTON.

Auto-Auctions Ltd., whose new premises at the corner of Old Burlington Street and Burlington Gardens were illustrated in THE AEROPLANE recently, have now acquired accommodation at the Heston Air-Park, which was officially opened by Lord Thomson, the Secretary of State for Air, on Saturday last before the finish of the King's Cup Race.

Auto-Auctions Ltd., having acquired the World-wide distribution rights of the Blackburn Bluebird side-by-side light aeroplane, are now able to offer customers a full course of instruction at the Heston Air-Park.

THE CHANNEL ACCIDENT.

The Air Ministry Report of the formal investigation of the accident to the Imperial Airways aircraft G-EBMM at sea on June 17, 1929, held under the Air Navigation (Investigation of Accidents) Regulations, 1929, was published on July 16.

The whole subject will be discussed fully in THE AEROPLANE when people's minds are free from Show interests and are able to give proper attention to the subject.—C. G. G.

A SUCCESS AT COWES.

The many friends in British Aviation of S. E. Saunders, Ltd., as now composed of Mr. S. E. Saunders, Sir Alliott Roe, and Mr. John Lord, will be glad to hear that the first combined effort of the firm has proved a success. The four seater cabin flying-boat, details of which were published in the special Aero Show issue of THE AEROPLANE, made its first test flights on Thursday, July 4. (The Cutty Sark).

The weather was far from ideal as there was a strong wind with gusts up to 30 miles an hour, but Mr. Chilton, Flg. Off., R.A.F., who piloted the machine, reported it as most satisfactory to handle. Thanks possibly to the strong wind the machine left the water in somewhere between 5 and 6 seconds, which however indicates that even in a flat calm the get-off would be quite good. In spite of the severe sea conditions the hull proved remarkably clean, the machine sitting well back so that the spray was clear of the cabin and air-screws. Mr. H. Knowler, the designer, deserves to be congratulated on his work.

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ON THE SCHNEIDER COURSE.

In *The Daily Telegraph* of July 10 the following appears:

The Aviation Correspondent of *The Daily Telegraph* writes:—

The course for the race for the Schneider Maritime Trophy, to be flown for in the international contest in the Solent on Sept. 6-7, has been the subject of an attack in an aeronautical journal, in which it is suggested that the course was chosen largely with regard to the convenience of spectators and others.

The course as chosen has been approved by the Royal Aero Club, but the club did not select the course. Selection rested upon experts, among whom were a Royal Air Force officer with great experience of seaplanes and the members of the British Schneider Cup team themselves.

It may be pointed out that an extension of the course eastwards would have much increased the chance of rough water and consequent postponements, while an extension at the western end, or a change of direction towards the north-west at that end, would also have gone beyond waters which enjoy a certain amount of shelter. The course has been inspected by Italian officers and approved by them.

No consideration except that of the race itself was entertained by the experts. There are many parts of the coast where a larger number of spectators could have been disposed, but there is no reason to believe that the arrangements which are being made for transport and catering will prove less than the best possible in the circumstances.

The foregoing article can only be described as what the late Victorians used to call a "farrago of nonsense."

The first paragraph is diametrically opposed to the truth. The suggestion in THE AEROPLANE was distinctly that the course was chosen entirely *without* regard to the convenience of the spectators,—namely, the British Public, who have to pay all the costs of the contest.

The second paragraph is equally unlikely to inspire confidence in the course. The fact that it has been selected by experts is the best possible reason for believing that it is wrong. So far as the members of the Schneider team are concerned, they would naturally assent to any good course, and could not be expected to consider the interests of the spectators. Nobody denies that the course chosen is good for flying. But one states definitely that the course suggested in THE AEROPLANE is as good for flying, and perhaps a trifle better, and is immeasurably better if the spectators are to be considered as they should be.

MATTERS OF GEOGRAPHY.

So far as the third paragraph is concerned, no suggestion was made in THE AEROPLANE that the course should be *extended* eastward. One eastward turning-point suggested in THE AEROPLANE is a trifle to the east of the turning-point at present chosen. But it is also further north, and therefore more within the shelter of Hayling Island if there should be a strong east wind on the day of the Contest.

The change of direction suggested in THE AEROPLANE to the westward would definitely *not* bring the course into unsheltered water. On the contrary, it would take the turning-point away from its present position exactly in the neck of the channel between the Isle of Wight and the New Forest, where it is exposed to every wind, especially the prevailing south-west wind, and would bring both the inward and outward leg of that part of the course over the most sheltered water in the Solent.

As a matter of fact, so far as the pilots themselves are concerned, the positions of the turning-points hardly matter. If their machines are going to break down they are no more likely to break down on the turn than anywhere else, and if they are going to break down on the turns the present turning points are just a trifle more dangerous than the turning points which are suggested in the revised course suggested in THE AEROPLANE.

The statement that the course has been inspected by Italian officers and approved by them is purely a politicians' argument,—an endeavour to drag our sportsmanlike competitors in as support to a silly mistake made by our self-appointed experts.

Italian officers taken on a trip to the Solent, and possibly flown over the course once, would have no opportunity of studying the course in detail. They would have to know the Solent thoroughly before they were competent to express an opinion. The best they could do would be to *approve* the course, as stated in *The Telegraph*, to the extent that they could see nothing objectionable about it.

But that does not in the least mean that having read the recent article in THE AEROPLANE the Italian and other foreign competitors have not formed an entirely different opinion now that the folly of the chosen course has been pointed out.

THE BIG-SHIP CHANNEL.

There is one apparently valid objection to the revised course suggested in THE AEROPLANE which the writer in *The Daily Telegraph* has not mentioned,—which is that a channel must be kept clear for big ships coming into Southampton Water from the English Channel by the Needles. The westerly turning point fixed in the middle of the Solent apparently (but only apparently) takes the course clear of this channel, whereas taking the course across to Calshot brings it across this channel,—which looks bad on paper.

As a matter of fact this objection is not valid either, for the channel allowed at present for big ships coming in from the East crosses the chosen course twice.

There are, according to the present plans, certain lanes cut across the course which will be kept clear of water-borne traffic by Admiralty patrols,—so as to provide an alighting space for the competing machines in case of trouble. The provision of a lane for shipping up to Southampton Water from the Channel would merely provide another such open space. It would involve no more trouble for the patrol boats, because in any case the pleasure-boats along the course near the west turning point will have to keep out of the big ships' course.

If a machine approaching the western turning point went wrong, with the course as at present chosen, it would alight perforce in the big-ship course as at present arranged,—and might well have to come down in rough water. If it went wrong when approaching Calshot on the course suggested in THE AEROPLANE, it would have a good sporting chance of alighting on the permanently smooth surface of Southampton Water, which would then be only a little to the north of the course.

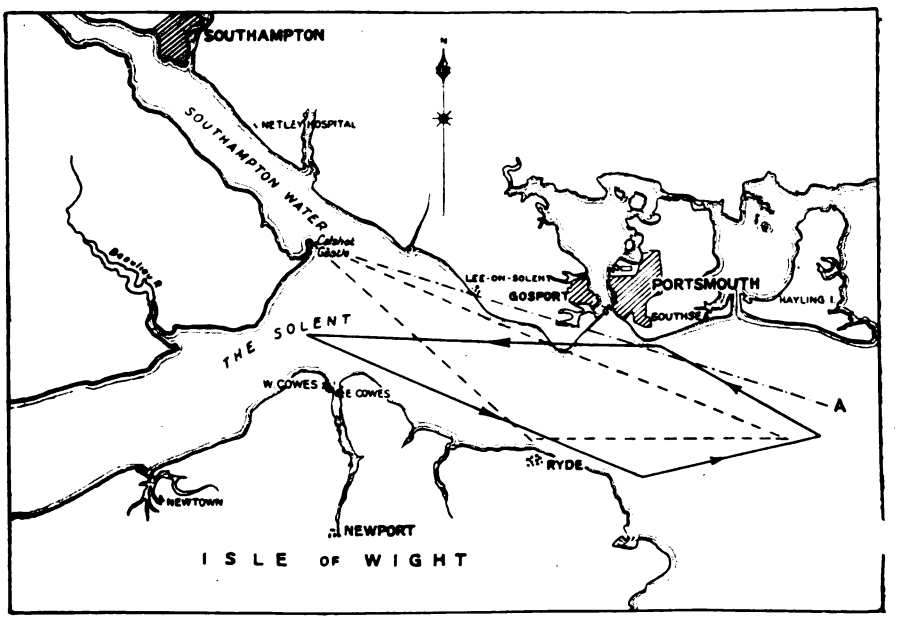
TRANSPORT AND MAINTENANCE.

The final statement to the effect that the arrangements which are being made for transport and catering will be adequate is on a par with the rest.

If people want to see the race in comfort, as at present arranged, they will have to give up three or four days to go to the Isle of Wight and back and they will have to submit to being robbed while they are there. Alternatively, they will have to be crushed in a mob at Southsea or Stokes Bay. If the course suggested in THE AEROPLANE were adopted there would be heaps of room for people all along the north coast of the Solent and for tens of thousands more on the shore round about Calshot,—within reasonable reach of food and shelter under reasonable conditions.

From a flying point of view the course suggested in THE AEROPLANE has distinct advantages over the course chosen by the so-called experts, and from the point of view of the British Public who are paying for the race, and of foreign visitors who want to see it, the course suggested in THE AEROPLANE is immeasurably better than that chosen by the Royal Aero Club and the people whom the Club choose to regard as experts.

The Aviation Correspondent of *The Daily Telegraph* as a rule is Major C. C. Turner. If Major Turner wrote that article then he has evidently been persuaded by the experts of the Royal Aero Club without having given enough personal attention either to the course or to the article in THE AEROPLANE which he has taken upon himself to criticise. And in any case, whoever wrote the article, it is too obviously a mere defence of the Aero Club without consideration for the British public.—C. G. G.



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GLO

KING'S CUP, 1929.

WINNER AND FASTEST TIME.

Pilot—
Flying Officer R. L R. Atcherley.
Navigator—
Flight Lt. G. H. Stainforth.
Entrant—
Sir Walter Preston, M.P.

The machine was a standard Two-SEATER "Grebe," as used for training Scout Pilots, with standard Siddeley "Jaguar" Engine.

Extract from "Observer," 7/7/29.

"The winner's average speed over the whole course of 1,176 miles was 150.3 miles per hour.

This is a record for the King's Cup."

Extract from "Daily Telegraph," 8/7/29.

"The incredible had happened, and the Grebe, which had been forty-two minutes behind the leader at Leeds, and twenty-seven minutes behind him at Birmingham, had overtaken him and four others in the last short lap."

INTERNATIONAL AERO EXHIBITION OLYMPIA LONDON, JULY 16-27. STAND NO. 4.

Gl

THE PIONEERS OF STEEL AIRCRAFT : : : : :
14 YEARS' EXPERIENCE :

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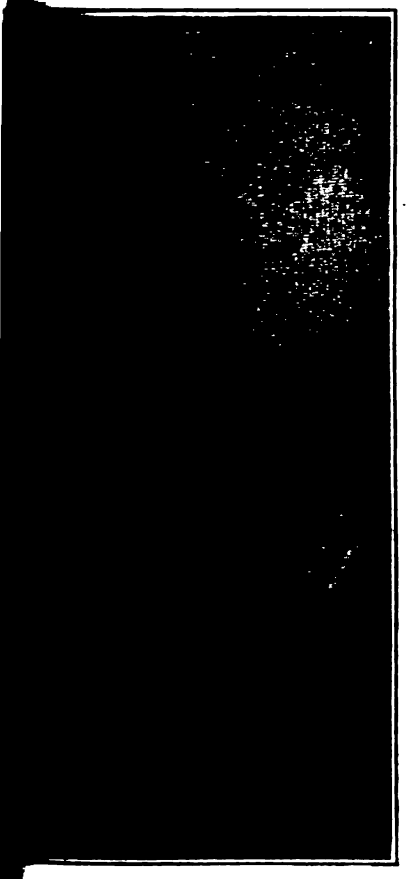

Fighter.

"The war gave Gloucestershire a new industry, which has remained with it, and has of late seen notable developments. Here, in the heart of a beautiful country under the green rolling Cotswolds, metal wings for many types of aeroplanes besides the well-known 'Glosters' are made. . . . The inside of the Gloster factory is exceptionally interesting because of the great variety of types seen in various stages of construction, and because of the big batches of wings for types not designed nor erected here. Almost endless strips of high tensile steel are to be seen passing into huge machines and emerging with rolled top and bottom flanges. They are used for building up light but immensely strong wing spars."—*Daily Telegraph.*

MANUFACTURERS OF AND SOLE LICENSEES FOR THE GLOSTER HELE-SHAW-BEACHAM VARIABLE PITCH PROPELLERS.

GLOSTER AIRCRAFT Co. Ltd.

SUNNINGEND, CHELTENHAM.

GLOSTER WORKS AND AERODROME, BROCKWORTH, GLOS.

THE STEEL WING Co., Ltd.

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THE OPENING OF THE AERO SHOW.

The Seventh International Aero Exhibition at Olympia was opened on July 16 by His Royal Highness the Prince of Wales. Strange to say, practically every stand was ready in time for the opening and hardly any aircraft remained to be built during the following night

The arrival of invited guests was made a trifle difficult by the fact that the invitations expressly pointed to the main entrance in Hammersmith Road as being the place at which to arrive, and on arriving there (at any rate up to 11.45 hours) the guests were faced by locked shutters over which was a notice saying "Invitations this way." Exhibitors naturally penetrated by back ways. But presumably guests queued-up till the doors were opened somewhere about mid-day.

His Royal Highness the Prince of Wales arrived shortly after 12.00 hours and was conducted round the Exhibition by the Council of the Society of British Aircraft Constructors,—so effectually that when the French Ambassador and the Air Council and the higher officers of the Royal Air Force arrived there was nobody left to receive them.

However, ultimately a vast concourse sat down to an excellent Lyons lunch, in which the healths of the King and of the Prince of Wales and of the rest of the Royal Family were proposed, in accord with the most modern custom, in the middle of lunch, so that people could begin smoking.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, proposing the Toast of Success to the Exhibition, said that he felt that it was a great privilege to open this International Aviation Exhibition. Those present would be pleased to know that before coming to Olympia he had had ten minutes' conversation with the King and that His Majesty had expressed his pleasure at his coming to open the Exhibition.

He then apologised for being late for lunch (13.45 hours instead of 13.00 hours) and told the Committee that they shouldn't have made the show so interesting. He simply couldn't tear himself away.

The exhibition, he said, was a powerful reminder of the progress of late years and it was a source of great encouragement to people like himself who were intensely interested in aviation.

This was the seventh Aero-Show to be held in the City of London, and it was the largest and most comprehensive ever held in the World.

He was glad of the opportunity of welcoming the representatives of so many countries. The Srow was indeed international. There were trade exhibits from the United States, France, Germany, Italy, Sweden, Czechoslovakia and Austria,—besides official exhibits from France, Germany, Italy and Austria.

He said that the whole of the British Aircraft Industry extended a hearty welcome to the diplomatic and other representatives of foreign nations. He was glad to see present the French and German Ambassadors and the Ministers of Sweden and Austria, and he much regretted the absence of the Ambassadors of the United States and Italy.

The Society of British Aircraft Constructors, he said, looked forward to extending all possible hospitality to visitors from all countries and hoped that such visitors would take away pleasant memories.

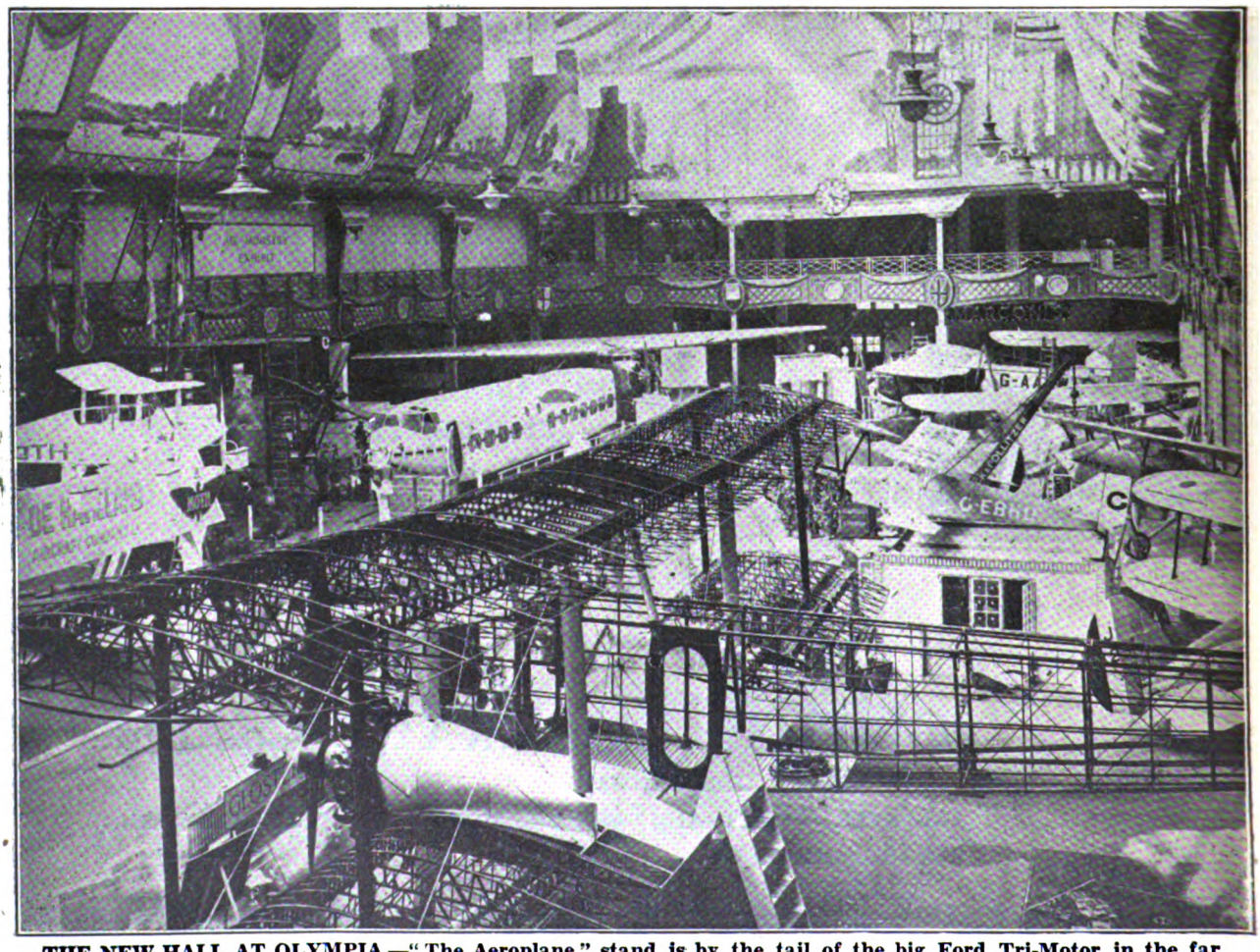
The Prince pointed out that this was a particularly appropriate time for an Aero Show. Last September saw the twenty-fifth anniversary of the first flight by the Wrights. This July would see the twentieth anniversary of the crossing of the Channel by Blériot, and that we all hoped to welcome M. Blériot in person on that anniversary. This year also celebrated the tenth anniversary of the first Atlantic flight by a U.S. Naval flying boat and by a British aeroplane and by a British airship.

The progress of aviation throughout these years was so well demonstrated by the Air Ministry exhibit in the gallery.

Everything encouraged a belief in the rapid future advance of flying. Aviation had now come right into our lives.

He congratulated heartily the Organising Committee of the Show and the Chairman, and said that all the things that had made him late for lunch were evidence of the ability of our aircraft constructors. He then declared the Exhibition open.

CAPT. P. D. ACLAND, Chairman of the S.B.A.C., replying, said that he wished to express on behalf of the British Aeronautical Community and their many welcome guests from overseas their thanks to His Royal Highness for his words and for opening the Show.



THE NEW HALL AT OLYMPIA.—"The Aeroplane" stand is by the tail of the big Ford Tri-Motor in the far corner, in the middle of the picture. In the foreground is the Gloster Survey biplane (Jupiters) built for the Aircraft Operating Co. Ltd. The cabin of the Handley Page liner is in the middle.

—("Aeroplane" photograph.)

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Fit "TripleX" Regd

"Triplex" -and be safe!

Triplex is fitted as standard to most modern cars, and wherever there is danger from flying glass. Triplex goggles are a vital necessity when flying to-day.

Make sure it's Triplex; Look for the three X's in a circle; This Trade Mark is on all Genuine Triplex Glass.

AERO EXHIBITION STAND 24

TRIPLEX SAFETY GLASS Co., Ltd., 1, Albemarle St., London, W.1.

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We all knew the great interest which His Royal Highness took in this new Art of Aviation, and the practical part which he played in it. His actions were evidence of that sympathy which our Royal House showed in all activities in our great Commonwealth.

The steps which aviation had made in recent years were all the result of advance in technique. Flying was at last becoming part of our lives and aircraft were becoming better instruments of communication.

The moment was now appropriate to show the British public the progress which we were making. He felt sure that he would give no offence to our visitors if, speaking for British constructors, he said that in no respect could British aircraft be excelled. We were glad to see so many exhibitors from foreign nations. We welcomed competition and hoped that the best man might succeed. The Prince of Wales had given the Show a splendid start and his action would encourage the British public to come and study this great new industry.

With that the lunch party dispersed and the Trade returned to their stalls or stands to await the hoped-for onslaught of the Public, while the present writer fled Cityward to get these few notes into the paper.

Next week a critical review of the aircraft at Olympia will be published, supplementing the specifications and illustrations which were published in the Special Issue of July 12. All that is necessary to say now is that there is a vast amount of intensely interesting material in the Show and that anybody who is really interested in flying should spend at least three whole days studying all the exhibits in detail.

As Capt. Acland said, in no respect can British aircraft be excelled. But there are among the foreign exhibits many ideas which suggest ways in which better and better aircraft can be designed or built. And some of the greatest ideas shown by British exhibitors are stowed away in comparatively small stalls in or under the galleries.

Every reader of this paper should visit the Show as often as possible and should make an effort to bring with him or her somebody else who had not as yet taken a lively interest in flying. By taking a few proselytes to Olympia during this week and next, and by making up parties to go to the Aerial Garden Party at Heston Air-Park on Saturday, where a number of the World's best pilots will be seen at play in the air, every reader may do really good work for the progress of aviation and so for the aerial supremacy of this comic country.—C. G. G.

THE FRENCH SCHNEIDER COMPETITORS.

Photographs of the Bernard racing seaplane, two of which are being built to compete in the Schneider Trophy Contest, have already appeared in the French press. They are similar in general appearance to the Short Crusader which was built for the Schneider Contest in 1927, and will have Gnôme-Rhône geared radial air-cooled engines of new design known as the Mistral, which are expected to give 1,200 h.p. One of the two machines will use the N.A.C.A. radial engine cowling.

The fuselage is of the fish-like section which has become classic for Schneider aircraft, with the pilot's cockpit over the trailing-edge of the wing, a streamline windscreen running forward to the engine and a long head-rest behind running into the vertical fin aft.

The monoplane wings are mounted on the thrust line and are wire-braced to the top of the fuselage and the floats.

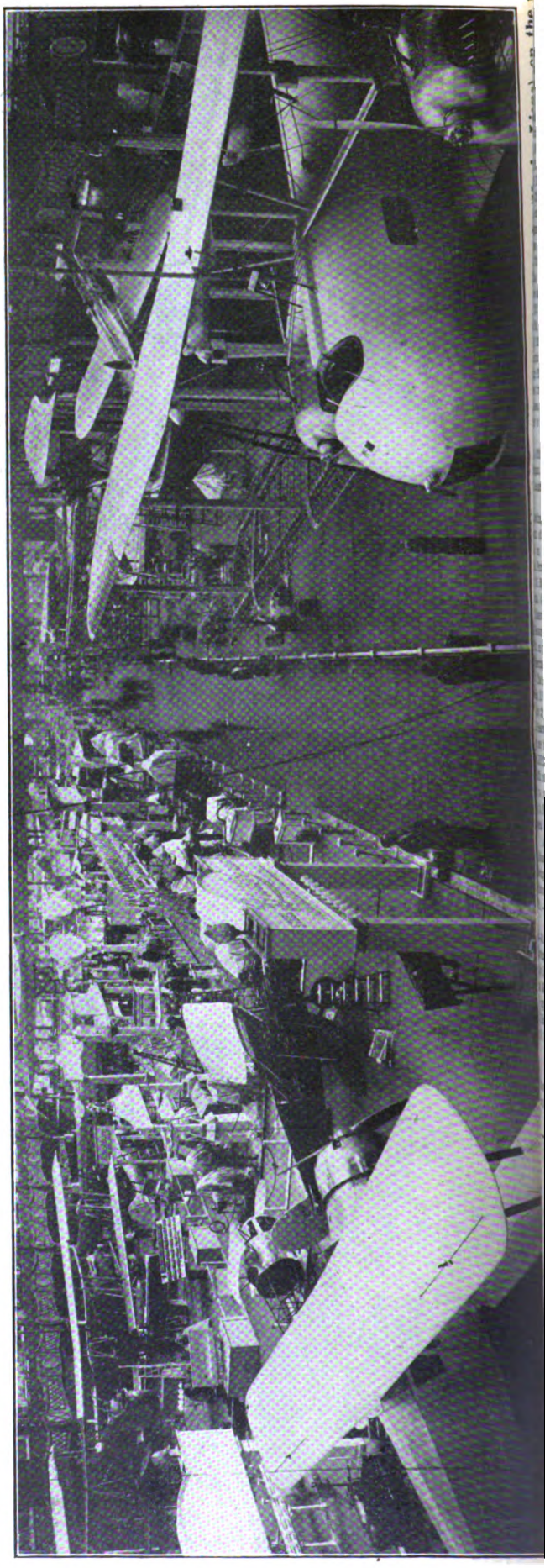
The floats are of the long, single-step streamline type and are attached to the fuselage by two streamlined "N" type struts. The gaps between the front two legs of the "Ns" are filled in, and each makes what looks like one deep leg.

The tops of these struts do not meet on the centre-line of the underside of the fuselage as in previous Curtiss, Supermarine and Gloster aircraft but merge into the fuselage some distance apart at what would be the bottom longerons in a normal fuselage. The floats are interconnected by two streamline wires.

Little is known about the Nieuport-Delage machines, which are to be fitted with Hispano-Suiza inverted "T" type engines, except that the engines will be cooled with the new ethylene-glycol fluid developed by the Material Division, U.S. Army Air Corps.

This fluid has a boiling point of 388 degrees F. and the temperature found most suitable at which to operate an engine using this fluid is 300 degrees F. The radiator required to cool an engine operating at this temperature is approximately one-fourth the size of one required to cool the same engine producing the same horse-power when using water as a cooling liquid and operating at normal temperature.

The French Government are to be congratulated on making so prompt a use of the two most outstanding recent American developments.—L. B.



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THE ROYAL AIR FORCE.

The London Gazette.

July 9.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—The following are granted S.S. comns. as Plt. Offs. on probation with effect from and with seniority of June 28:—G. E. Agard-Butler, N. Alexander, F. C. Allen, C. A. Ball, G. Bearne, G. Calvert, N. J. Capper, D. I. Carlyle, I. A. Critchley, C. H. Glover, D. H. A. Golege-Steel, W. E. Grant, D. C. Harrison, W. J. Hodge, A. H. Houghton, G. M. Ievers, F. J. B. Keast, D. W. Lydall, I. L. S. McNicol, C. W. Marriott, T. G. Melior, C. E. Morse, J. T. Mynors, B. Paddon, H. G. J. Purcell, N. Stratton, J. M. Waddell, G. N. Warrington, G. E. S. Williams, S. N. Wiltshire.

The following Plt. Offs. are promoted to the rank of Flg. Off.:—A. D. Bennett (with seniority of Mar. 2) (Mar. 7); N. F. V. Henkel (June 8); D. J. Waghorn, N. A. Tait, W. H. Hutton, J. R. H. Pott, W. K. Beisiegel (June 17); H. Bailey, V. S. Bowling, N. W. Creasy, I. D. Elliott, W. R. Tope (June 30).

Flg. Off. A. W. Elias takes rank and precedence as if his appointment as Flg. Off. bore date Jan. 31, 1927—reduction takes effect from June 20, 1929; Flg. Off. M. H. Clare takes rank and precedence as if his appointment as Flg. Off. bore date May 9, 1929—reduction takes effect from May 16, 1929; Plt. Off. H. R. Dale takes rank and precedence as if his appointment as Plt. Off. bore date Feb. 22, 1929, immediately following Plt. Off. A. F. C. Booth on the gradation list—reduction takes effect from May 24, 1929.

Flg. Off. E. Whittlesea, M.B.E., is placed on the retired list (July 6); Flg. Off. H. J. Usher is placed on the retired list on account of ill-health (July 10).

The following Flg. Offs. are transferred to the Reserve (July 8):—CLASS A.—C. H. Morgan, J. E. Davies, R. W. Steele, A. J. Thompson, W. E. Gray, E. L. Leader, W. A. Cooke. CLASS C.—L. A. Egglesfield, E. Walker.

Flg. Off. B. B. Dowling (Lt., Manch. R., R.A.R.O.) relinquishes his S.S. comn. on account of ill-health (July 8). The S.S. comns. of the following Plt. Offs. on probation are terminated on cessation of duty:—I. M. L. Kat Ferreira (June 29); E. G. Hucker (July 6). Plt. Off. on probation C. H. Robbins is dismissed the Service by sentence of General Court Martial (June 29).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—The following are granted comns. in Class A.A. (ii) as Plt. Offs. on probation:—R. G. Shaw (June 21); W. Clarke (June 24); I. B. Sherring, L. Swan (June 26); K. Shenstone, E. S. Kennedy (June 27). The following Plt. Offs. on probation are confirmed in rank:—J. G. Naz, E. W. Seymour-Hosley (June 29); J. L. Browne, W. W. L. Jones (July 2); J. W. Carmichael (July 9). Plt. Off. J. A. Hall of the Special Reserve is promoted to the rank of Flg. Off. (June 11). The following are transferred from Class A. to Class C:—Flt. Lt. R. A. Birkbeck, D.F.C. (May 12); Flg. Off. G. C. Lugg (Mar. 13). The following Flg. Offs. relinquish their comns. on account of ill-health and are permitted to retain their rank:—S. A. Lane (July 10); D. E. B. Clark (July 3). Flg. Off. A. L. Monger is dismissed the Service by sentence of General Court-martial (June 6).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 602 (CITY OF GLASGOW) (BOMBER) SQUADRON.—The following to be Plt. Off.:—F. G. Murray (May 29).

No. 603 (CITY OF EDINBURGH) (BOMBER) SQUADRON.—The following Plt. Offs. to be Flg. Offs.:—J. M. Fosbrooke (Nov. 30, 1928); I. E. C. Watson (Jan. 22).

MEDICAL BRANCH.—No. 605 (COUNTY OF WARWICK) (BOMBER) SQUADRON.—The following Flg. Off. to be Flt. Lt.:—J. S. Jerome, M.C., M.A., B.M. (July 5).

PRINCESS MARY'S R.A.F. NURSING SERVICE.

The following are appointed to the permanent service (July 1):—SISTERS.—Miss E. E. Horsford, Miss E. M. Murphy, Miss H. Adams. STAFF NURSE.—Miss G. F. H. Lloyd.

Appointments.

Week ending July 15.

GENERAL DUTIES BRANCH.—Group Captain H. R. Busteed, O.B.E., A.F.C., to R.A.F. Reception Depot, West Drayton, to command, 4/7.

Squadron Leader F. E. Hellyer, O.B.E., to H.Q., Coastal Area, 8/7.

Flight Lieutenants C. E. Maitland, D.F.C., to Experimental Section, R.A.E., S. Farnborough, 24/6. H. A. L. Pattison, to R.A.F. College, Cranwell, 29/6. H. G. P. Ovenden, to No. 216 Sqdn., Middle East, 17/6. J. W. Colquhoun, to H.M.S. *Hermes*, 13/5. C. E. H. Allen, D.F.C., to Cambridge University Air Sqdn., 8/7.

Flying Officers W. J. Coadwell, D.S.M., to Aircraft Depot, 'Iraq, 5/6. W. G. Campbell, to Home Aircraft Depot, Henlow, 6/6. D. G. Walker, to Home Aircraft Depot, Henlow, 25/6. J. H. Pool, to Home Aircraft Depot, Henlow, 3/7. H. M. S. Wright, J. M. Cohu, A. W. B. McDonald and G. B. M. Rhind, all to Cambridge University Air Sqdn., 8/7. D. D. M. Eastwood, to No. 4 Stores Depot, Ruislip, 6/6. (Hon. Flt. Lt.) L. P. Winters, to No. 501 Sqdn., Filton, 3/7. D. J. Waghorn, to No. 408 (F.F.) Flight, 21/6. C. H. Johnson, to R.A.F.M.T. Depot, Shrewsbury, 15/7. C. W. L. Trusk, A.F.C., to Home Aircraft Depot, Henlow, 1/7. R. J. Carvell, to Home Aircraft Depot, Henlow, 8/6. P. C. Fair, to No. 446 (F.S.R.) Flight, 5/7. G. N. S. Lane, to H.Q., Coastal Area, 1/7.

Pilot Officers D. R. S. Freestone, to No. 3 F.T.S., Grantham, 17/6, on appointment to a Perm. Comn. (on probation). E. Coleman, D.F.M., to R.A.F. College, Cranwell, 17/6, on appointment to a Perm. Comn. (on probation). H. E. Dicken, to No. 35 Sqdn., Bircham Newton, 17/6, on appointment to a Perm. Comn. (on probation). P. J. Connolly, to No. 47 Sqdn., Middle East, 19/6. P. J. J. Cullinan, G. A. E. Harkness, and R. Louis, to No. 70 Sqdn., 'Iraq, 13/6. J. C. Harcombe, to No. 55 Sqdn., 'Iraq, 13/6. E. C. Passmore, to No. 30 Sqdn., 'Iraq, 13/6. J. R. Robins, to No. 84 Sqdn., 'Iraq, 13/6.

MEDICAL BRANCH.—Squadron Leaders R. W. Ryan, M.B., to H.Q., No. 1 Air Defence Group, Sloane Street, S.W., 26/7. E. A. Lumley, M.C., M.B., to H.Q., A.D.G.B., 1/8. T. J. Thomas, M.B., to Central Medical Establishment, Clement's Inn, 22/7.

Flying Officers C. Crowley, M.B., to Medical Training Depot, Halton, 2/7. H. C. S. Pimblett, M.B., to Medical Training Depot, Halton, on appointment to a S.S. Comn., 2/7.

STORES BRANCH.—Flight Lieutenant H. J. Barnham, to Station H.Q., Duxford, 14/6.

Flying Officer B. E. Essex, to R.A.F. Base, Malta, 5/7.

ACCOUNTANT BRANCH.—Flying Officer R. J. Wishlade, to R.A.F. Depot, Uxbridge, 1/7.

CHAPLAINS BRANCH.—The Rev. T. A. P. King, to R.A.F. Depot, Uxbridge, on appointment to a S.S. Comn., 3/7.

The Higher Command.

The Air Ministry announces the following appointments:—

Air Vice-Marshal F. R. Scarlett, C.B., D.S.O., now Air Officer Commanding, Fighting Area, Air Defence of Great Britain, to command the Royal Air Force in the Middle East in November next vice Air Vice-Marshal T. I. Webb-Bowen, C.B., C.M.G., on termination of his three years' appointment.

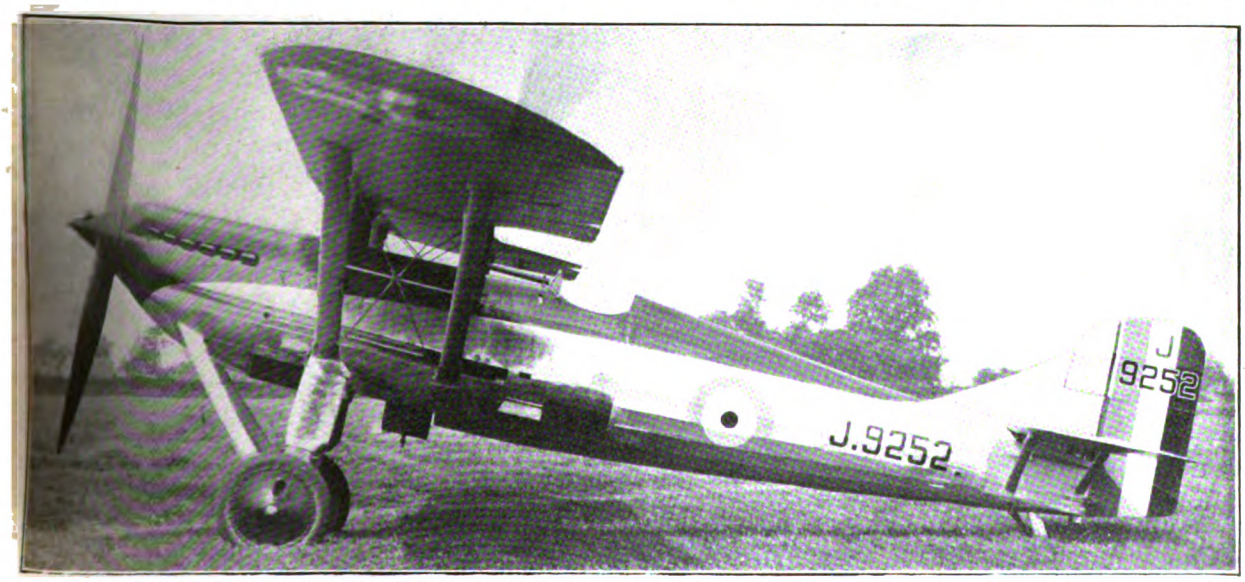
Air Vice-Marshal H. C. T. Dowding, C.B., C.M.G., now Director of Training, Air Ministry, to command the Fighting Area, Air Defence of Great Britain, in November next.

Air Vice-Marshal A. E. Borton, C.B., C.M.G., D.S.O., A.F.C., now Director of Personal Services, Air Ministry, to command the Inland Area, Royal Air Force, in November next, vice Air Vice-Marshal C. A. H. Longcroft, C.B., C.M.G., D.S.O., A.F.C., on termination of his three years' appointment.

A Royal Investiture.

His Royal Highness the Prince of Wales held an investiture at St. James's Palace on behalf of the King on July 9.

Among those in attendance upon His Royal Highness was Air Chief-Marshal Sir John Salmond (Principal Air Aide-de-



A FAST FIGHTER.—The Westland Wizard II single-seat fighter monoplane (Rolls-Royce F.XIs engine), which has a high performance at altitude with a low landing speed.

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Camp). Group Capt. R. Peel Ross (Aide-de-Camp-in-Waiting) was also present.

The following were among those introduced into the presence of the Prince of Wales, when His Royal Highness invested them on behalf of the King with the respective divisions of the Orders into which they have been admitted:

The Most Excellent Order of the British Empire.—Civil Division, Dame Grand Cross: Professor Dame Helen Gwynne-Vaughan.

The Most Honourable Order of the Bath.—Companion, Military Division: Air Commodore Cyril Newall.

The Most Excellent Order of the British Empire.—(Military Division), Officers: Wing Cdr. Edgar Huntley, R.A.F., and Sq. Ldr. Robert Oxland, R.A.F. Members: S-M. Charles Goodchild, R.A.F.; S-M. Francis Parker, R.A.F., and S-M. Charles Turner, R.A.F.

The Prince of Wales, on behalf of His Majesty, then conferred decorations as follows:—

The Distinguished Flying Cross.—Received a Second Bar: Sq. Ldr. Harold Whistler, R.A.F.

The Air Force Cross.—Flg. Off. Ardley Pickering, R.A.F., and Flg. Off. Claude Trusk, R.A.F.

The Medal of the Military Division of the Most Excellent Order of the British Empire.—For Gallantry: Flg. Off. Walter Anderson, R.A.F., and Cpl. Thomas McTeague, R.A.F.

A Fatal Accident.

The Air Ministry regrets to announce that as the result of an accident near Trowbridge to an Avro machine of No. 1 Flying Training School, Netheravon, on July 11, Plt. Off. Reginald Montague Swaine, the pilot and sole occupant of the aircraft, was killed.

Vacancies for Apprentice Clerks.

The Air Ministry announces that sixty vacancies exist in the R.A.F. for well-educated boys, between the ages of 15½ and 17, to enter as apprentice clerks. Thirty vacancies will be filled in October next and 30 in January, 1930. Some of the posts will be filled by means of an open competition which will be held by the Civil Service Commissioners in October at various centres (for entry in January, 1930) and the remainder by direct entry of boys who have obtained an approved school certificate. Successful candidates will be required to complete, in addition to the training period, 12 years' Regular Air Force service after reaching the age of 18. At the age of 30 they may return to civil life or may be permitted to re-engage to complete time for pension.

Detailed information regarding the apprentice clerk scheme can be obtained from the Royal Air Force, Gwydyr House, Whitehall, S.W.1.

The Premier and Service Air Transport.

In the House of Commons on July 10, Capt. Crookshank asked the Under-Secretary of State for Air if he would state what were the regulations in force regarding the use of military aeroplanes by civilians other than those connected with the Air Ministry; whether any charge was made for the use of such aeroplanes and if so what were the rates?

The Under-Secretary of State for Air said that the use of military aeroplanes by civilians other than those connected with the Air Ministry was regulated in accordance with paragraph 797 of the King's Regulations for the Royal Air Force which provided *inter alia* for the conveyance of "persons of distinction in the public service to any part of the British Empire or of any friendly Power" in cases in which the responsible authority was "satisfied that the public interest would be promoted by the grant of flying facilities." In this country such flights were only authorised by the Air Ministry, while overseas the personal authority of an air or other officer commanding was required. The answer to the second part of the question was in the negative and the third part did not therefore arise.

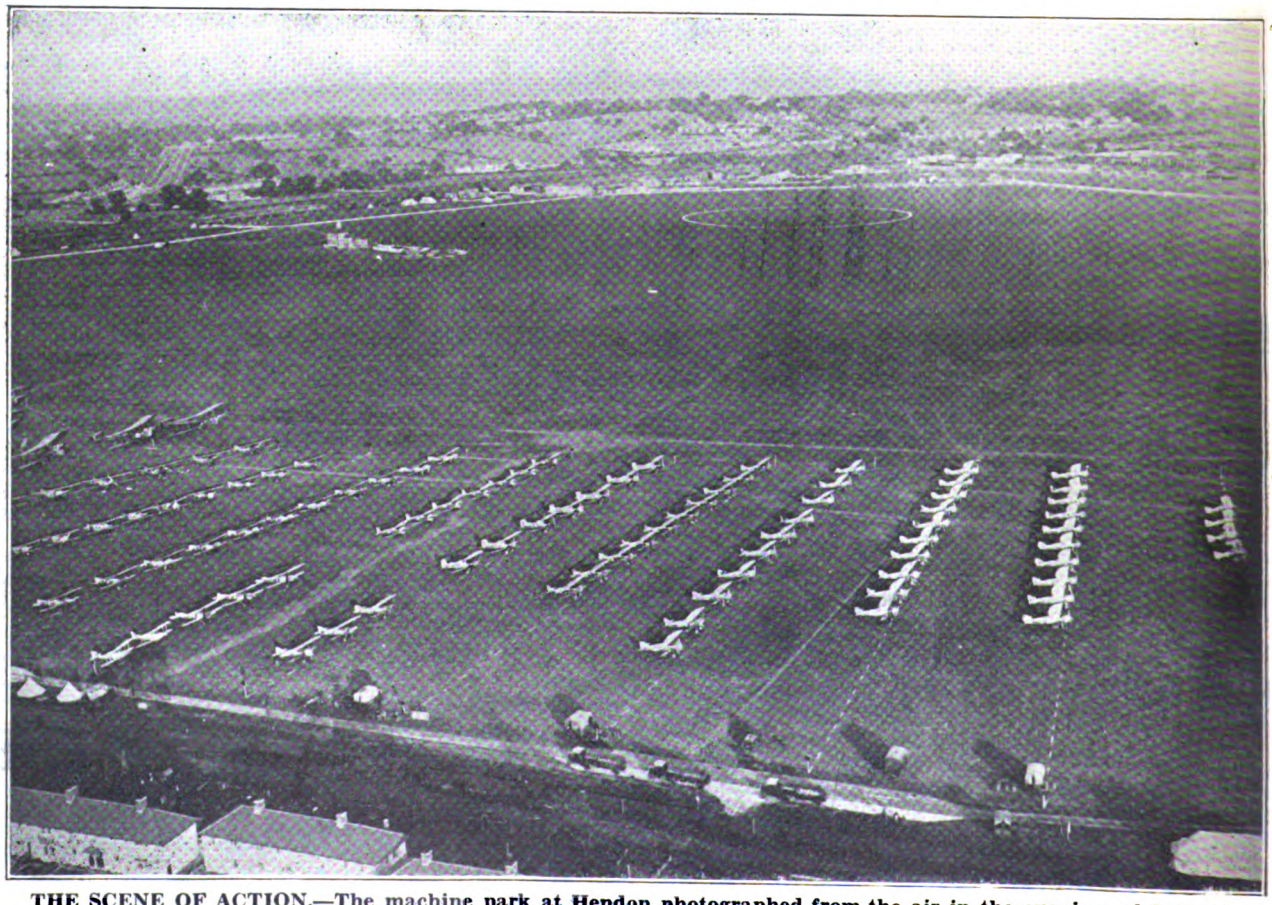
Capt. Crookshank asked whether it was a fact that a Service aeroplane had been used on July 6 to take a member of the Government to a political demonstration at Durham?

Mr. Montague said that the object of the flight was not to enable the Prime Minister to attend a party gathering but to curtail his absence from the seat of Government.

Capt. Gunston asked whether there was any precedent for a Minister using a Service aeroplane for party meetings, to fly to a political demonstration? If the Prime Minister was so pressed for time why could he not hire a private aeroplane?

Mr. Montague said that the aeroplane did not go within 30 miles of the function concerned and it was necessary to take that form of transport in order that the Prime Minister should fulfil an engagement in the public service.

Capt. Crookshank gave notice that in view of the unsatisfactory nature of the replies he would raise the question on the Adjournment. On re-opening the question he said that the question arose out of the Prime Minister's use of a Service aeroplane on July 6 in order to go to Durham to take part in a political demonstration. He would like a further explanation of how the Air Ministry could satisfy itself or the Air Council, which had nothing to do with politics, could satisfy itself that the public interest would be promoted by the presence of the Prime Minister at a purely party demonstration. What he and the general public wanted an explanation about was this:—Granted that it was necessary for pilots to receive their training, granted that the expense to the State was not overwhelmingly large, granted that the Prime Minister had to be in London on Friday night and



THE SCENE OF ACTION.—The machine park at Hendon photographed from the air in the evening of July 11.
("Aeroplane" photograph.)

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Sunday morning, the question to which he required an answer was, "As he had to go by aeroplane why could he not go in a civil machine? Why did he have to call upon the Royal Air Force to supply him with a machine when the Regulations of the Air Force state that they are to be provided only when the public interest will be promoted? How can the public interest in the general sense be promoted by either the Prime Minister or anyone else of any party attending a purely party demonstration."

Mr. Montague said that he was going to take the position that if there was any citizen of this country who had the right to the use of a Service aeroplane it was the Prime Minister. If the Prime Minister wanted to use a civil aeroplane he might have used a dozen quite easily. The question was one of facility and convenience.

Sir Samuel Hoare said that he should be the last Member of the House to blame the Prime Minister or any Member on the front Bench for flying on his official duties. He (Sir Samuel Hoare) had flown between 40,000 and 50,000 miles on his official duties during the last Parliament. They did not criticise the Prime Minister for flying upon his official duties but he was genuinely sorry that a military machine should have been used to take any Minister to a party meeting and he would suggest to the Prime Minister—who took a very great interest in the Air Force and the development of flying generally—that it would be much better if, on a similar occasion in future, he flew in a civil machine.

Inter-Service Polo.

The annual Polo match between the Royal Navy and the R.A.F. for the Duke of York's Challenge Cup was played at Ranelagh on July 11.

The R.A.F. received a handicap of 2½ goals and won the match by 7½ to 5 goals. The Air Force opened the scoring with a goal by Flt. Lt. A. B. Ellwood. Shortly after Lt. Cdr. Lord Louis Mountbatten hit a goal for the Navy. Early in the second chukka Sq. Ldr. the Rev. M. Beauchamp put the Air Force further ahead. During a noisy but unproductive bit of play Lt.-Cdr. C. R. W. Gairdner's pony bolted with him and leaving the ground dashed under some trees and threw his rider. Lt.-Cdr. Gairdner was stunned and broke two ribs. After a short delay his place was taken by Admiral Sir Roger Keyes. The Navy improved in the next two chukkas and hit three goals to the Air Force one. The fifth chukka was all Air Force and at the end of it they were leading by 7½ to 4. Both teams were pretty well played out when the Navy hit their fifth and last goal. The teams were:—R.A.F.: 1, Sq. Ldr. the Rev. M. Beauchamp; 2, Sq. Ldr. A. Coningham; 3, Flt. Lt. A. B. Ellwood; back, Sq. Ldr. W. de W. Waller. R.N.: 1, Lt. Cdr. C. R. W. Gairdner (Admiral Sir Roger Keyes); 2, Lt. Cdr. Lord Louis Mountbatten; 3, Cdr. E. G. Hastings; back, Lt. W. Eykyn.

The Duke of York's Cup was presented to the winners by Lady Keyes.—C. M. MCA.

THE R.A.F. ANNUAL DINNER.

The tenth annual dinner of the R.A.F. Dinner Club, founded in 1919 by Wing Cdr. W. G. Christie, C.M.G., D.S.O., M.C., and the late Sq. Ldr. Vivian Robeson, D.S.O., was held on Friday, July 12, the eve of the R.A.F. Display, at the Connaught Rooms. His Royal Highness the Prince of Wales was the guest of the evening. Sir Samuel Hoare, late Secretary of State for Air, was an honoured guest. Marshal of the Royal Air Force Sir Hugh Trenchard, Bart., G.C.B., D.S.O., was in the chair. Among those present were:—

Air Chief Marshal Sir John Salmond.

Air Marshals Sir John Higgins and Sir W. H. G. Salmond.

Air Vice-Marshals C. L. Lambe, C. Longcroft, Sir Oliver Swann, Sir Philip Game, Sir Vyell Vyvyan.

Air Commodores Bowhill, the Hon. J. D. Boyle, Drew, Holt, Longmore, Ludlow-Hewitt, MacEwen, Newall, Warrington-Morris, Fellowes, The Rev. R. E. Vernon Hanson.

Colonels T. E. St. C. Daniell, Sir Walter Lawrence, Bt.

Captain Birkett, R.N.

Group Captains Barratt, Bettington, Busteed, Bigsworth, Christie, Courtney, McNeece-Foster, Gossage, Gill, Rathborne, Ross, Smyth-Piggott, Cave-Browne-Cave, Grenfell.

Lt.-Colonels Donaldson-Hudson, Fell, Sir Francis McClean, Rabagliati, Dore.

Wing Commanders J. T. Babington, Hetherington, the Hon. Maurice Baring, Bailey, Barton, Colbran, Cordingley, Don, Douglas, Evill, Garrod, Gould, Graham, Grant-Dalton, Laws, Macdonald, Maude, Maund, Maycock, Murlis-Green, Murray, Nicholl, Parry, Peck, Robinson, Ryan, J. Sowrey, Sutton, Tyssen, Ward, Welsh, Hicks, Tedder, F. Sowrey, Collishaw.

Majors Beatson, Bulman, Iliske, Lambert, Moller, Pye-Smith, Reynolds, Somers-Clarke, Windeler.

Squadron Leaders J. O. Andrews, Baker, Beauman, Black, Budgeon, Burge, Capel, Cockey, Cole-Hamilton, Coningham, de Roeper, Don, Ellerton, R. Graham, Elmhirst, England, Evans, Everidge, Gilley, the Rt. Hon. F. E. Guest, Hall, Hamilton, Hollinghurst, Jones-Williams, Lees, Leslie, McEntegart, Maynard, Rea, Ridley, Russell, Slessor, Thomas, Wann, Workman, Williams, Glenny, Orlebar, Scott.

Captains Bailey, Dainty, Furniss, Herbert, Hogarth, Moore, Ramsay, Waddington, Woodford, Findlay, Plugge.

Flight Lieutenants Andrews, Allen, Cahill, Chick, Dearlove, G. E. Gibbs, V. R. Gibbs, Gillman, Halford, Hilton, Martin, Sorley, Whitaker, Durrant, Jenkins, Openshaw, Wiggin, Wilson, Eales-White, May, Pope, Mellor, The Rev. C. S. Ensell, The Rev. C. F. Neate.

Messrs. Atcherley, Broadway, Colebrook, Crosbee, E. B. Fielden, N. Fielden, Gowing, Howes, Hurst, Jones, Newsome, Pumphrey, Purdey, Snowden-Gamble, Stubbs, Walker, Winter, Barfoot-Saunt, Grey, Trusk, Yeatman, Presland, Switzer, Ward

Proposing the toast of the Royal Air Force Sir Hugh Trenchard thanked Air Vice-Marshal Longcroft for his seven-year chairmanship of the Club, and Group Capt. Gossage, Major Pye-Smith, and Sq. Ldr. Andrews for their work as organisers.

Turning to the R.A.F. Sir Hugh Trenchard said that the proposed expansion was not yet complete. There were still twenty or more squadrons to be raised. But when we looked back ten years we could not think we were not progressing. While the Air Force was expanding it meant harder work for those in the force than if it were stationary. And those who had left could help by making people understand that the Air Force existed for work and not for pleasure.

Those who were building the Air Force had built the foundations and the walls and the roof. The furniture still had to be put in. So they must create stability and not ask for changes,—some years must still pass before the idea of a separate Third Service had sunk into the thoughts of the British people.

Sir Hugh reminded his hearers of what the R.A.F. had done of late, referring particularly to the Far East cruise of the Supermarine flying-boats under Grp. Capt. Cave-Brown-Cave; Sir Philip Sassoon's visit to the over-seas units; Sir Samuel Hoare's journey of 4,075 miles in five days from Cairo to the Soudan and back; and the Kabul evacuations of 586 people in 80 flights covering 28,000 miles without loss of life in the worst weather.

Referring to the widespread activities of the R.A.F. Sir Hugh mentioned one squadron at Hinaidi which on a certain day had two machines at Risalpur, two at Aleppo, two at Karachi, and two at Hinaidi. He mentioned the flight to India non-stop of Sq. Ldr. Jones-Williams and Flt. Lt. Jenkins. Also he told of Sq. Ldr. Livock's various journeys from and to Karachi along the Persian Gulf in the heavy rain season to test the possibilities of flying-boats, and of Sq. Ldr. Howe's journeys from Basra, up and down the Persian Gulf.

Sir Hugh said that the R.A.F.'s work at Aden was one of the most brilliant things it had done. And he referred particularly to the high value and the personal enterprise of Sir John Salmond's flight all round Australia.

Looking to the future he drew the attention of his hearers to the Air Force List, in which they might see "the flow of promotion starting up, *and out.*"—[The reference here is no doubt to those officers who will retire after promotion,—those known in the R.A.F. as "the beach party."—C. G. G.

He referred gracefully to the laying of the foundation stone of the R.A.F. College at Cranwell by the Lady Maud Hoare, and to the habit of His Royal Highness the Prince of Wales of flying everywhere with the minimum of fuss as happy omens for the future.

Finally he gave a list of the events in athletics and other forms of sport in which the R.A.F. had been victorious over the other Services,—or over notable civilian organisations such as the beating of Sandhurst and Woolwich in Rugby Football by the R.A.F. College, and the beating of the Navy by the R.A.F. in Association Football, and the beating of the Army in Egypt in the same game, and the beating of the Navy in Polo, and the winning of the Marathon Race again by Corporal Ferris.

After the toast of the R.A.F. had been honoured, Sir Hugh Trenchard proposed the health of Sir Samuel Hoare saying that his work was known throughout the World. He had got over difficulties which seemed impossible to overcome in organising our Imperial air routes. And on the Service side he had always stood up for the R.A.F.

SIR SAMUEL HOARE replied, after his health had been drunk in a way which showed clearly how much his high qualities are appreciated by the Air Force.

He said that there was no assembly where he would rather have his health drunk than by this one, and there was no man by whom he would rather have it proposed than by his old friend Sir Hugh Trenchard. One of the most tiring some jobs which Sir Hugh had had must have been the education of successive Secretaries of State. His own predecessors, including Capt. F. E. Guest were not difficult, but he sympathised with Sir Hugh when he himself came into office in 1922, the third to be instructed in a few months. He had only been in the air once before that date, and that was on the Italian Front during the War, in an Italian airship, with the then Lord Mayor of London, who was

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completely beatific all the while, having taken three boxes of Mothersil's on the way from the hotel to the air station.

Mr. Bonar Law had said, only a few months earlier, that the Air Ministry would soon be abolished and that the Army and Navy would split up the Air Force between them.

His own interest in Empire Air Routes began, he said, when Sir Hugh Trenchard showed him a big map with, marked on it, the landing grounds which would link up the Empire.

Recalling one of his recent journeys to the East by air, when, owing to a delay he had to finish his journey by rail,—he told the story of the French officer who, meeting him in Paris, said that if only he (Sir Samuel) had been killed in a railway accident—for preference on an Italian railway—on his way home he would indeed have established the superiority of Air Transport.

He disclaimed any credit for his work and said that no captain could fail with such a team to back him as those pioneers of Air Control, Air Defence, and Technical Development, whom he saw around him that evening.

In conclusion he said that he had worked with Sir Hugh Trenchard for six years, and they had been in many difficult corners. No Chief of Staff and Political Chief had ever been in closer touch. He himself could not wish for a better friend or a surer rock of support. Sir Hugh Trenchard had doggedly held a very difficult position, and there would be no more distinguished page in History than that which would tell of his work. He (Sir Samuel Hoare) appreciated the honour which the R.A.F. paid to himself more than almost any that had come to him.

HIS ROYAL HIGHNESS THE PRINCE OF WALES then proposed the health of Sir Hugh Trenchard, saying that he had thought he was going to have a night off from speechmaking. As a Group Captain, R.A.F., he was glad to thank the Dinner Club for their hospitality, and said that he found his transport much facilitated by the R.A.F.

His Royal Highness said that his reason for rising was to propose the health of Sir Hugh Trenchard, as this would be his last dinner with the Club as Chief of the Air Staff. He could claim Sir Hugh as an old friend, not only in the Royal Air Force, but as the highly efficient Colonel of the Royal Scots Fusiliers. Sir Hugh often came to see him, perhaps about his having to wear a very uncomfortable parachute, or about the prospects of young officers, or about the costumes of the fighting men of his Fusiliers.

Sir Hugh Trenchard, the Prince said, might justly be described as the Father of the Air Force. He did not exactly begin the Air Force, but he was a pioneer of Service Flying, and as Chief of the Air Staff he had watched the triumph of the Air Force materialise. The Royal Air Force had never known peace conditions, and much was due to Sir Hugh for the fact that the Air Force had been so soon able to get on an efficient and stable footing. The Royal Air Force was very lucky to have a man of so many fine qualities to guide them. Sir Hugh Trenchard, he said, was a fine soldier, a fine sportsman, and a great gentleman, who would never let you down. He would be leaving this year. The greatest compliment which we could pay him would be to say how much we should miss him.

The feelings of the Air Force having been almost adequately shown, Sir Hugh Trenchard gently thanked the Prince of Wales for the honour done to him, and thanked the Air Force for making his task easy.

Thereafter the company went to another room where they talked. The Prince of Wales remained till long after dinner was over. And many of the younger generation of officers realised the value of this annual gathering.—C. G. G.

THE GOVERNMENT AND AIR SURVEY.

The Rt. Hon. J. H. Thomas, M.P., Lord Privy Seal, speaking in the House of Commons in the Debate on the Address from the Throne of July 3, said:—

With regard to the development of cotton in our Colonies I am one of those who want to make this country independent. I did much in 1924 to encourage that. I now find that surveying in the ordinary course will take four or five years. Is it worth waiting five years for the surveys? I also find that with modern aeroplanes, which are now at our disposal, these surveys can be done in four months. We shall have them carried out by aeroplanes right away wherever necessary, to save delay in valuable developments. All this is an indication of how much can be done within the Empire itself.

Major H. Hemming, Managing Director of the Aircraft Operating Company Ltd., in a letter to *The Times* of July 5 states:—

Sir,—It is indeed encouraging to learn from Mr. Thomas's speech before the House yeterday that the Government are going to have surveys carried out by aeroplanes right away in connection with Empire development.

It is becoming generally recognised that, before opening up undeveloped territories, an economic survey should be made. The recommendations made in the Report of the Commission on the closer Union of the Dependencies in Eastern and Central Africa, of which Sir E. Hilton Young was chairman, recognise this. The high state of efficiency which has now been reached by British companies in carrying out air survey work can enable the recommendations of the Commission to be carried very much further, and also provides a means of giving effect to these recommendations both economically and rapidly.

In the practical field of air survey, British interests lead the world to-day. The air survey work which was undertaken for the Government of Northern Rhodesia has been recognised by that Government as a complete success. We have now reached the stage where we can claim that air surveying, if properly utilised, can be of inestimable value to Empire development. It is most encouraging to know that the Government recognise this. In order to give some idea as to what air survey, in association with suitable ground organisation can do, I would point out that it would be possible to carry out an economic survey of Northern Rhodesia, which has an area of approximately 300,000 square miles, for less than £450,000—that is at a rate slightly below 30s. a square mile. This figure covers all costs, including the flying and taking of the photographs, the laying down of the ground control, the preparation not only of the topographical maps but also of the geological and vegetational maps, and the sending out of the experts dealing with vegetation, soils, minerals, etc., and the information gained would also enable the authorities to decide on the best lines for new roads or railways to take. This survey can be completed in four years.

I am, Sir, your obedient servant,
H. HEMMING.

RED CROSS AEROPLANES.

The International Red Cross Diplomatic Conference, on July 12, adopted a new article of the Geneva Convention dealing with the use of aeroplanes for Red Cross work during war.

The final text was as follows:—

(1) Aeroplanes used for medical purposes should enjoy the protection of the Convention on condition that they be exclusively reserved for the transport of sick and wounded.

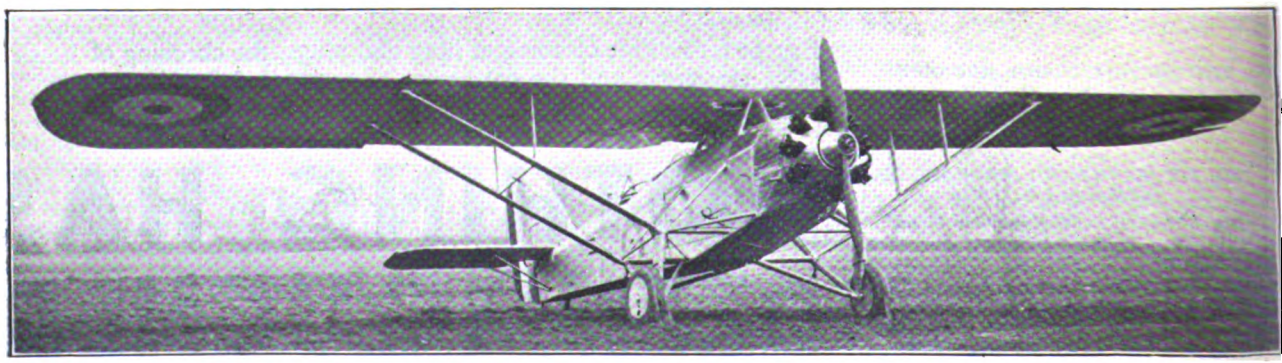
(2) The aeroplanes must be painted white, and clearly marked with the distinctive sign provided for in article 18 (a red cross) in addition to the national colours on their lower and upper surfaces.

(3) Except in case of special and express permission it is formally forbidden to fly over the line of fire, as well as over the zone situated in front of the chief medical clearing station, or over any fortification whatever.

(4) Medical aeroplanes must obey every summons to land.

(5) In case of unintentional or forced landing on enemy territory the sick and wounded, as well as the personnel and material, including the aeroplane, continue to benefit by the present Convention.

(6) The pilot, mechanics, and wireless operators captured will be surrendered on condition that they give their parole not to serve until the end of hostilities in any but a medical formation.



THE WESTLAND WITCH.—A two-seat short-range Day Bomber monoplane with the Bristol Jupiter VIII geared engine.

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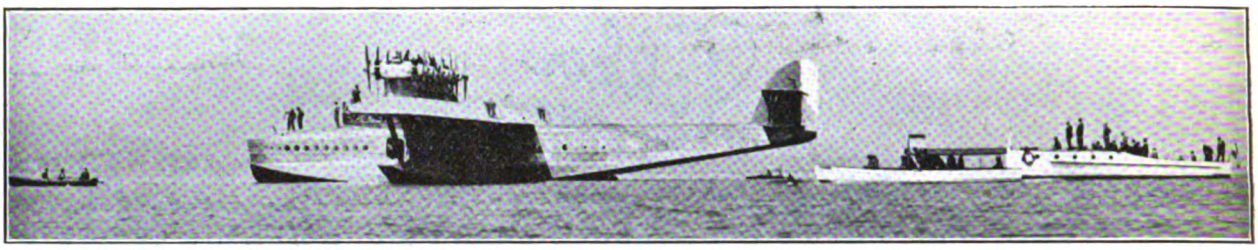
THE BIGGEST YET.



A SPLENDID EXPERIMENT.—The Dornier Do.*x*, afloat on Lake Leman, with her twelve Siemens-Jupiter engines set in six tandem housings.

The following details are to hand, from the Berlin correspondent of *The Times*, about the Dornier Flying-Ship Do.*x*, with twelve Siemens-built Jupiter engines. The description is interesting as showing how ship-like the design is, more especially in making the pilot responsible only for the control surfaces. There is a little difficulty in imagining how such a system can assure the necessary correlation between flying and engine controls:—

The 12 525 h.p. Siemens-Jupiter engines are mounted in pairs, with one pusher and one tractor airscrew in each pair, on a small auxiliary plane above the main plane. This gives the flying-ship from some angles almost the appearance of a biplane. A shaft leads from each pair of engines down to the main plane, which has a span of 160 ft., and along which runs a narrow gangway 2½ ft. high. On this are rails and a small trolley on which mechanics, lying flat, can propel themselves until they reach the engine-pair they want to inspect. In this way it is possible to reach any of the engines during flight and to carry out repairs. It is believed that the machine would be able to maintain itself in the air without loss of height even if four engines failed.

The uppermost of the three decks, a projecting windowed structure with a wide field of view, is the "command station," or "bridge." Forward is the steering cabin, for two pilots, behind that the navigation room for the ship's officers, containing all essential instruments and maps, and behind that again the engine control station, where the engineer officer watches the performances of the 12 engines. There is also a small wireless cabin and mail-room. The crew will consist of the captain, second officer, two pilots, an engineer officer, four mechanics, a telegraphist, a cook, and a steward. The pilots will in a sense be simply helmsmen; they will have no concern with navigation or engines. As on board a ship, their task will be to hold to the course set by the captain.

From the "bridge" a gangway leads down into the ship's interior and the main deck, containing the passenger accommodation. Here are the cabins, each for four or six passengers, divided by a central gangway which runs the length of the ship. Amidships are the large dining and sitting rooms; forward a luggage hold, and aft the kitchen and lavatories. Beneath this middle deck are the fuel and oil compartments connected with the engines by feed-pipes. With the necessary supplies of oil and fuel and the crew of 12 the craft will weigh about 35 tons; its useful load for a flight of 1,000 kilometres (about 620 miles) is calculated at 15 tons, and it is estimated that for that distance it could carry more than 100 passengers with their luggage and a fuel reserve of 50 per cent. The ship also has an auxiliary 4 h.p. engine which serves the lighting plant, the wireless generator, the cooling-water pump, the compressor for starting the engines, and the leakage-pump. The ship's draught when loaded is estimated at 1¼ metres (about 4 ft.), and the propellers would stand 7¼ metres (about 23 ft.) above the surface of the water.

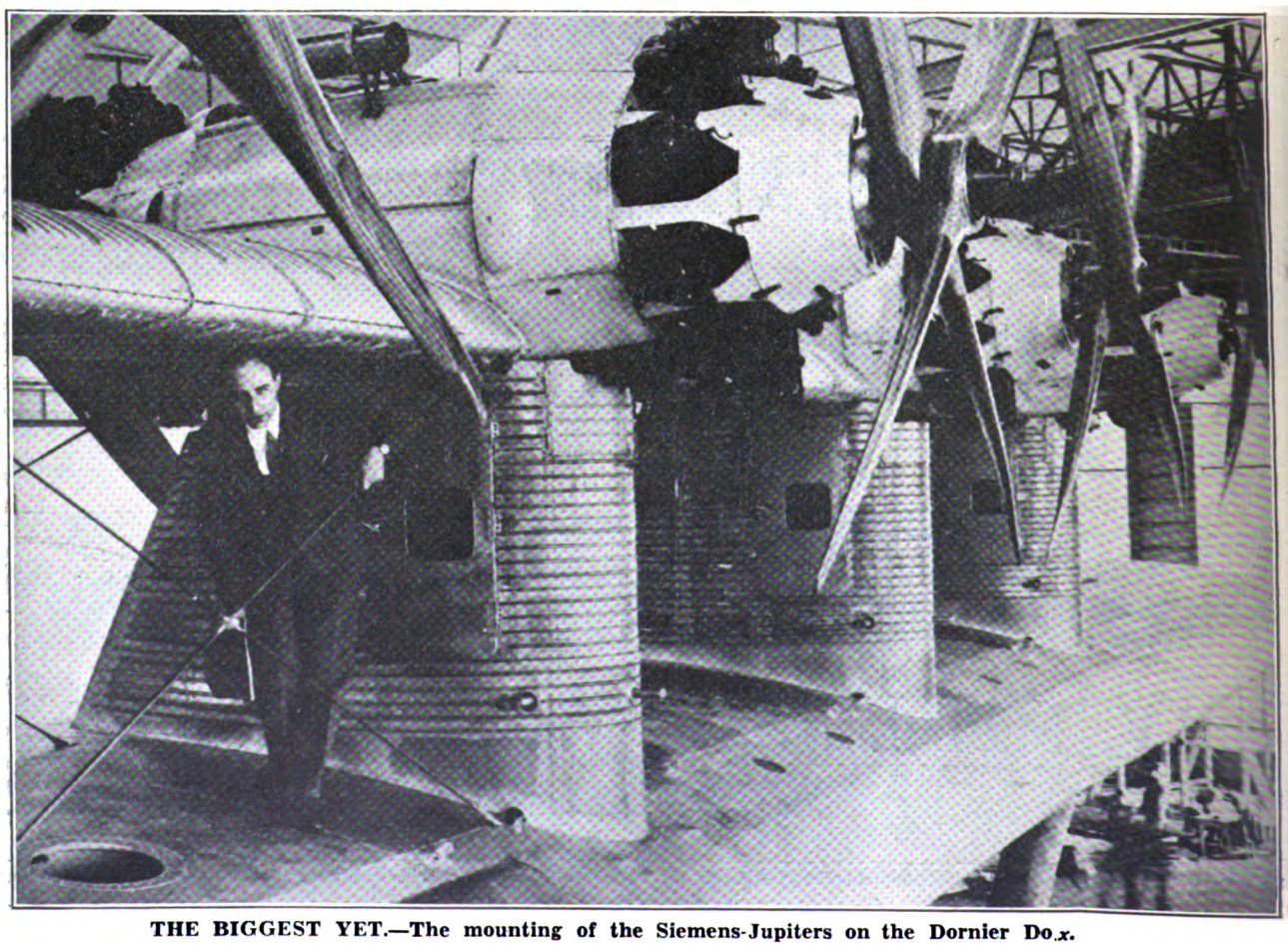
Three short test flights were made first of all, the flying-boat taking off in approximately 30 secs. each time and flying a straight of a few hundred yards.

The latest report to hand states that the Do.*x* has now carried out long flights up to 3 hours' durations.

She was taken out with 25 persons on board and having an all-up weight of 36½ tons, took off with only 8 engines running in 28 secs. She climbed well and made an entirely successful flight at considerable altitude.

Those who like accuracy in the nomenclature of aircraft should note that the "Do." part of the name is the standard abbreviation for the name of Mr. Dornier, the brilliant designer of the machine, and the *x* is the mathematical unknown quantity. Thus the name Do.*x* implies that Mr. Dornier modestly regards the machine as an experiment. All will wish success to his enterprise.

An excellent model is shown on the German stand at Olympia.



THE BIGGEST YET.—The mounting of the Siemens-Jupiters on the Dornier Do.*x*.

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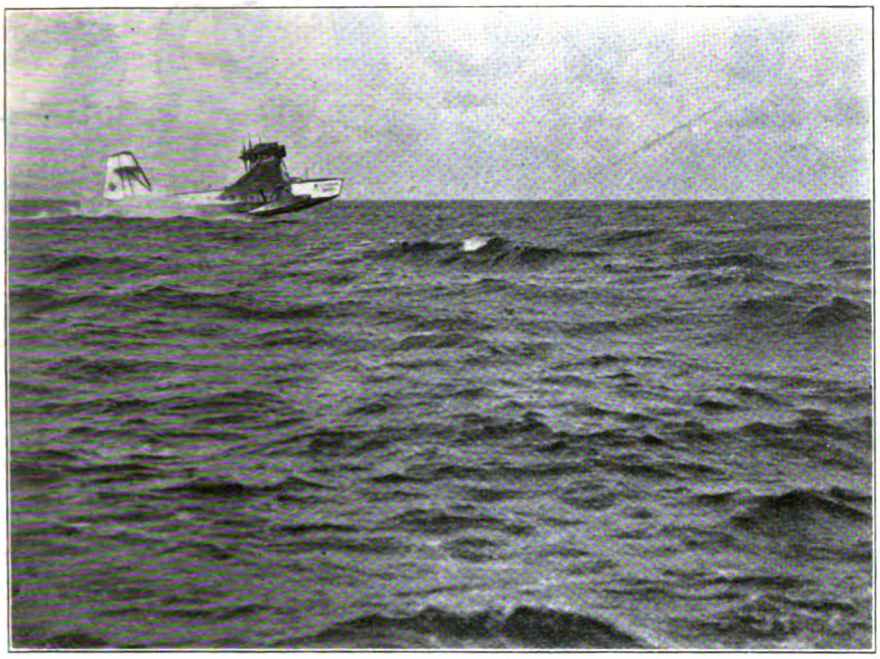

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On December 12th and 13th, 1928, the "Rohrbach-Romar" underwent her seaworthiness trials, under supervision and to the entire satisfaction of the "Deutsche Versuchsanstalt für Luftfahrt and Deutsche Lufthansa A.G.," who satisfied themselves of the excellent manœuvrability of the ship in rough waves.

A model of the "Rohrbach-Romar," 5 metres in size, will be shown at the "International Aero Exhibition," Olympia, at London, from July 16th to August 1st, 1929, so that all details can be easily inspected and studied.

ROHRBACH METALL-FLUGZEUGBAU, G.m.b.H.,
BERLIN, N. 65.

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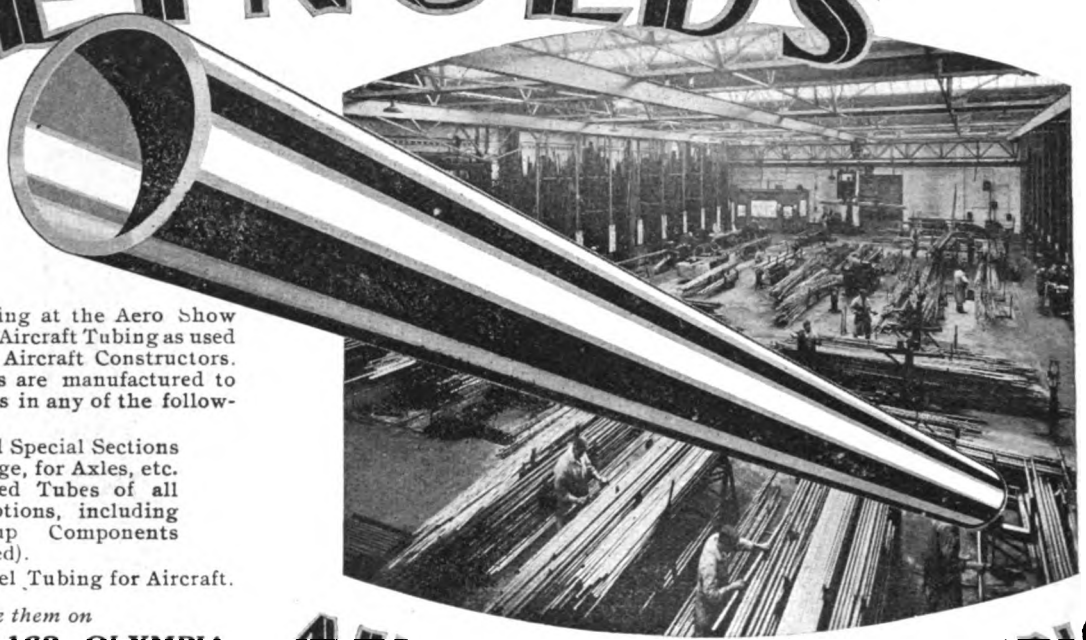

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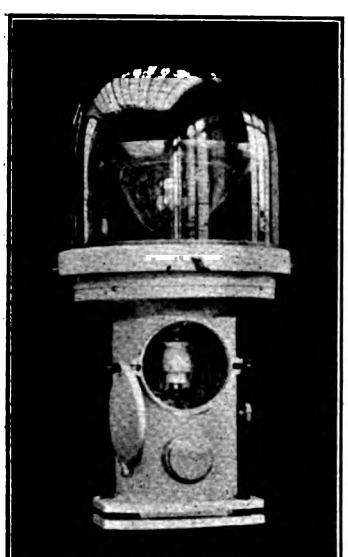

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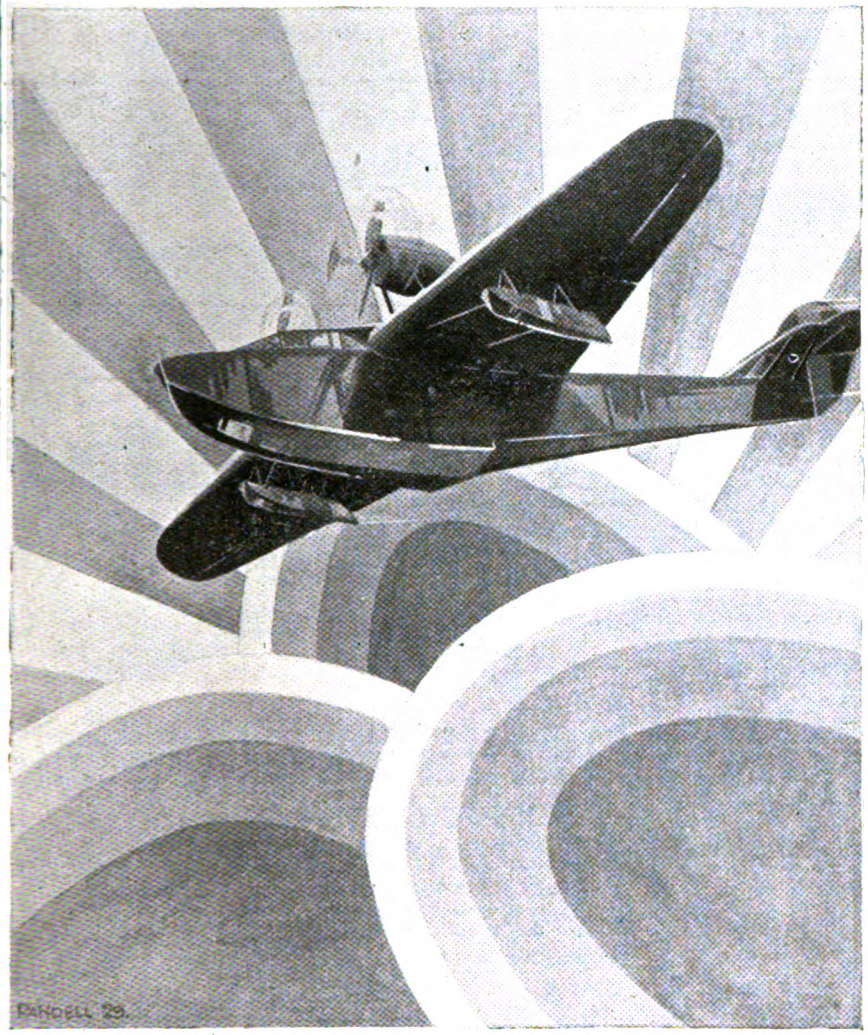

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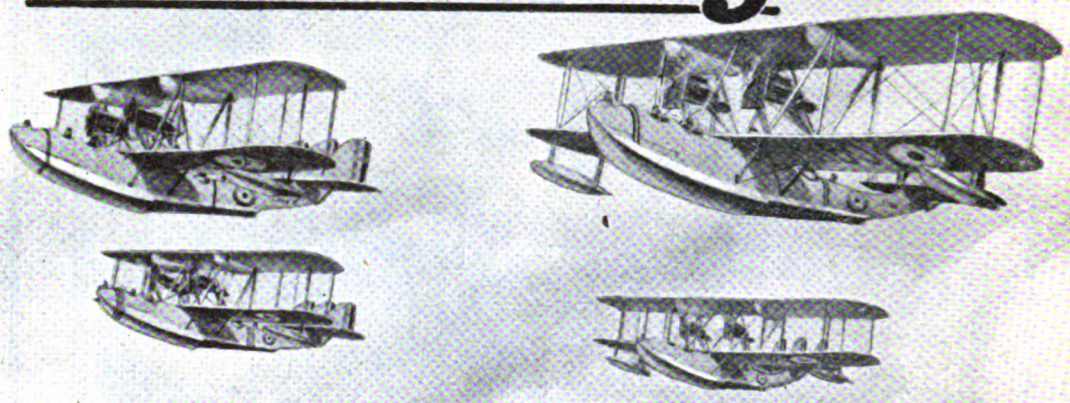

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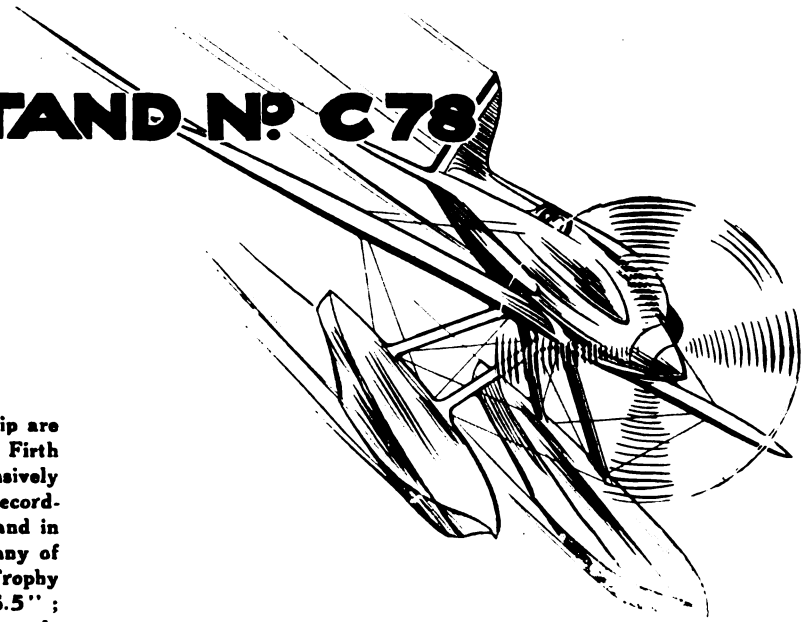

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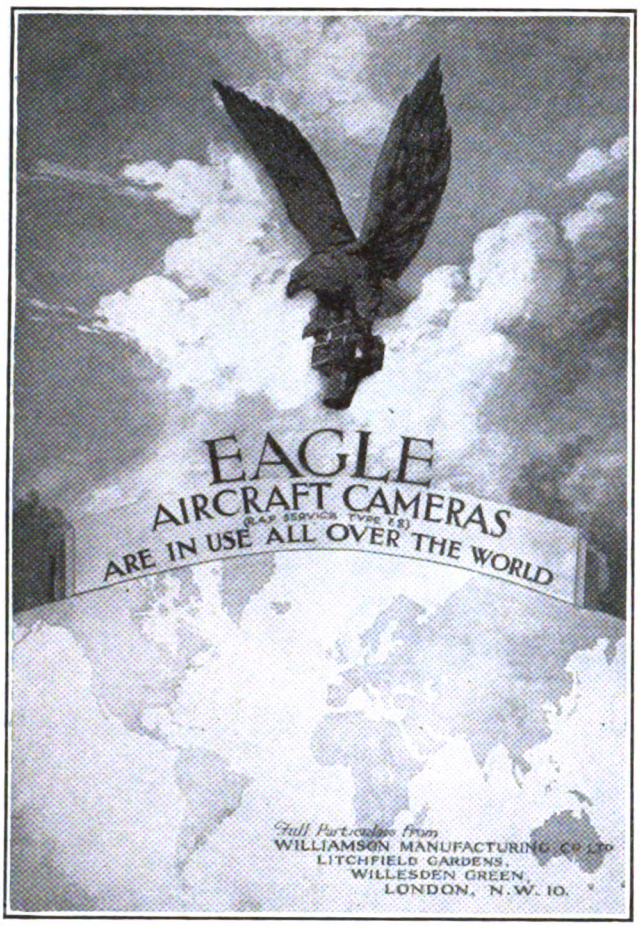

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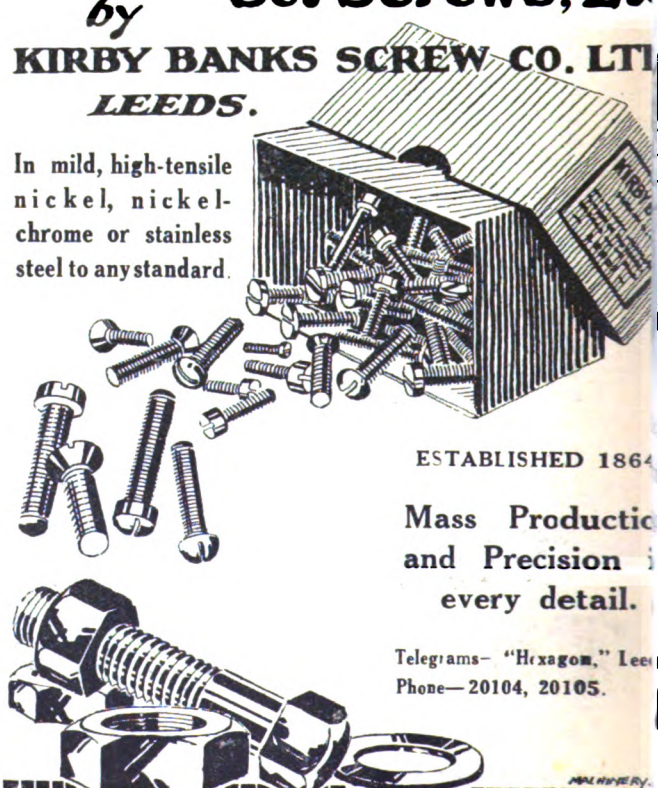

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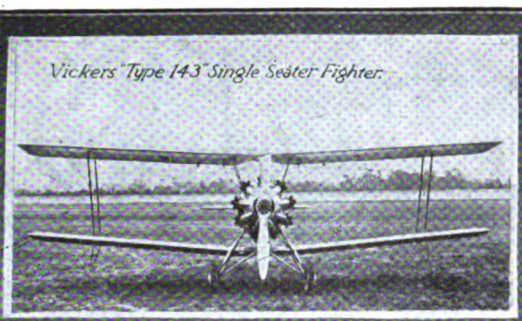
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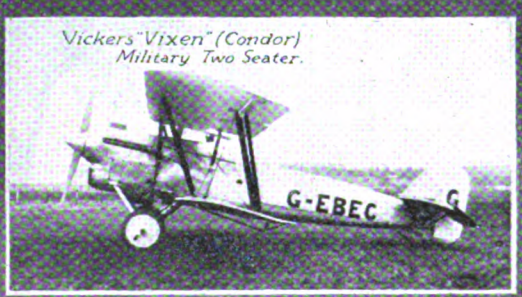
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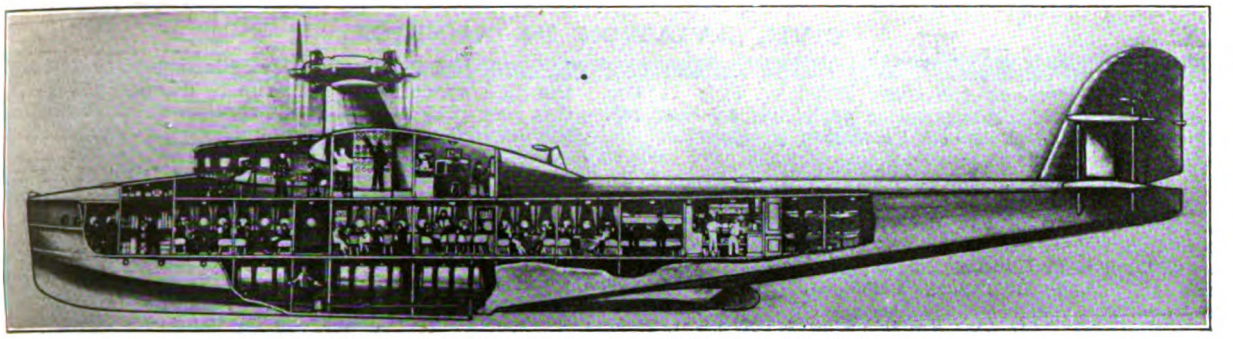


A FLYING-SHIP.—A schematic drawing of the interior of the Do *x*.

THE "ONCE-UPON-A-TIME" PILOTS.

BY RODNEY HOLT.

Scattered over this country of ours are large numbers of young men who, to their boundless delight, were known a dozen years ago—thanks to some inspired journalist—as "intrepid birdmen." Many of them are "birdmen" yet and, one supposes, no less "intrepid," but the men I have in mind are those who, like myself (and, maybe, you also), crawled from their last cockpit at the end of the War and faded away into civilian life.

We went vowing gaily, "Oh, we shall keep in touch with flying." And tried hard to do so. Flying journals, Air Pageants and the like did their best for us. Our deep interest in aviation defied the passing years. But that subtle intimacy which belongs only to those who fly day by day gradually, imperceptibly slipped away from us.

However, we are perfectly happy among ourselves, we "once-upon-a-time" pilots. Put two of us together for a few minutes and the conversation, even now, inevitably drifts to the one absorbing topic.

"Do you remember," my companion will murmur reminiscently, "those right-hand turns on the 'Camel'?"

"I do," is my reply, for what "Camel" pilot could forget them? "And its trick of spinning from the top of a loop," I add. "Now, the Pup on a climbing turn . . . ." and so on, with undiminished enthusiasm, hour after hour.

This is all very pleasant. In the privacy of our own homes we can still talk about flying with an air of unchallengeable authority. Our wives gaze at us proudly as technical phrases, incomprehensible to lesser mortals, roll glibly from our tongues.

Really, to hear us discussing the finer points of piloting, one might imagine that we had just landed, parked our machines in the garden, and came indoors for a friendly yarn. Nobody could guess, for example, that ten years had passed since either of us handled an aeroplane's "joy-stick"—except a present day pilot. And he would know in a minute!

He would notice, I expect, that whilst discoursing learnedly on antiquated dead-and-buried machines we were not nearly so fluent about the newest aircraft. He would perceive a strange reluctance, on our parts, to comment on the vagaries of, say the Siskin in a loop or roll. So many tiny details would betray us. The cold truth would dawn upon him . . . . and what then?

If he were an old war-pilot himself he would readily understand how vivid the memory of flying remained in us. He would sympathise with, and enter into, our glowing talk of the aircraft of the past. But a young newly-fledged pilot, to whom these ancient machines were no more than mere names, would find difficulty in repressing a feeling of mild amusement at two "once-upon-a-time" pilots with their quaint out-of-date notions.

And can we blame him? After all, to take a parallel case, would *we*, as proud possessors of the 1929 Super-Sports motor-cars be wildly impressed by an argument, however brilliant, over the respective merits of 1904 De Dions and Panhards?

No, a back seat (if, indeed, we are allowed a seat at all) is clearly indicated for us poor onlookers. What we knew and did, once-upon-a-time, counts for very little now. For in the flying game there is no half-way house—you are either "in" or "out."

All the same, we feel that we were "in" the game at the right time. Ours was the earlier stage of aviation:—when people would look into the sky and say, "See, an aeroplane!" instead of, as now, grumbling, 'Confound the noise!"; when one indifferently performed loop on a B.E.2c would provide a village with a week's excited gossip and speculation as to the wonderful pilot's identity; when we learned to fly straight and dreaded to turn right or left so obsessed were we by the prevalent belief that a flat spin was a thing from which no man could extricate himself; when that one silent prayer from immunity from fire was ever present in our hearts . . . . —and when we counted amongst our friends those legendary heroes of the air—Lanoe Hawker, Ball, McCudden, Mannock, and the rest, the men whom we followed blindly into the Valley of the Shadow and back, the men whose unflinching devotion to their duty steadily inspired us to do ours. . . .

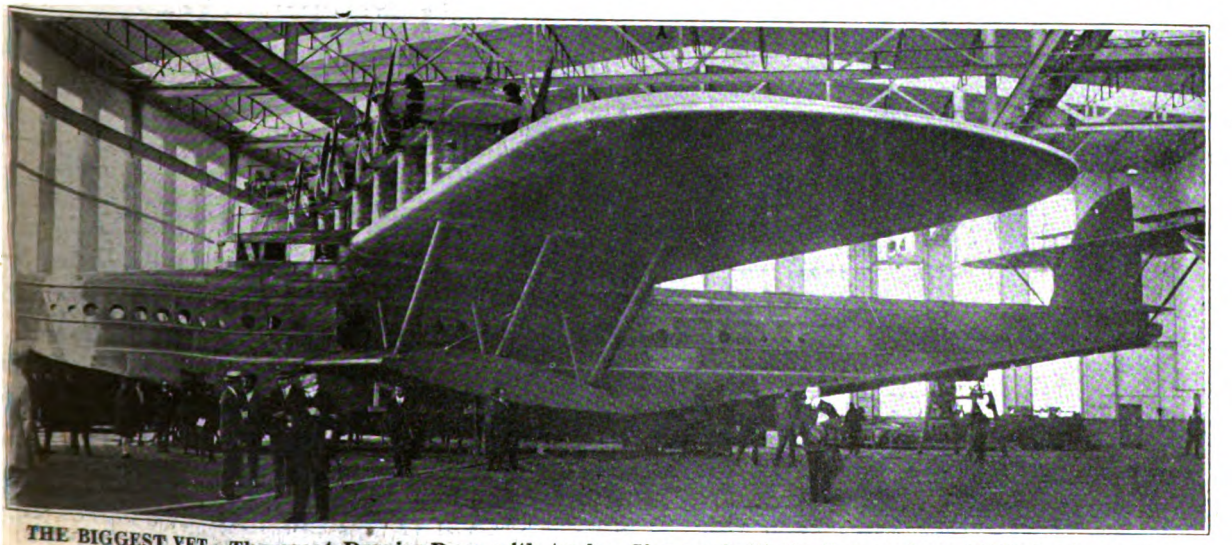
"Once-upon-a-time" pilots, perhaps. But the *spirit* of flying is our heritage for all time.

PROLONGING THE JOKE.

Reuter was responsible for this on July 13:—

After a flight that has continued uninterruptedly for 10 days 6 hours 44 minutes, and has surpassed the previous endurance record by over three days, the aeroplane *Angeleno* landed yesterday at Culver City, California.

This well-worn stunt may be humorous, but why accentuate it by making an angel of the shade of Dan Leno?



THE BIGGEST YET.—The great Dornier Do.*x*, with twelve Siemens-built Jupiter engines (6,300 h.p.) in her shed at Friedrichshafen.

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CIVIL AVIATION IN AMERICA.

The American Chamber of Commerce in London held their monthly lunch at the Cecil Hotel on July 11 and invited a large and representative gathering to hear Mr. George J. Mead speak on Civil Aviation in America.

Among the guests were Air Vice-Marshal Sir Sefton Brancker, Mr. Lester D. Gardner of New York, Capt. P. D. Acland (Chairman of the S.B.A.C.), Col. The Master of Sempill (Chairman of the R.Ae.S.), Sir Vyell Vyvyan (of Imperial Airways), Mr. C. L. Egtvedt (of the Boeing Airplane Co.), Mr. F. Handley Page, Sq. Ldr. the Hon. F. E. Guest (of National Flying Services), Mr. S. Bloom (Congressman).

That the first important function of the London Show Period should be organised in London by Americans for English guests is typical of our muddled way of doing things.

Mr. F. E. Powell, the Chairman of the Chamber, introduced Mr. Mead as the Vice-President and Chief Engineer of the Pratt and Whitney Aircraft Co. and of the United Aircraft and Transport Corporation.

Mr. Mead said that the great difference between Aviation in America and in England was that over there it had to pay by itself and could not rely on subsidies to help it along. They were probably better situated to concentrate on the Commercial side of aviation as there were not many people who would be likely to give their military organisations any trouble to deal with.

He spoke with modesty on the efforts America had made in developing Civil Aviation but mentioned that though they, up to the present, concentrated on postal work they were going ahead with passenger-carrying and felt a certain amount of pride in the fact that they had carried over 40,000 passengers in the last six months, and that one company had taken some 2,700 to some mines in Canada where there was no rail transport.

He stressed the fact that they had had to turn almost entirely to postal work as that was the thing that could and had been made to pay, and that passenger work was a far more problematical source of income. From 1920 to 1924 the mail services had been run by day only and then from this year they started night services as well and this year the passenger-carrying traffic has been developed. Having gained the experience necessary for reliable operation during the previous years they now felt that they could guarantee sufficient reliability to attract passenger traffic, and one firm alone had run over 8,000 miles in the last two months with 100% efficiency.

Air-cooled engines had very largely brought about the rapid expansion of the various lines, ever since they had been taken over from the State and operated by private firms, because the air-cooled engine was inherently more reliable than the water-cooled engine, and the saving of weight of the former over the latter provided a large increase in pay load. He pointed out that 70% of the forced landings due to engine trouble had been caused by trouble with the cooling systems.

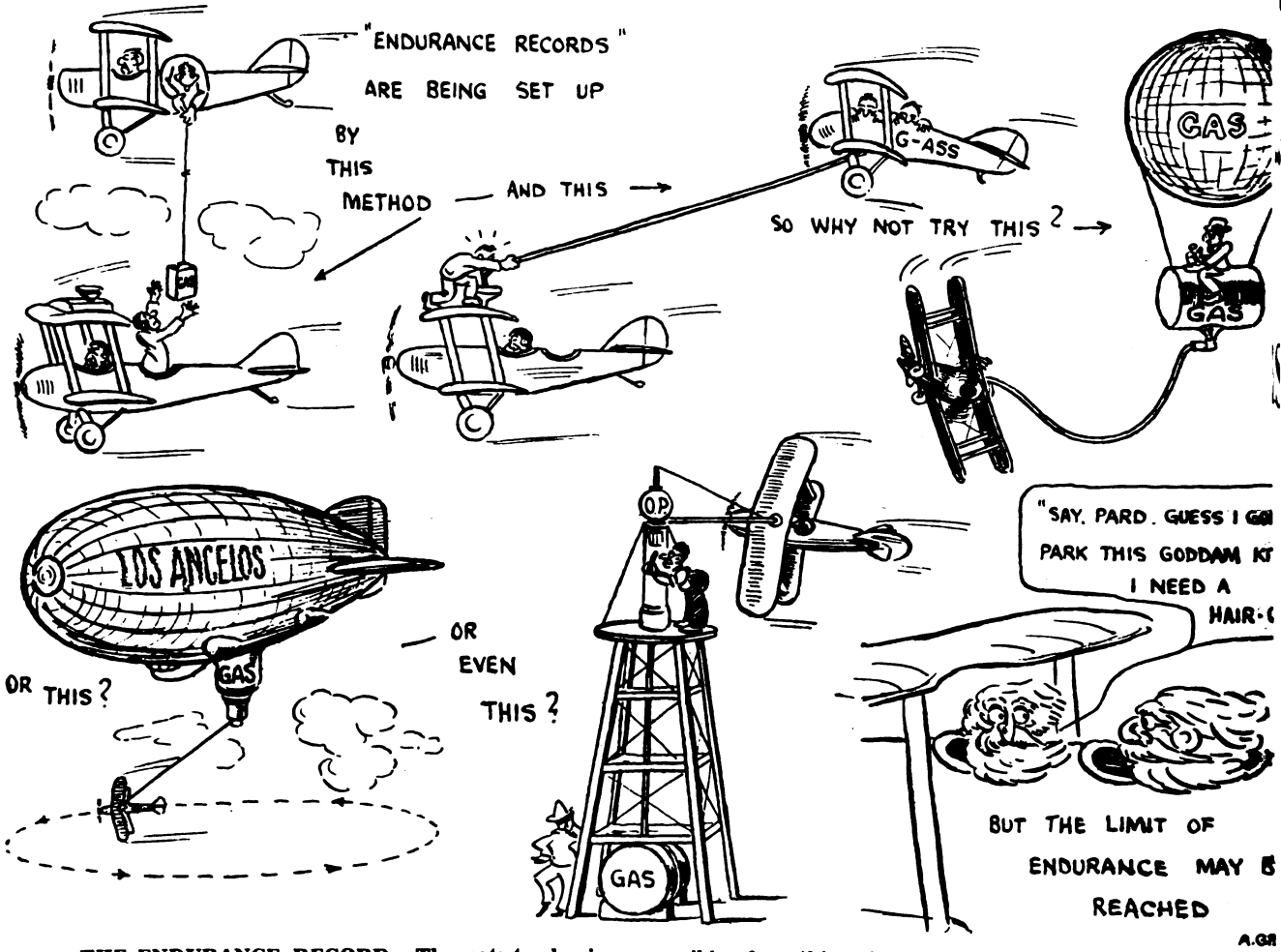
The latest step in passenger flying was the combination with the trans-Continental railways, whereby passengers could fly by day and travel on the train by night thus saving nearly half the time of the normal journey.

The mail service was now highly developed, and with the help of the lighted routes, where night-flying was being regularly carried out over the mountains, they were flying over 70,000 miles daily and had carried over 600,000 lbs of mail in the last 6 months.

Developments were going ahead with the radio-telephone and they hoped by this means to overcome the trouble of flying with safety through foggy areas, as the pilots could be directed to safe landing-grounds.

Germany, he said, was now following the lead of America and lighting their routes and concentrating on mail-carrying instead of making passengers the chief part of the work.

He paid tribute to the work done with passenger-carrying here in England and said that we were second to none for this class of work, and that America was much i



THE ENDURANCE RECORD.—The artist who is responsible for this picture writes: "You have been reproached by the 'Aero Digest' for a certain lack of modernity in your publication. The introduction of the humorous element occasionally may tend to raise the standard of 'The Aeroplane' to the level of the more progressive American journals. In fact, one might seriously suggest the institution of a comic strip as a regular feature which, as Aviation develops, might grow into an 8-page comic supplement, in accordance with up-to-date ideas!!"

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The Great "SOUTHERN CROSS" Flight

Australia to England in 13 days

on Spirit and Oil supplied by

Pratts

Pratts Quality Links the World

151 H. K. McC.

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debted to us for the help we had so readily given when they started carrying passengers.

The industry in the United States as a whole was, he said, very healthy, but there was a grave danger of there being too much capital put into it; for all good progress was necessarily slow and the public would expect dividends sooner than it was economical to start paying them. There were some 2,000 firms directly connected with the industry and of these about four were well known engine building firms and about 20 really solid aircraft building firms.

The general trend was towards standardisation, and recently a very great deal had been done towards this end. Their chief trouble was a lack of really good pilots who were fit to take charge of valuable machines with valuable cargoes. But the schools were being co-ordinated and in time this difficulty would be met. Their mail pilots were the finest in the world and he thought that they had not received enough praise for the magnificent work they did.

As for the future, transportation must and always would be the prime interest in aviation. Private ownership would be second. But for economical working of transportation lines they must have good aerodromes and reliable weather reports.

Aerodromes were being made all over the Continent. And the Government was doing very great work with the problem of weather reports, and the day was not far distant when pilots would be able to obtain weather reports of any district from any aerodrome where they landed.

The large mergers, of which there had been so much talk lately, were bound to tend towards stabilisation and were a very good sign indeed, as even now there were more individual firms in the industry than there were in the motor-car trade.

Their chief trouble was to secure personnel with sufficient experience. But they were growing slowly and it was only by slow growth that real soundness could be reached.

Much was being done to make the private machine easier to fly, but he did not expect that private owners would increase in such numbers that they would have "Fords of the Air" yet. And aircraft had always to be of the highest quality to be safe. There were three things which everyone agreed had to be of the best,—your wife, your toothbrush, and your aeroplane! [That is a typically American remark. An Englishman would probably have linked "bed and beer," or if he had thought of a wife as important he might have said "wife and whiskey," for the sake of alliteration. But a toothbrush is not a thing which looms large in the Englishman's cosmos. The American view is one of those minor spot-lights on American success in the World which explain so much.—C. G. G.]

Transportation by air, Mr. Mead said, was no longer an experiment. He thought that the more international air lines were developed so much the more would international misunderstandings become things of the past. Rapid transport between countries would lead to a better understanding of each others' problems.

Sir Sefton Brancker, replying, said that on all points we had done exactly the opposite to the States. With restrictions we had always been meticulous—they had been free. We had subsidised,—they had not. They had concentrated on mails,—we on passengers. They had tended toward competitive working,—we toward a monopoly. Both systems were right in their ways, but now he felt that theirs had proved the best.

We had given America a large amount of experience with air-cooled engines, and now we were getting it back.

He stressed the wonderful development that America had made in the last two years, as they were now flying greater distances on regular routes than all Europe together.

But we were also making strides with Empire Development, and he thought that the development of air transport was going to do more towards stopping wars than anything else, it would do so by developing civilisation and international co-operation. [On this point of Empire Development readers are referred to Sir Samuel Hoare's speech at the R.A.F. Dinner, which appears in the Royal Air Force pages of this paper.—C. G. G.]

HOW LONG, OH LORD, HOW LONG?

The Bellanca monoplane Pathfinder, which was piloted by two American aviators, Messrs. Roger Williams and Lewis Yancey, left Old Orchard (Maine), U.S.A., on July 8 in an attempt to fly to Rome, and reached Santander in Spain after a flight of 31 hours. The Pathfinder actually landed at a place called Albericia, which is outside Santander.

The landing is said to have been due to lack of petrol and the aviators state that they only used 315 gallons for the flight. One must therefore conclude that the report that the machine had taken off with 500 gallons was inaccurate. Could the Pathfinder have reached Rome with only 315 gallons?

The French flight to Paris from Old Orchard also reached Santander and took two further hops to Paris.

One no longer flies the Atlantic, one flies from somewhere in the States to a capital of Europe.—Of course, one does not always get there.

MORE TRANS-ATLANTIC FAILURES.

Although officially prohibited by the French Government two more machines went up from Le Bourget Aerodrome in a simultaneous attempt to fly the Atlantic on July 13.

The Polish machine, *Marshal Piludski*, flown by Majors Idzikowski and Kubala, is reported to have crashed on landing on the island of Graciosa, in the Azores. Major Idzikowski is reported killed.

The French machine, the *Question Mark* (no relation to the re-fuelling stunter), flown by Capt. Costes and M. Bellonte, was forced to turn back, owing to head winds when near the Azores and landed at Villacoublay on Sunday morning, July 14.

M. le Brix, the partner of Capt. Costes in his great World flight last year, was in England on Monday and Tuesday last. There seems to be some mystery about the latest attempt by Capt. Costes.

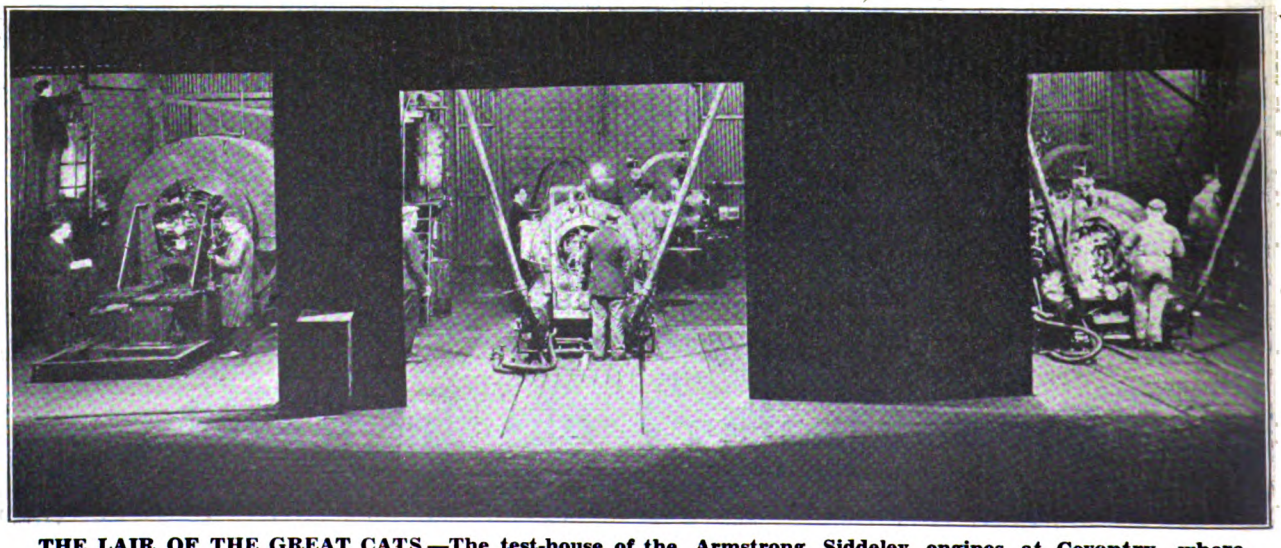
The Sikorsky amphibian named *'Untin' Bowler*, which was attempting a flight from Chicago to Berlin by way of Northern Canada and Greenland, has been lost near Port Burwell, Ungava Bay, but its crew are safe.

The aeroplane drifted out to sea among the icefloes from its moorings yesterday evening, according to a wireless message received to-day by the Department of Marine.

[This last is a great pity, for the flight was a sound attempt by a good sportsman to find a reasonably safe way of flying to Europe by a short route. Better luck next time.—C. G. G.]

THE STOCKHOLM—NEW YORK FLIGHT.

Captain Ahrenberg's seaplane, the Sverige, was on July 13 still detained at Ivigtut, Greenland, by a leaking float.



THE LAIR OF THE GREAT CATS.—The test-house of the Armstrong Siddeley engines at Coventry, where the Leopard, the Jaguar and the Lynx were under test at night. (An interesting flashlight effect.)

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The

SHORT-CALCUTTA

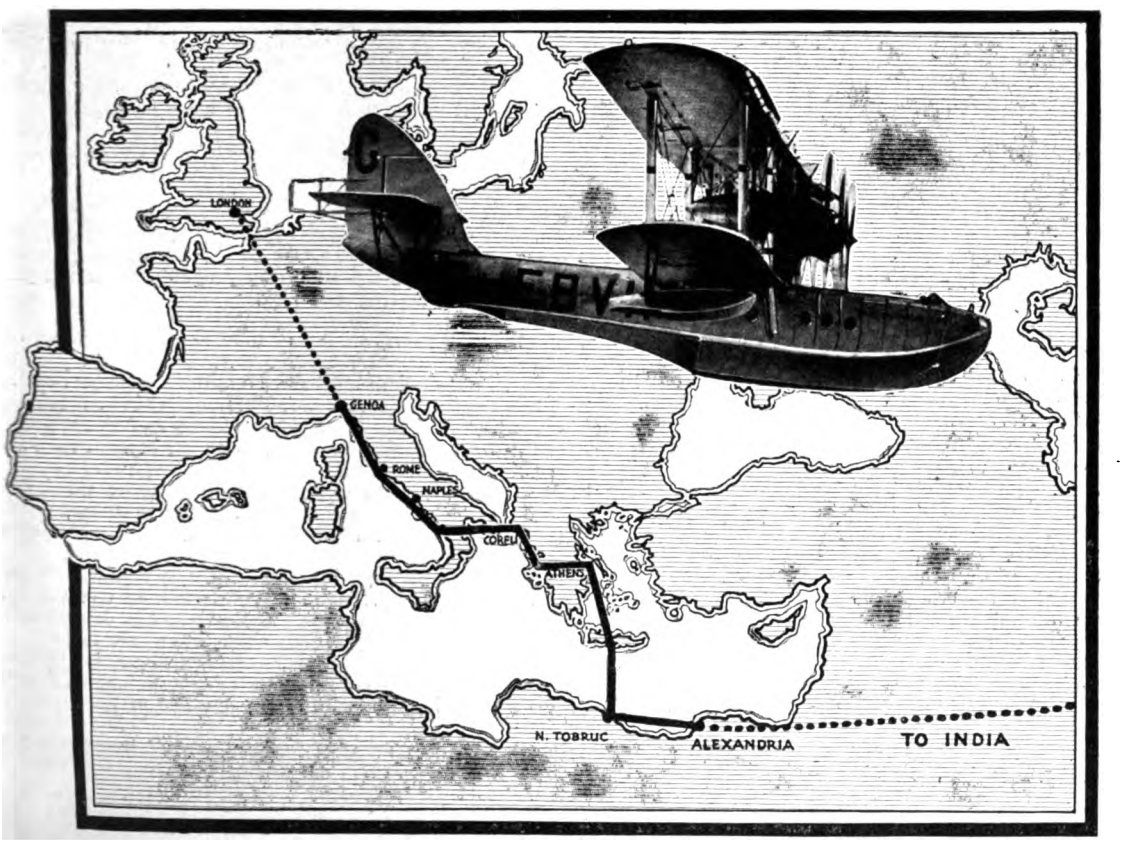
THE LEADING BRITISH ALL-METAL

FLYING BOAT

AS ORDERED BY THE FRENCH GOVERNMENT

ALSO BEING BUILT FOR U.S.A.

"Makes a new flying link of Empire"



IMPERIAL AIRWAYS CHOSE THIS BOAT

for the longest commercially operated Sea Route in the World, 1,700 Miles

15 PASSENGERS
TOTAL PAYLOAD 4860 lbs

CRUISING SPEED 100 M.P.H.
RANGE 6½ HOURS NO PETROL IN HULL.

Designed and Built by

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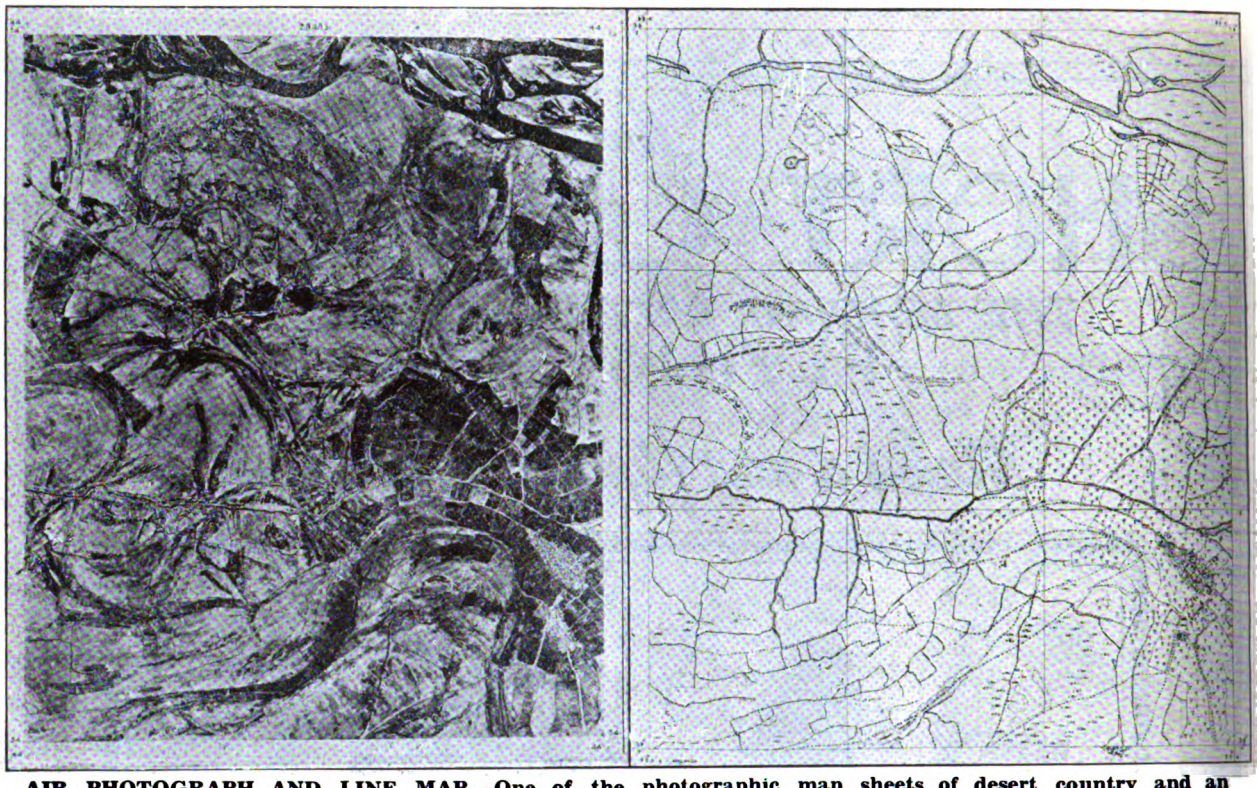


AIR PHOTOGRAPH AND LINE MAP.—One of the photographic map sheets of desert country and an irrigated village near the Tigris as supplied to the 'Iraq Survey Dept., and a line map prepared from the photographs to the same scale by the Aircraft Operating Co. Ltd.

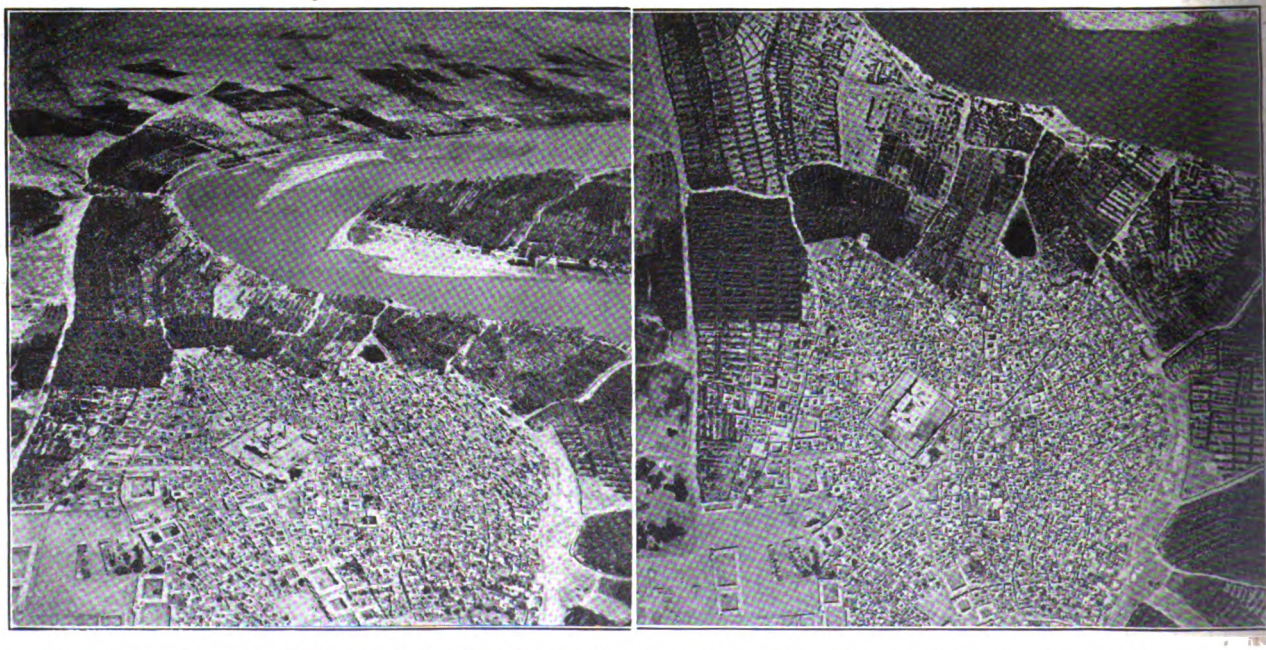
SOMETHING ABOUT SURVEY.

[*Aerial survey in relation to the economic development of new countries, with special reference to an investigation carried out in Northern Rhodesia.*—R. Bourne, M.A., Imperial Forestry Institute, Oxford, formerly of the Indian Forestry Service. 35 pp. 2 half-tone and 1 coloured plates. 3s. 6d. net. Oxford at The Clarendon Press and THE AEROPLANE Book Dept.]

To those who, like the present reviewer, have been "jungle-wallahs," the Indian Forestry Service spells cheerful efficiency, and this reputation can but be enhanced by this able monograph prepared by one of its officers. Mr. Bourne's especial duty while at Oxford has been "to watch all development in aerial survey, more particularly in their relation to the reconnaissance of forests."

For some years past forest authorities and companies in the United States, Canada and Burmah, have tried different methods of aerial survey as a means of furnishing, or at lea supplementing, the information obtainable by the forest official afoot. Although the conditions in these three countri differ widely (the reviewer has, on occasion, taken two hou to advance a hundred yards in some of the "wet" fore in Burmah, conditions which did not hold in the States) t results obtained during these surveys have been of such val and promise as to justify more research on the subject, p ticularly because, as Mr. Bourne so aptly says, "the futu prosperity of the British Empire depends a good deal up the economic development of the agricultural, forest, a mineral resources of the Colonies, India, and the Dominions

There is importance in remembering that although t incidence of mineralogical deposits was determined in ge logical times, that of vegetation is subject to the varied i fluences of climate, geology, soil, disease, and the activiti of man. Where man is absent and nature has a free re then the ultimate result is nearly always forest.



AN INTERESTING COMPARISON.—Two types of aerial photographs. On the left an oblique and on the right a vertical, the extra detail of the oblique supplementing the accurate map-like character of the vertical. They were taken during the 'Iraq survey and show the village of Khadimain on the River Tigris.

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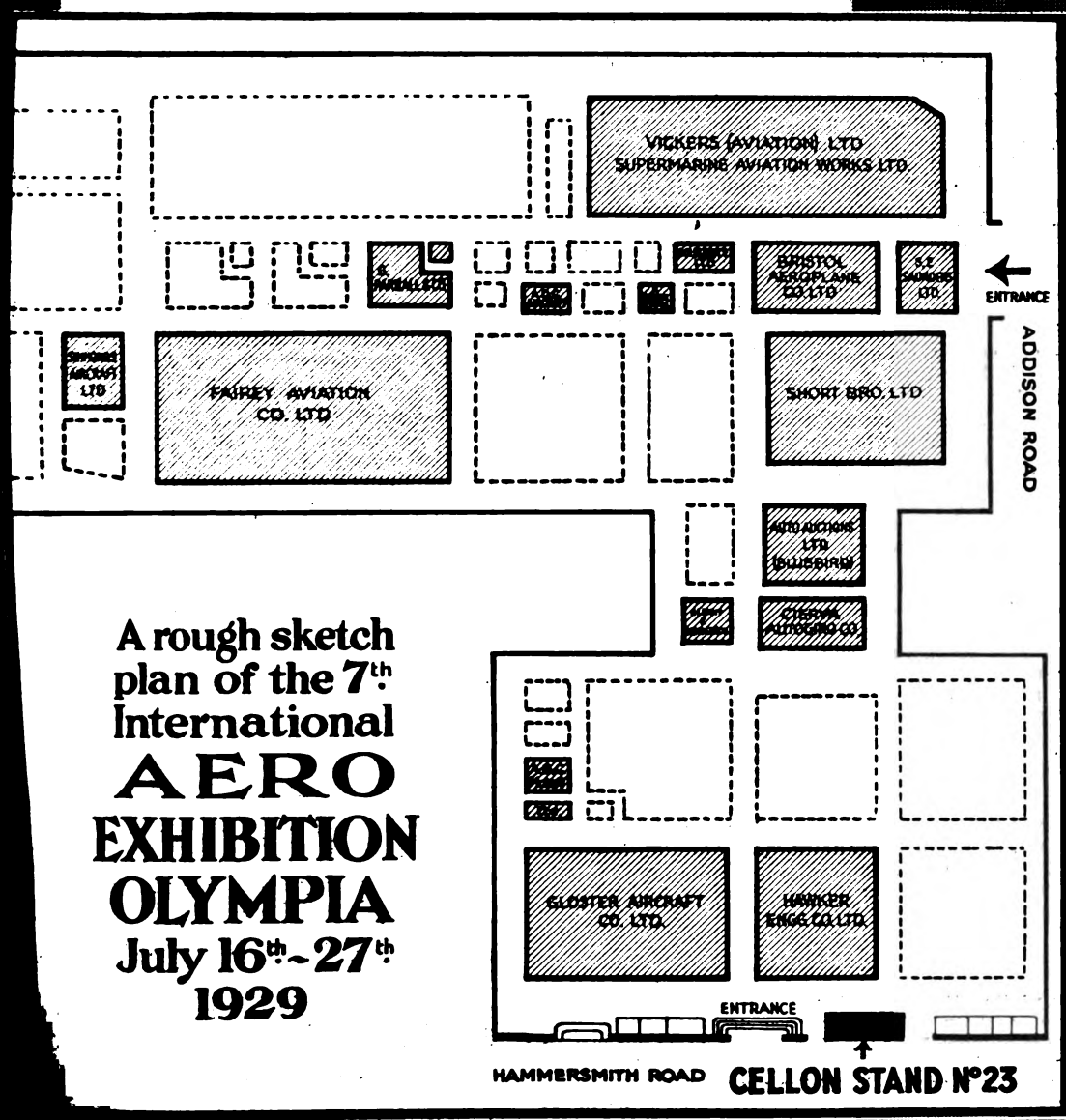
DOPED WITH CELLON



A rough sketch plan of the 7th International AERO EXHIBITION OLYMPIA July 16th–27th 1929

CELLON *The dope of proved efficiency.*

Machines completely finished with Cellon Products are exhibited on stands indicated by shaded portions on above plan.

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If this condition should obtain, then the state and form of the forest depends mainly on the climate. Locally, however, within any climatic zone, the natural forest tends to vary with changes in geological formation and the condition of the soil. The soil itself exerts an immense influence on the natural forest, being itself affected by the climate.

The general result of all these conditions serves to draw attention to the fact that "vegetational and soil surveys are a means not only of taking stock of the resources of a country, but also of studying the history and present condition of a locality with special reference to its climate, vegetation, soils, and in many cases geology. *Indeed local study of the correlation existing between vegetation, climate, topography, and soil should form the scientific basis of all agricultural and forest practice.* That such surveys may also throw much light on the geological formation and, in consequence, upon possible mineralisation is a point to be borne in mind."

This is very important, for it suggests that, given enough experience and careful research, aerial surveys may become almost an exact method of discovering the precise location of mineral deposits, which could only be discovered otherwise by laborious and perilous prospecting.

Mr. Bourne had the opportunity recently of demonstrating the truth of this dictum, for he conducted a vegetational and soil survey for the Government of Northern Rhodesia, part of which was made along the Solwesi-N'Changa road. When he had finished his survey he visited The Aircraft Operating Company's air survey expedition (under the command of Major C. K. Cochran-Patrick, D.S.O., M.C.) at N'Changa.

He found that the photographers of this expedition had taken a strip of over-lapping photographs of some 140 miles of the road, at a height of approximately 10,000 feet above the ground. The Rhodesian Congo Border Concession Ltd. (for whom The Aircraft Operating Co. Ltd. was making the aerial survey) courteously gave permission for the strip of photographs to be placed at Mr. Bourne's disposal.

The latter had made his ground survey from a motor-car, travelling at an average speed of 15 miles an hour along the road. This method had the disadvantage that he was able to see only the fringe of the vegetation on the side of the road—but with the aid of the aerial photographs Mr. Bourne was able to mark down the different vegetational types, to study the shapes of the grassy glades, the native cultivation, and generally *to consider the vegetation in relation to the geology of the country.*

He later prepared a coloured map of his survey which is reproduced (in the customary beautiful manner of The Clarendon Press) in the monograph which gives all this information.

The result of his labours was to convince Mr. Bourne more than ever that, although the conditions in Northern Rhodesia are helpful to the aerial surveyor, the extension of such surveys "might prove to be one of the most profitable investments that the Empire could make in the immediate future."—S. G.

HAWAIIAN AVIATION.

Hawaii and its attendant islands are known in England as a sort of earthly Paradise, whose first publicity agent was the poet Rupert Brooke. The recent mass-production of ukeleles, and of songs referring to that part of the World, have perhaps taken some gilt off the gingerbread.

The notorious Dole Flight across the Pacific, when so many competitors were lost in the attempt to fly non-stop from San Francisco to the Islands drew a lot more attention to Hawaii and the rest of the group. And now the news comes through that they really are on the map, and in the humdrum of commercial existence.

Two rival concerns have been floated to organise air-lines and link the Islands together. And they are placing orders for equipment and generally preparing to get matters moving.

Hawaiian Airways, as one concern is known, has placed orders for two Fokker F-10 trimotor monoplanes (three Pratt and Whitney Wasps) and an Eaglerock biplane for use in Hawaii.

Inter-Island Airways Ltd., the company proposed by the Inter-Island Steam Navigation Company, has filed articles of incorporation and has ordered three eight-seat Sikorsky amphibians.

HULL'S AERODROME.

Negotiations have been completed between the Hull Corporation and the War Office for the leasing of land for the establishment of a seaplane base on the River Humber.

The offer of National Flying Services Ltd. of a rental of £350 per annum for a portion of the municipal aerodrome site at Hedon was accepted on July 14 by the Aeroplane Committee of the Corporation.

A JAPANESE AIR TRANSPORT COMPANY.

For some considerable time authentic information concerning the development of Civil Aviation in Japan has been desirable. On July 11 *The Army, Navy and Air Force Gazette* published, by permission of the General Staff, War Office, an article which, coming from such a source, is worthy of particular consideration. It is therefore reproduced hereafter:—

The development of civil air routes in Japan has recently been placed upon a secure business footing by the formation of the "Air Transportation Company, Limited" (Nippon Koku Yuso Kabushiki Kaisha). The capital of the company is approximately £1,000,000, and it is the first firm of its kind to be launched in Japan. Its establishment is the result of the passage of a Bill through the Imperial Diet agreeing to provide a subsidy amounting to approximately £2,000,000, spread over 11 years. When the company re cently offered its shares for public subscription they were over-subscribed by 140 times the original amount.

The proposed routes which it is hoped to inaugurate thi year include Tokyo—Dairen and Osaka—Shanghai. The dis tances, estimated hours of flight, etc., of these routes ar shown in the following table:—

Between	Distance in kilometres.	Hours of flight.	Number of trips per wee 1st year of operation.	2nd year of operatio
Tokyo—Dairen route.				
Tokyo—Osaka ..	425	2·50	12	12
Osaka—Fukuoka ..	500	3·20	6	6
Fukuoka—Seoul ...	550	3·40	3	6
Seoul—Dairen ..	600	4·00	3	6
Total	2,075 (1,290 miles)	13·10	...	...
Osaka—Shanghai Route.				
Osaka—Fukuoka ...	500	3·20	3	6
Fukuoka—Shanghai	950	6·20	...	...
Total	1,450 (900 miles)	9·40	...	...

At the beginning of April, 1929, the first practical st towards the establishment of the Tokyo—Dairen route w inaugurated by an air service between Urusan (50 mil north-east of Fusan in South Korea) and Dairen. At prese the service is being run three times a week in each directic mails only being carried. The route is Urusan—Seoul Heijo—Dairen, the total distance of about 600 miles bei scheduled to occupy 6½—7 hours in the air, with one adc tional hour at intermediate halts. During the present e perimental stage, Salmson machines taken over from tl military authorities are being used, necessitating one chan of machine at Seoul.

It is hoped that larger and more modern Fokker machin ordered from Holland will arrive in time to carry on t service in July and August, but until then the sea passa of about 160 miles between Urusan and Fukuoka (at t western end of the island of Kyushu) will not be attempt Until these new machines arrive the mails are being tak by motor car from Urusan to Fusan, where they are plac on board the Government railway ferry-steamer which tak them to Fukuoka, whence they proceed by air to the ae drome at Tachikawa, 27 miles outside Tokyo.

It is stated that the new Fokker machines will ha accommodation for five passengers in addition to the ma

It is too early as yet to form any opinion as to the succ of the undertaking, the more so as the present Salms machines are admittedly a mere makeshift. One of t principal difficulties is the deficiency of landing plac There is an adequate military aerodrome at Heijo, and t recently constructed aerodrome at Joito, near Seoul, is a now properly equipped. The latter, however, suffers fr the risk of occasional flooding during the rains of July a August. Urusan is a mere landing ground without equ ment. Emergency landing grounds between the regu halts do not yet exist, and until some more are provide may perhaps be doubted whether the service can be carr on for long without undue wastage of machines.

With the exception of one or two purely experimen flights recently undertaken with Dornier Wal flying-bo the service from Osaka to Shanghai has not yet b inaugurated, but it seems likely that this will be the n route to come into regular operation.

[The particular point to be noted is that no British craft enters into the scheme, and that apparently no nego tions are in progress to introduce British aircraft.—C. G. G.

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

GIPSY ENGINES IN THE KING'S CUP RACE.

The following letter has been received from the De Havilland Co.:—

Sir,—In your comments on the King's Cup you refer to Gipsy Engines (certain of them) which "had naturally been tuned up to pretty nearly the last ounce."

On page 72 you say "the engines were tuned up to give extra power."

May I remove this misconception by assuring you that all the Gipsy Engines in the race were absolutely standard and all were identical?

(Signed) C. C. WALKER.

Carried *nem. con.* But the engines on the three speed-machines *were* revving a trifle high—which would be natural on streamlined machines with airscrews of standard type. And one does not imagine that the engines had been deemed to keep them from over-revving. So their performance was all the more remarkable.—C. G. G.

NEWS FROM NORWICH.

The Norfolk and Norwich Club has engaged Mr. R. J. Bunning, late of the Northampton Club, as Chief Instructor in place of Mr. Houston.

The Club has reduced its rates of instructional flying to 25s. an hour, so that they now have a flat rate for all flying, dual, solo, and soloists carrying passengers. The Club hopes that this reduction of 10s. an hour in their flying rates will bring enough new members to warrant a second instructor.

If necessary, sleeping accommodation on the aerodrome can be provided.

The Club Secretary, Mr. McEwen, who has for some time past been laid up with diphtheria, has now recovered and is back at work.

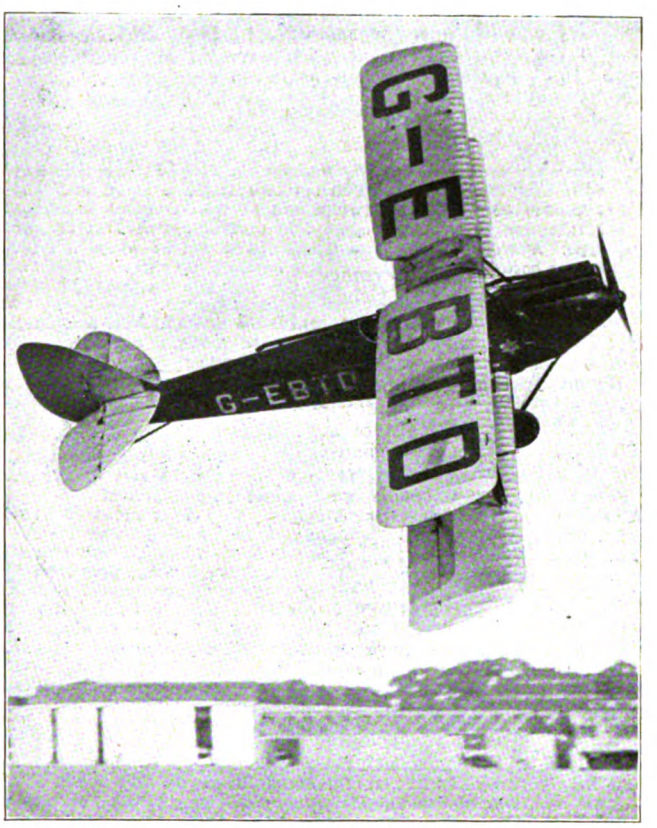
AN EAST AFRICAN AIR TRANSPORT COMPANY.

A new company, known as Wilson Airways, has been formed in Nairobi to provide inland and coastal services in East Africa. The controlling financial interest is held by Mrs. F. K. Wilson, and Mr. T. Campbell Black will be managing director of the new company.

The company's first machine, a D.H. Gipsy-Moth, has arrived at Mombasa, and this will be used for taxi work and instruction.

Two other machines are on order. These are a Westland IV limousine (three Cirrus-Hermes engines) and an Avro Five (three Armstrong-Siddeley Genet-Major engines). One of these machines will be fitted with floats and used on a coastal service between Mombasa, Tanga, Zanzibar, and Dar-es-Salaam. The other machine will be used for an inland service.

The intention is to provide air links with the projected Cape-to-Cairo route, and, if occasion warrants, the sea route will be extended to Beira, Portuguese East Africa, which would bring Johannesburg and Cape Town within five and seven days respectively of Nairobi.



AFTER 500 HOURS.—The Sealed Gipsy showing her paces.—(*"Aeroplane" photograph.*)

THE SEALED GIPSY.—The Gipsy-Moth, which has been flying for months with a sealed engine, doing its speed-test after flying for 500 hours without overhaul. —(*"Aeroplane" photograph.*)

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THE SURREY FLYING SERVICES A.L.1.

The Surrey Flying Service A.L.1 was designed for Mr. Grant of Surrey Flying Services Ltd. nearly two years ago by Mr. A. T. Bewsher, but unfortunately circumstances have prevented much work being done on it until now. Mr. Grant says that his idea is to build this one and carry out extensive tests to insure that it is really the best for the job, before he will consider putting it on the market. It has been designed for the private owner or taxi-plane operator with upkeep as the point to be considered before all others.

No attempt has been made to get the last ounce of performance but, all the way through, particular attention has been paid to the question of wear and tear, and all bearing surfaces have been made extra large, and wherever possible all pins and bolts work in liners or distance tubes.

Description.

Type.—Two-seat side-by-side staggered biplane.

Wings.—Equal span staggered single-bay biplane. The top centre-section is carried above the fuselage on splayed-out spruce struts with wire cross-bracing. Two spruce interplane struts either side between the wings. The wings are of wooden construction with spruce and plywood box-spars and normal spruce ribs of girder type. Ailerons of the same construction as the wings are fitted to the bottom planes only and are operated by cables. The wings are braced with Raf-wires and the flying wires both go to the front spar-root fitting at the bottom longeron. The wings have not yet been made to fold but will be so in subsequent machines.

Fuselage.—The fuselage is a wire-braced wooden structure. Ash longerons of 1 in. sq. section and spruce struts. Piano wire bracing from simple plate fittings. The cockpit is arranged beneath the centre-section and comfortably seats two side-by-side. The covering is fabric.

Tailplane.—Normal cantilever construction. Box plywood spars and spruce and plywood ribs. Duralumin tube leading and trailing edges. The elevator spar is built in one piece and carries both elevators. The tail-plane is adjustable on the ground.

Undercarriage.—Straight cross-axle type. Very neat spring leg, with rubbers in compression,—the radius rod leading forward.

Power Plant.—One 95/108 h.p. Salmson A.C.7 radial air-cooled engine. Engine-mounting secured to the front of the fuselage with steel-tube structure, the engine mounted on a welded-up steel plate. Separate 3½ gallon (15.91 litres) oil-tank carried directly behind the fire-proof bulkhead which is at the back of the engine mounting. Fuel tank 18 galls. (81.83 litres) carried in the top centre-section giving gravity feed to the engine.

Accommodation.—Side-by-side with dual control. Large luggage compartment directly behind the cockpit.

Specification and Estimated Performance.

Surface 216 sq. ft., Power A.C.7 Salmson 95 h.p. Normal—108 h.p. Maximum, Weight 1,200 lbs., Power Loading 12.6 lbs./h.p.—11.1 lbs. per h.p., Loading 5.56 lbs./sq. ft., Speed 106 m.p.h.—110 m.p.h.

Rate of Climb low down.—At 95 h.p. 1,010 ft. per min., at 108 h.p. 1,170 ft. per min.

Landing speed.—45 m.p.h.

Ceiling.—21,500 ft.

Time to reach.—10,000 ft. 12.9 mins., 15,000 ft. 22.9 mins., 20,000 ft. 37.0 mins.

COMMERCE BY AEROPLANES.

The Avian agents for Queensland (Aircraft Proprietary Ltd., of Brisbane) recently had one of their machines chartered by an official of the General Motors Corporation for a tour of dealers in Queensland.

The Avian, piloted by Mr. R. S. Adair, made a round trip of 1,500 miles in a week-end of 16 flying hours whereas by normal ground methods this trip would have taken two weeks over rough roads.

A THOROUGH TEST.

The Henderson-Glenny Gadfly monoplane which was recently described and illustrated in The Aeroplane has been fitted with Pearson Rotary Ailerons, the invention of Capt. K. N. Pearson, M.C., the designer of the machine. These ailerons are guaranteed to give control after the wing itself is stalled.

By way of testing these ailerons Mr. A. A. Anderson, more commonly known as Jock Anderson, who was formerly ground-engineer at the Henderson School and is now Chief Engineer to the Henderson-Glenny outfit, took the machine up and looped, spun and rolled it,—which was a pretty good effort for a small machine of such low power.

A MARCONI SET FOR THE PRIVATE OWNER.

An extensive ground organisation exists to provide com mercial aircraft with weather reports and to inform pilot of their exact location by wireless telephony. Privat owners and pilots of light aircraft have so far been unabl to use this organisation because there has been no wireles telephony set on the market suitable either in weight or siz for light aeroplanes.

The Marconi Company have recently produced a set Typ A.D.22 which had been designed for telephony only, thoug either continuous or interrupted wave telegraphy may b received as well as telephony. With a power of 75 wat the transmitter will cover ranges of 50 to 75 miles whe communicating with the normal class of aerodrome grou stations, and with highly efficient stations such as Croyd ranges up to 100 miles may be obtained.

For normal working the set operates on the wave-leng band between 850 and 950 metres but a quick-change swit is provided so the ship's wave-length of 600 metres may used in emergency.

The set can be installed for operation by the passeng or may be fitted in any convenient part of the machine a operated by the pilot using a remote control unit, as t tuning has been simplified to "one-handle" manipulatio

The telephone transmitter and receiver are contained a wooden box 16 in. × 9 in. × 7 in. Complete with microph and telephones, wind-driven generator, accumulator, aer and connecting leads, the total weight is 60 lbs.

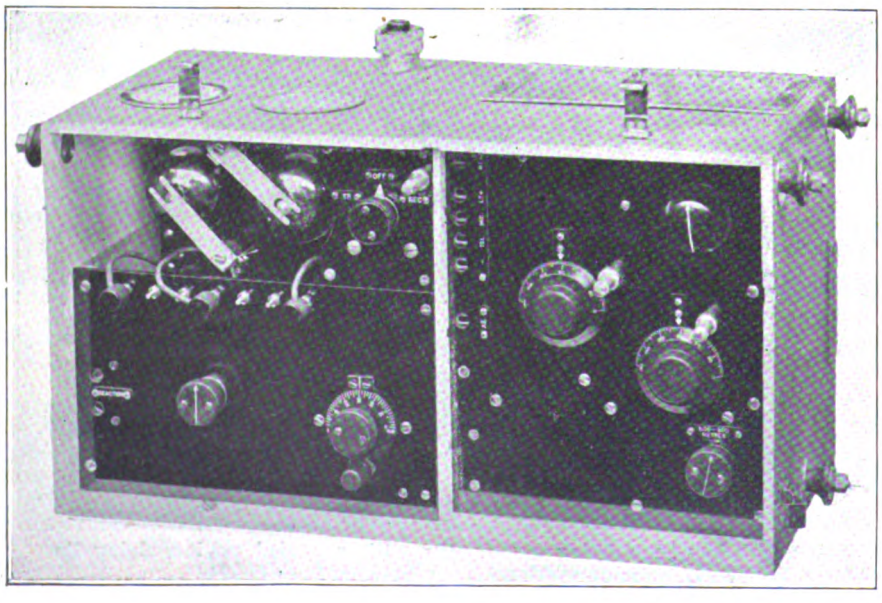
The essential components of the transmitter and recei are mounted in a light wooden box with strong lugs to wh rubber shock absorbers can be attached when the set is fit in the machine.

The transmitter comprises an aerial tuning inducta with adjustments and switch for 900 and 600 metre wa lengths, an oscillation valve Type M.T.5 for energising aerial circuit by means of a variable reaction coil and anode tap system on the aerial tuning inductance, an modulating system consisting of a control valve Type M. connected in series with a speech choke.

The principal components of the receiver are a tuner w slow motion condenser adjustment for high-frequency se tion, a single stage of screen-grid high-frequency mag cation with valve Type S.610, a detector with capacity action and valve Type D.E.L.610, and a low-frequency ma fication stage with valve Type D.E.L.610.

The microphone and telephones are designed for a plane work and are practically unaffected by engine no

A generator of small and light struction provides both high and tension current for the transmitter receiver, the high tension output b 1,000 volts 75 milliamperes, and the tension output being 7 volts 4 amps is fitted with a constant speed winc which is self-regulating over a ran wind speeds from 70 to 170 miles hour, thus ensuring a constant p supply.



A MINIATURE MARCONI SET.—new Marconi A.D.22 transmitting receiving set suitable for use in aircraft. With it telephony ma transmitted and continuous or rupted wave telegraphy as well as phony may be received. Its o dimensions are 16 in. by 9 in. by and it weighs complete with phone, telephones, wind-driven g tor, accumulator, aerial and co ing leads 60 lbs.

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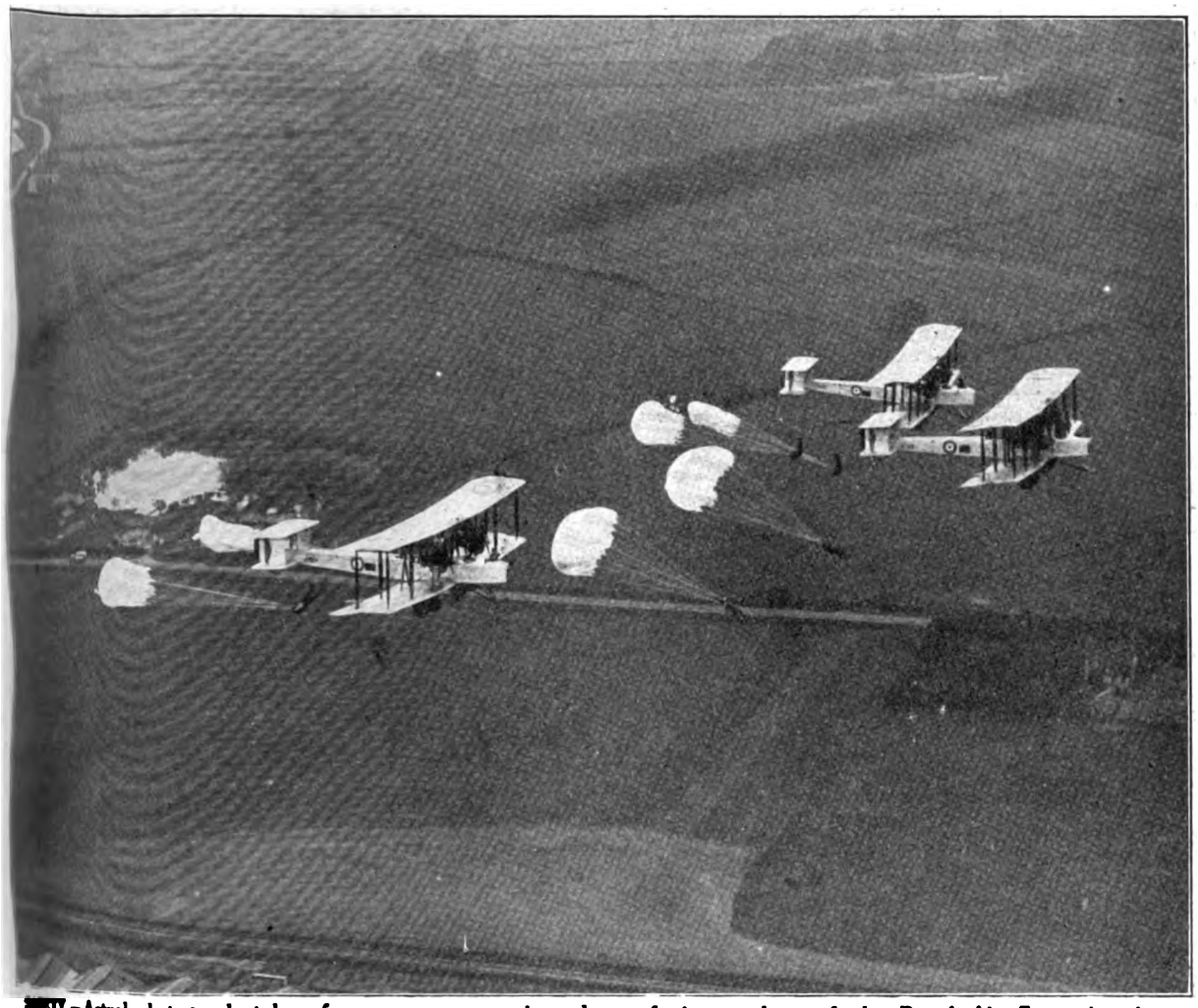

SAFETY.—Actual photograph taken from an accompanying plane of six members of the Royal Air Force jumping simultaneously with IRVIN Air Chutes from Vickers Virginia bombers.

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----Zip!

IT'S OPEN.—You're safe! Your fall stops. You rest in mid air. And then relax.

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Scores and scores know what a life saver this is, from their own wide experiences in the air.

Already more than 200 aviators have been saved by use of their Irvin Air Chutes when naught else could possibly have brought them safely down.

Among these are aviators in the Air Forces of Great Britain, Japan, Sweden, Denmark, Poland and the Argentine Republic, as well as scores in the United States.

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Many of the emergencies were of the most extreme nature, and in every case the Irvin Air Chute functioned perfectly.

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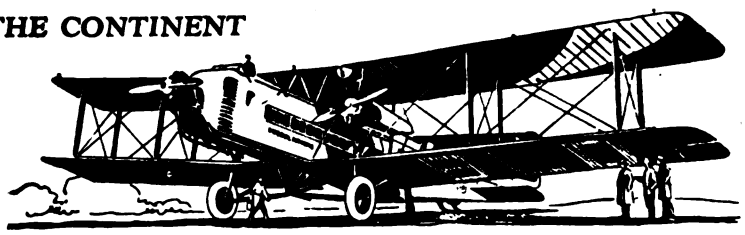

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Don't be Out-of-Date

First Voice: Poor old Tomkins is so old-fashioned—he still lives in a tent and tries to stalk his dinner with a wooden club.

Second Voice: Well, he's no more out of date than are the folk who *will* go on feeding their modern motor engines with old-fashioned treacly oils. You must use Shell Oils to get the best from modern engines.

First Voice: True—but most people realise that now, I think.

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For Daimler, Morris, Sunbeam, Wolseley, etc.

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For Austin (all models), Bentley, Buick, Rolls Royce, etc.

ACHIEVEMENT

Alfa Romeo—Premier Award in J.C.C. Race

In the recent double 12 hours' race at Brooklands the premier award was won by an Alfa Romeo car using Shell Oil. The manufacturers of the Alfa Romeo use and recommend Triple Shell Oil.

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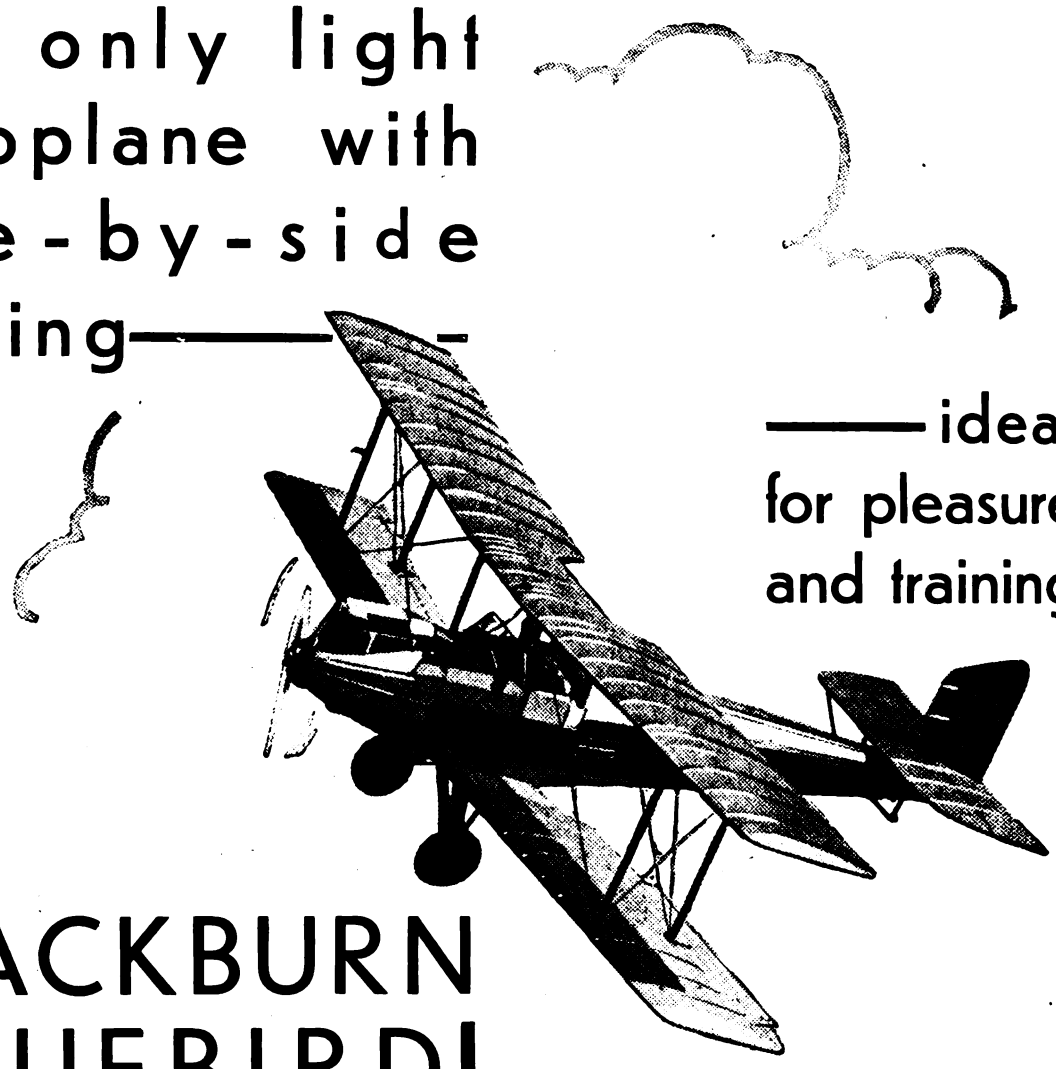
the only light aeroplane with side-by-side seating——



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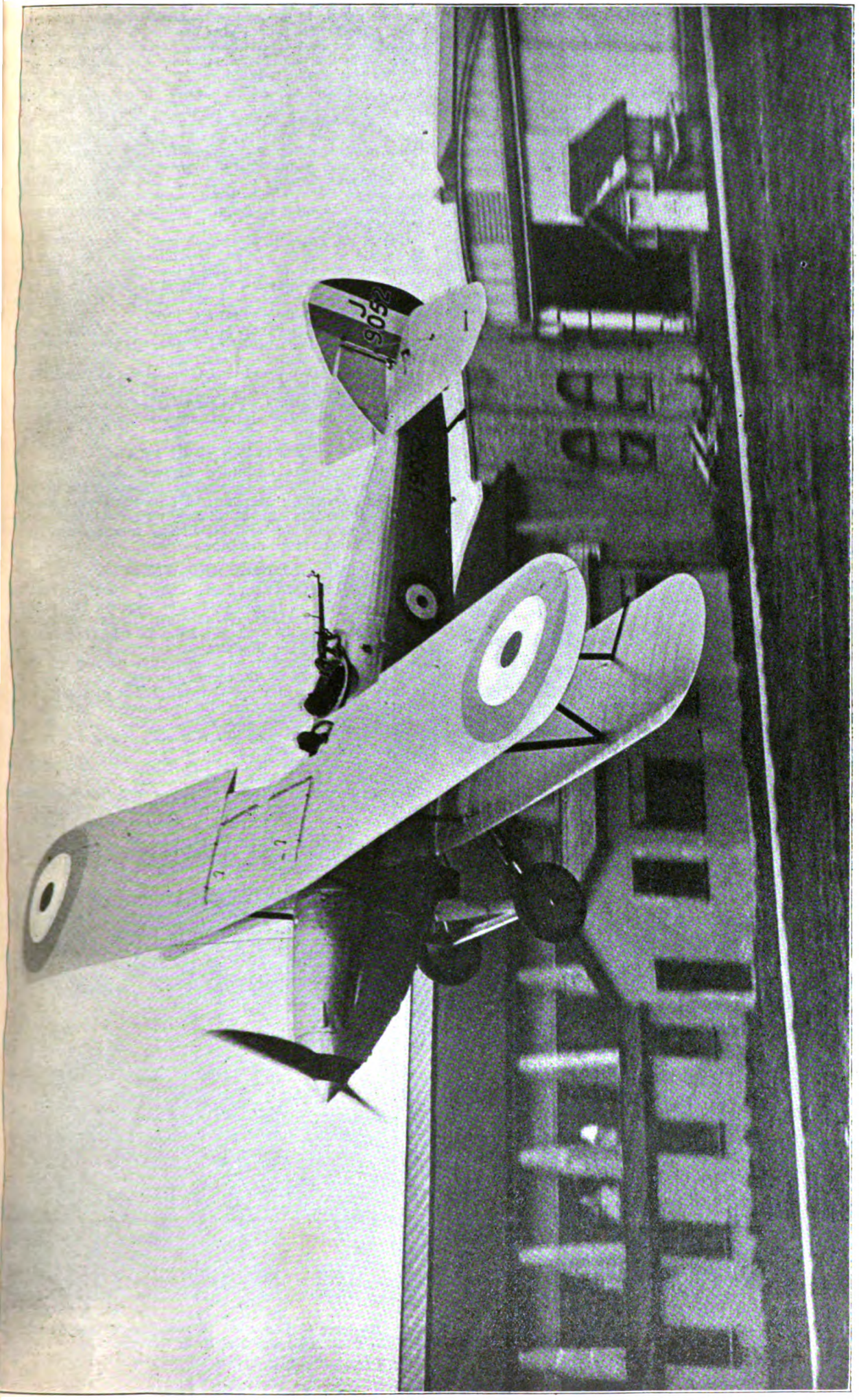

ON THE TURN:—A striking view of the Hawker Hart two-seat Fleet Reconnaissance Fighter [Rolls-Royce "F" engine] turning in front of the main sheds at Brooklands.—*(Aeroplane photograph.)*

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WHEN THREE ENGINES FAILED.

Details are now available of the accident to the tri-motor Fokker FVII3m in which Mr. Donald Drew, Lt.-Commander Glen Kidston and four others were on their way to Central Africa.

The accident happened 30 miles from Mongalla, at a place called Tomba. The machine had just been diving over a herd of elephants (who became exceedingly annoyed and were evidently determined to remain non-airminded). After a dive Mr. Drew pulled the machine up, and at a height of 700 ft. all three engines cut right out without any warning.

Mr. Drew, who at the time was alone in the front cockpit, had three alternatives. He could land in the jungle, the river or the swamp. The first alternative did not seem a good plan. Apart from the dangers of landing in the jungle, the anti-airminded elephants, he thought, would behave towards him as pilots in air races do towards the handicapper. And then in the river there were the crocodiles, whose state of mind is always rather like that of a she-pilot discovering that the altitude record is still above her.

However, having heard various dance bands play "Chloe," Mr. Drew decided, in spite of possibilities of smoke and flame, if he'd got to get back to us, the swamp was the only way. He thereupon made a fine one point landing with the tail skid for 30 ft. and then touched with the wheels. The under-carriage was wiped off but the machine did not turn over. The fuselage was undamaged but ten feet of the port wing was smashed.

The cause of the engine-failure was an air lock in the petrol system. The three tanks are interconnected and the feed to all three engines comes from one central point. The tanks had emptied unevenly and one was completely empty. Following the line of least resistance, the engines sucked air from the empty tanks rather than petrol from the other two, which were two-thirds full.

Which seems to show that if you are having three engines you should have a separate petrol system for each.

Water transport was brought from Mongalla and Mr. Drew and his mechanic with native labour dismantled the machine and put it on board. It was taken to Khartoum where it had to await shipment to Holland for repairs. A new wing will be necessary, but apart from this there is not much further damage.—G. D.

THINGS WE ALL WANT.

Now that flying competitions of various sorts are so much the fashion and now that private owners are increasing and multiplying, people concerned with aviation will find a great deal of interest in the products of the Birmingham Medal Company Ltd. of Summerhill Terrace, Parade, Birmingham. This firm has for many years specialised in the making of medals, badges, trophies, cups, shields, name-plates, and in fact everything that is included in artistic metal work, all the way from an advertising souvenir to a gold cigarette box.

Private owners in these days are fond of giving their machines fancy names, and the Birmingham Medal Co. are just the people to produce really artistic plaques for this pu pose. Nearly all owners also like to have their names an addresses in neat unostentatious lettering on the machin Here again the nameplates made by the Birmingham Med Co. are just what is wanted.

At the other end of the scale, clubs, and kind-heart people who like giving prizes, will find the Birmingha Medal Co. equally well able to produce cups, shields, a special trophies of all kinds in gold, silver or any oth metal, in any size from the miniature cup such as is present to the member of a team right up to a monument the size the Schneider Trophy or bigger. And one can vouch pe sonally, as the result of more years acquaintance with t firm than one cares to recall, that their workmanship is ways excellent.

One of the firm's most successful recent products is a p fect scale model of a Moth, which may be had either a motor mascot, or as a trophy on a plinth with inscript plate. In silver-plated white metal it costs £3 3s., and hall-marked silver it costs £7 7s.,—which is remarkably ch for the workmanship and artistry in it.

Among medallions one of the neatest of the firm's p ducts is the famous medal of St. Christopher, the patron all travellers whether by sea, land, or air, without wh guardianship many people would not dare to travel. The Christopher dashboard mascot in solid silver, gilt and amelled, only costs £1. The firm's catalogues are themsel so well done that they are the best possible proof of the fir capabilities.

SAFETY FIRST IN FRANCE.

The French are beginning to feel that "safety fir should be the rule in all matters appertaining to the and the French Air Minister, M. Laurent-Eynac, has iss a decree limiting the conditions under which aeroba may be carried out, and forbidding mock aerial comb between two or more machines.

WAHABIS AND WAPITIS.

The Works of Petters Ltd., Yeovil, had an interest visitor on June 17 in the person of Sheikh Hafidh Wah Minister of Education to the Government of Ibn Sa Head of the Wahabi Sect, and King of the Hejaz and N He is at present in England as a delegate to the Po Congress. The Sheikh was conducted round the airc and engine works of the firm and expressed consider interest. He was afterwards taken for a flight in the Westland IV three-engined four-passenger limousine.

Hafidh Wahba, who has flown several times before, pressed his opinion that the Westland IV was a very si and comfortable machine.

His secretary, Ali Shukry Bey, who speaks English fectly, acted as interpreter.

Ibn Saud has a number of Petter Oil Engines insta in his palace for electric lighting and other purposes. now, no doubt, he will have a few Westland IVs for transport of his officials,—as he owns a whole fleet of already. And he might do well to order some Wapiti keep his more troublesome tribesmen in order.

NEIGHBOURS FROM NEJD.—Left to right: Mr. E. M. Benjamin, Flt. Lt. Louis Paget, Mr. P. W. Petter (Managing Director of Petters Ltd.), Sheikh Hafidh Wahba (Minister of Education to Ibn Saud), Ali Shukry Bey, Mr. T. D. Cree, Capt. R. C. Petter, Capt. G. T. R. Hill, and Mr. R. J. Norton.

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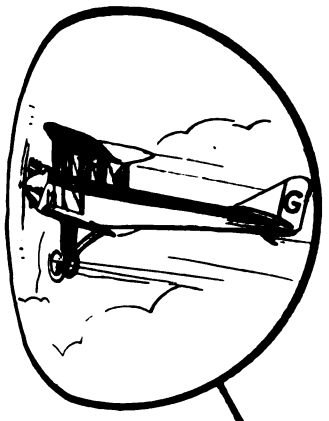

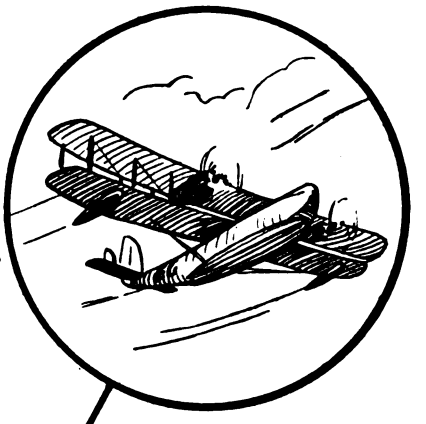

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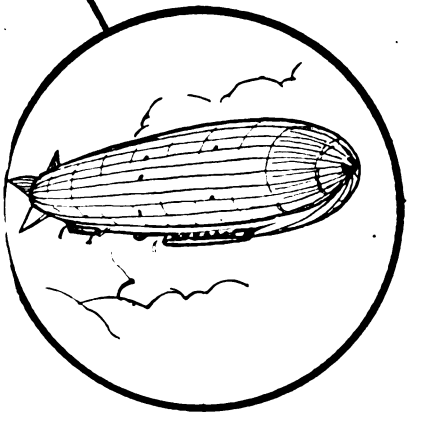

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 15; Monday, 36; Tuesday, 37; Wednesday, 41; Thursday, 40; Friday, 43; Saturday, 42.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 74, passengers 748, freight 26 tons. India Route: Inward, passengers 4, mail 763 lbs.; outwards, passengers 5, mail 529 lbs.

AIR UNION:

Paris—London and return: Machines 72, passengers 337, freight 23¼ tons.

K.L.M.:

Amsterdam—Rotterdam—London and return: Machines 49, passengers 293, freight 17¼ tons.

SABENA:

Brussels—London and return: Machines 14, passengers 90, freight 3¾ tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London and return: Machines 27, passengers 57, freight 4¼ tons.

MISCELLANEOUS:

British machines 16, passengers 14.

Foreign machines 2, passengers 3.

Total number of trips by British machines 90, carrying 763 passengers. Foreign machines 164, carrying 780 passengers.

COMPARATIVE FIGURES.

Week ending July 13:
Machines, 254; Passengers, 1,542; Crews, 527; Total personnel, 2,069.
Corresponding week, 1928:
Machines, 239; Passengers, 1,688; Crews, 460; Total personnel, 2,148.
Corresponding week, 1927:
Machines, 167; Passengers, 1,101; Crews, 320; Total personnel, 1,421.
Corresponding week, 1926:
Machines, 169; Passengers, 1,199; Crews, 218; Total personnel, 1,427.
Corresponding week, 1925:
Machines, 165; Passengers, 888; Crews, 218; Total personnel, 1,106.
Corresponding week, 1924:
Machines, 199; Passengers, 991; Crews, 250; Total personnel, 1,241.
Corresponding week, 1923:
Machines, 121; Passengers, 604; Crews, 194; Total personnel, 798.
Corresponding week, 1922:
Machines, 152; Passengers, 411; Crews, 256; Total personnel, 667.
Corresponding week, 1921:
Machines, 115; Passengers, 430; Crews, 137; Total personnel, 567.
Corresponding week, 1920:
Machines, 106; Passengers, 219; Crews, 137; Total personnel, 356.

CROYDON NOTES.

Imperial Airways' tea flights over London are proving extremely popular this year. To those who know their London well from the ground, it is of unfailing interest to trace well-known routes through London, spotting from the air the traffic congestion at certain points and working out wily alternative routes for the car. For flying over a great city the present weather is, of course, ideal, and many interesting discoveries can be made. A Navy Officer on leave for example, can easily spot the venerable roof of the "Goat" on account of the blue haze of fumes hovering over it.

It is said, too, that on certain days the building which houses THE AEROPLANE in Piccadilly is shrouded in a dull purple mist through which volcanic Editorial objurgations shoot upwards like red-hot cinders.

One evening Sir Sefton Brancker enlivened the evening for radio fans by broadcasting an extremely able account of what Civil Aviation had done since 1919. Sir Sefton Brancker pointed out to the British public how many of the World's pioneer flights were made by British planes and pilots, and that the first cross-Atlantic plane flight as well as the first to and fro Atlantic Airship flight was made by a British Airship. All this is extremely good for the British public who as a body seem unalterably convinced that Germany made the first cross-Atlantic Airship flight and America the first Atlantic plane flight.

Great jubilation is expressed in Air Journalistic circles over the flight of the big Dornier on Lake Constance.

Journalists accustomed for years to refer to anything from a D.H.16 with a Napier engine to an 8-seater Fokker F.VIIa as—this giant air liner or this colossus of the air—are hard at work inventing super-superlatives for the really big flying-boats which Germany has produced.

On opening our morning paper we eagerly search for some headline such as—

Aerial Brontosaurus Cleaves Skyways.

followed by an opening on the following lines—

"Described as resembling a flying Megalith of metal, hurtling with unutterable velocity through the realms space, brushing aside eagles like flies, and scuttering flocks Roc's like so many sparrows, the new German mammoth the Aetherial routes, etc., etc."

Jockeys have always favoured air travel as a means getting about. On Sunday, four of them, Gordon Richard Steve Donoghue, Fox, Lane and Richardson flew to Osten by Imperial Airways to ride in the races there. Unlucki not one of them rode a winner. Undiscouraged they return to Croydon the same evening, and Gordon Richards fl to Ayr on Monday, again by Imperial Airways. Leavi Croydon early in the morning, he reached the course abo an hour before the first race. At Ayr he rode two winne and two seconds, returning to Croydon about 10.30 p conscious of a good day's work well done. Jimmy Youell w the pilot.

Weather conditions in the Channel have been so perf lately that the oldest pilots on the air routes do not reme such visibility. From Ostende it has been possible to obt a marvellous view of the Kent and Essex coasts.

The *Southern Cross* rests on its laurels in the Croyd Hangars looking battered but contented. The history this aeroplane is interesting. It is understood to be co posed of a wing originally built in Holland and a fusel constructed in America. Both wing and fuselage, as co ponent parts of two different machines, made a trip to Arctic regions, amongst other adventures.—SPRY.

THE ARRIVAL OF "THE SOUTHERN CROSS."

The *Southern Cross* arrived at Croydon on Wednes last, July 10, at 15.22 hours.

Sir Sefton Brancker welcomed the crew. Mr. Kingsfo Smith was the pilot, Mr. Litchfield was navigator, Mr. M Williams was mechanic, and Mr. Ulm was the fourth the "companions" mentioned in the newspaper report

The machine looked weather-worn, but the way it stood up to its lengthy journeyings, and to the expos during its much-debated forced landings,—on which official inquiry has recently been held in Australia,—is str testimony to Fokker design and construction. The Mica airscrews, an American product made of some "mashe composition, do not appear to have suffered at all.

Mr. Kingsford-Smith explained that they had bought f Avro-built Fokkers which they were going to take back w them to Australia, for use on the air-line which they h to operate along the East Coast of Australia.

The following message has been received by the Ri Honourable Lord Thomson, Secretary of State for Air:—

"Please convey to the four airmen of the 'Southern Cr my heartfelt congratulations on their remarkably succes achievement after all the dangers and hardships they h experienced."

(Signed) GEORGE R.

THE AUTOGIRO WINDS ITS WAY.

The Cierva Autogiro Co. Ltd. state that Senor Rambo the Spanish Pilot of the firm, made a non-stop flight July 11 from Madrid to Lisbon in four hours agains head wind all the way. The distance along the Ta which was the route chosen, is about 350 miles.

The machine in which Senor Rambaud flew is exa similar to the one which is on show at Olympia. machine is claimed to be a great improvement on previous types of Autogiro as it includes an apparatus deflecting the slipstream from the propeller to the r blades causing them to rotate sufficiently while the mac is stationary to get it off the ground in a very much sm space than heretofore.

[Anyhow four hours for 350 miles strikes one as being an Irishman would call "a tagus journey."—C. G. G.]

AIR MAIL AND "DAILY MAIL."

The Daily Mail has been drawing the attention of readers to the advantages of the Indian Air Mail, and Harry Harper, writing in its columns, makes the p already emphasised by THE AEROPLANE, that the Post O should use the fastest means of transport available, wit surcharge. This is very sound. Another sound point f

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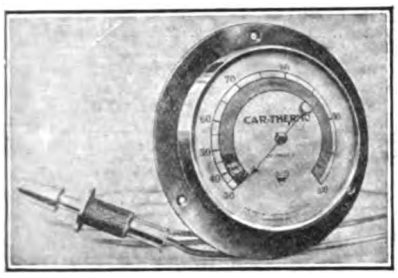

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The Car-Thermo is a scientifically calibrated instrument which indicates, upon the instrument board, the temperature where it matters, in the cylinder head.

There is no soldering or drilling to do, the temperature responsive element is inserted through a small hole (made with a cutter supplied with the instrument) in the radiator hose, and is held in position by a neat patented method.

The Car-Thermo is made in many sizes, for flange or sunk mounting, and in different finishes, black or nickel case, silver or black dial, complete **25/-**

The Car-Thermo Safety Gauge

This dual instrument replaces the existing oil gauge and occupies the same hole in the instrument panel, and combines a high-class oil gauge with the well-known Car-Thermo.

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The first to open will be the London Air Park and Country Club at Hanworth, 30 minutes from Hyde Park Corner. Here a country mansion standing in spacious grounds is being converted into an up-to-date Country Club. Surrounding it are the two aerodromes, and close to it the hangars and shops have been erected.

A limited number of members are now being admitted at the following rates: Flying Members, 5 gns. entrance fee, and 5 gns. annual subscription; Non-Flying members 3 gns. in each case. It is estimated that for the average member there will be no waiting, and after learning, flying charges scale down to £1.1.0 per hour The cost of learning to fly will be under £25.

A Trial Flying Lesson for £2.2.0.

There is no better way of finding out if you really would like to learn to fly than a trial lesson, which gives you half-an-hour in the air, and lets you experience the feel of the controls. The trial lessons are open to everybody and include free transport by car to and from the London Air Park, starting from Trafalgar Square; also from Olympia during the Aero Show.

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(30 mins. from the West End)
Phone: Feltham 236.
Station: Feltham, Southern Rly.

Air Press Agency.

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Mr. Harper's article is that mail-planes should be operating daily instead of weekly.

What is *not* pointed out is that such a system would mean a very big capital outlay in buying new machines and increasing the staff. Still a guarantee of a ton of mail a day from the Post Office at a pre-arranged figure would be very much better than the present subsidy business,—especially for the Indian Route. A further point is that if you are going to carry a ton a day why not use modified Fairey Long Range Monoplanes? Such machines could do the whole journey in a series of long hops at a high average speed.

THE EXAMINATION OF CIVIL AIRCRAFT.

In the House of Commons on July 10 in reply to a question by Capt. Balfour, the Under-Secretary of State for Air said that there was no obligation whatever upon owners of private civil aircraft to have their aeroplanes inspected by the British Aviation Insurance Group under the arrangement made with that body in connection with the renewal of certificates of airworthiness and it rested entirely with each owner whether he would have his aircraft inspected under that arrangement or as hitherto, by Air Ministry officials.

Capt. Balfour asked whether the principle of the Air Ministry authorising private concerns to carry out the necessary examination of civil aircraft as required for the renewal of a certificate of airworthiness under the Air Navigation Act, was to be extended to applicants other than the British Aviation Insurance Group, and, if so, would the qualifications required by the Air Ministry before the granting of such powers to a civil concern be defined and published by the Air Ministry.

Mr. Montague said that the position was that two bodies, including the one mentioned, were being accepted as competent to make recommendations for the purposes of the renewal of certificates of airworthiness for privately-owned aircraft. The answer to the second part of the question was in the negative but application from other responsible bodies possessing competent inspection organisations would receive consideration.

ABOUT THAT C.I. ENGINE.

The Sunbeam Motor Car Co. Ltd., of Wolverhampton, have just issued an interesting and beautifully illustrated booklet describing the succession of Sunbeam aero-engines right away from the early 150 h.p. eight-cylinder water-cooled engine up to their latest development, the Compression-Ignition Engine type P.1.

One point of interest about the old eight-cylinder engine is that with the first of these, in a Maurice Farman long-horn biplane, there came to Brooklands a clever young mechanic from Wolverhampton named Jack Alcock, who later joined the Royal Naval Air Service, distinguished himself highly in the War, and finally won fame and a knighthood by flying the Atlantic non-stop for the first time.

Sunbeam aero-engines were also fitted to the R.34, which was the first airship to cross the Atlantic in either direction, as well as the first to cross it there and back.

The Sunbeam Co. have had little to do with Aviation in the past eight or nine years, and if their Compression-Ignition Engine should be the first British engine of its type to fly the performance would be a great feather in the cap of the enterprising Mr. Coatalen, who has already produced so many remarkable engines.

The booklet can be had post free by anybody who writes to the Sunbeam Motor Car Co. Ltd., Moorfield Works, Wolverhampton, asking for it, and mentioning THE AEROPLANE.

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NATIONAL PETROL STATIONS LTD.—Private Company. Registered July 11. Capital, £1,000 in £1 shares. Objects: To carry on the business of dealers in and distributors of petrol, motor spirit and oil, etc. The directors are: A. G. Hemsley, 1, Melvin Place, St. John's Wood, N.W.8. I. A. E. Edwards, Downe Hall, Downe, Kent. (director National Flying Services Ltd.). G. E. F. Boyes, 39, Cholmley Gardens, N.W. (director National Flying Services Ltd.). Secretary: N. I. Smith. Solicitors: Halsey Lightly and Hemsley, 32, St. James's Place, S.W. Registered Office: Grand Buildings, Trafalgar Square, W.C.2.

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PERSONAL NOTICES.

DEATH.

SWAINE.—At Trowbridge, on July 11, as the result of a flying accident, Reginald Montague Swaine, Plt. Off., R.A.F.

Mr. Swaine entered the R.A.F. last March with a short service commission and was posted to No. 1 Flying Training School, Netheravon, for a course of flying instruction.

BIRTHS.

EVILL.—On July 9, at 30, Curzon Street, W.1, to Wing Cdr. and Mrs. Strathern Evill—a daughter.

McMULLIN.—On July 11, at Corriegills, Manor Road, Ruislip, to Loretta (*née* Dent), wife of C. R. McMullin—a son.

MAYO.—On July 15, at 16, Coleherne Court, S.W.5, to Thorva, wife of R. H. Mayo—a daughter.

POPE.—On July 14, at Brightwell, Woodbridge Road, Ipswich, to Pamela (*née* Cameron Young), wife of Flt. Lt. S. L. G. Pope, D.F.C., A.F.C., R.A.F.—a daughter.

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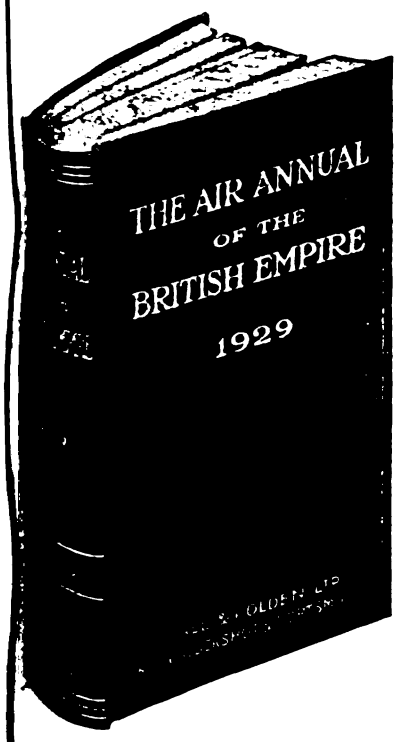

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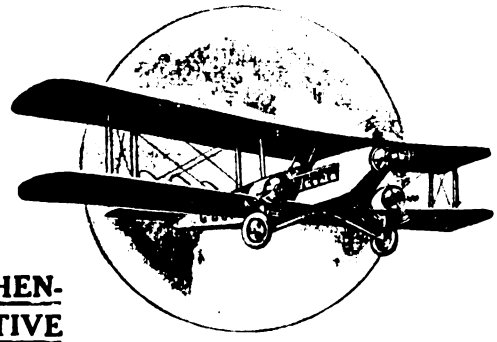

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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. G. Grey

Vol. XXXVII. No. 4. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

AUG 7 - 1929

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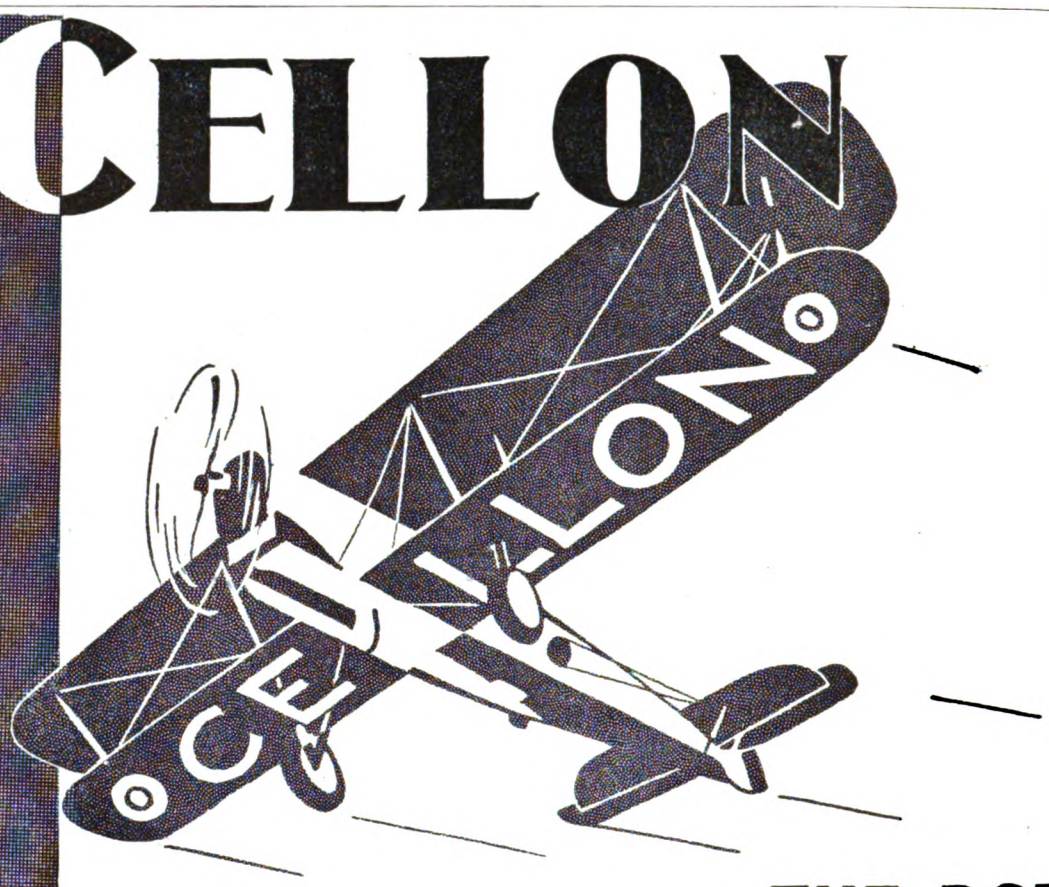

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ON THE AERO SHOW.

Taking it all round the Aero Show at Olympia is a really fine effort on the part of the British Aircraft Industry. If there is nothing startling or revolutionary in the design of any of the aircraft it does at any rate show that we can make aeroplanes against anybody in the World.

After all, however stupid the English business man may be in any trade, if you want to get the best thing in the World, whether it be a motor-car or a pair of boots or a suit of clothes, you have to go to England for it. And even if you want a foreign product, or an imitation of a foreign product, you can buy it better and cheaper in England than you can anywhere else.

For all our bleats about bad trade and everything else, we are the best fed and the best housed and the best clothed and the best amused people in the World. We may have more unemployed here than there are in other countries, but there is far less poverty. And altogether, jolly old England is very much to-day the Merrie England of the glorious days of good Queen Bess.

English Salesmanship.

All of which does not in the least affect the truth of the statement so often made in one form or another in this paper that so far as salesmanship is concerned the English business man is a blithering idiot. Only the other day, being driven by the heat, one went into a shop in Bond Street to buy an undergarment which had been largely advertised in the 6d. class shilling weekly papers by that particular firm as suitable for the hot weather. The people in the shop had never even heard of the garment, and when they had discovered it in their catalogue they said that they would get it from their city warehouse by next day. Now there is an absolutely typical example of English business methods in one of the very best shops in the best shopping street in the whole British Empire, which means in the world.

The salesmanship of the British Aircraft Industry collectively is just about on a par with that. The one thing that the British Aircraft Industry wanted to do, the chief reason for the existence of the Aero Show at Olympia, was to sell aviation to the British people.

At a very moderate estimate a quarter of a million people must pass Olympia every day. And Olympia happens to be so placed on a curve that it hits you slap in the eye every time you pass it by its sheer ugliness, whichever way you choose to look at it. Until the day the Show opened there was practically nothing on the outside of Olympia to tell anybody that there was going to be an Aero Show.

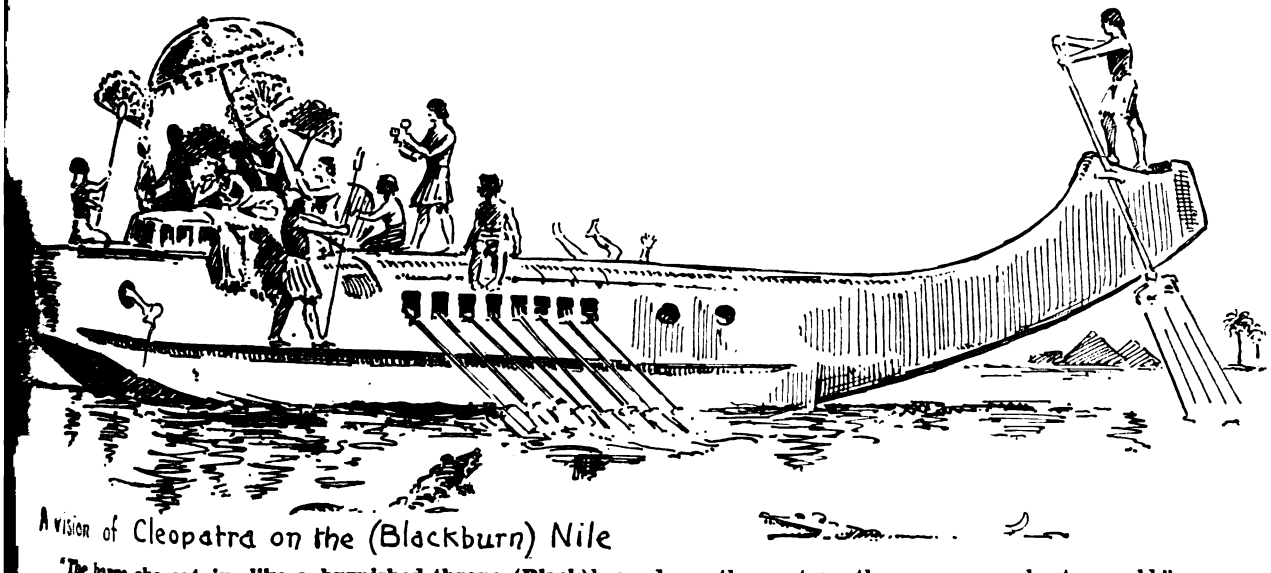
There were a few very dull two-by-four posters stuck on the walls, but they were only about as big as the newspaper placards on a bookstall, and they could not be read from the roadway by people in cars and buses. Over the entrance and at the corner facing Addison Road Bridge were some dead illuminated signs which would display the words "Aero Show" quite brilliantly in the dark, but fade into the fabric of the building in daylight when the lamps are off. Olympia was doing nothing for three weeks before the Show, and so by the simple expedient of sticking big placards all over the outside and putting a few banners across the road, all at a cost, at the very outside, of £100, the promoters of the Show could have told a quarter of a million people a day about the Show every day for three weeks.

Then on top of that the people who ran the Show decided to shut it at 9 o'clock in the evening,—that is to say in broad daylight,—so that their two funny little illuminated signs outside do not get to work till the people who are in Olympia are going home.

And imagine the sheer imbecility of shutting a Show at 9 o'clock when you want to sell Aviation to the British people. As Lord Thomson said at the Banquet last week, the intelligent minority of the people are those who ought to be interested in aviation, and intelligent people are busy during the day earning their livings. Even the type of lad of the village who is going to buy a private aeroplane instead of a sports car is at work at something or another during the day, and the well-to-do business man who is going to buy the family limousine is also a pretty hard worker. Added to which, the boys and girls who are going to persuade their parents to buy family limousines are either at school or at college or doing something or another during the day, and the intelligent British workman whom we want to interest in aviation is also at work during the day.

Anyhow, none of us gets away from work till about six in the evening, and then we have to go home and wash and have some food, which means that we cannot get away from home till about 7.30 and we certainly cannot get to Olympia till eight. And nobody is going to pay even 1s. to go to Olympia at eight if he or she is going to be pitched out again at nine.

Several times during the Show one has seen people in evening dress stroll in at about 8.30, evidently thinking that they were going to have at any rate two hours in which to



"The barge she sat in, like a burnished throne (Black)burned on the water: the poop was beaten gold."—
(*Antony and Cleopatra*—Act II, Scene II.)

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have a look round the Show. And their faces when they were calmly told to clear out at nine were worth watching.

As a matter of fact, all of us on THE AEROPLANE were so busy over the Special Issue, and getting ready for the Show and so forth, that none of us realised till we actually went to Olympia that the Show was going to be shut at nine in the evening. If we had thought that the organisers of the Show could have been guilty of such abject foolishness there would have been quite a good deal said on the subject in THE AEROPLANE several weeks ago.

When aviation does at last succeed in this country it will most distinctly do so in spite of the people who are supposed to organise aeronautical affairs, and not because of anything they do for aviation.

Anybody of even the most moderate intelligence ought to have seen at once that people are not going to a Show to be turned out at nine with a completely spoiled evening. You cannot go anywhere after nine o'clock and you do not get value by going there before nine o'clock.

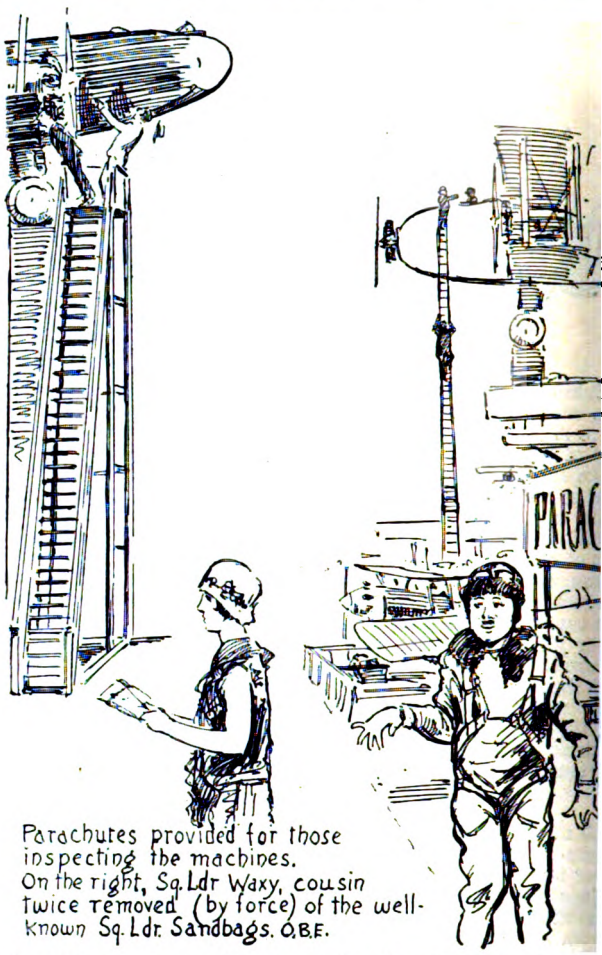
Considering that we use Summer time in this country the Show ought to be kept open till eleven. Then people could stroll down there quite comfortably after their evening meal at 8 or 8.30 or even 9 and have hours in which to play round the Show. People do not expect to come out of a theatre or a movie till after 11, so why on earth should they be asked to clear out of a Show before then?

ENTHUSIASM.

In spite of all the wailing of the Trade about lack of support in the newspapers and so forth there is no doubt about the enthusiasm of the British public if only they are allowed to go and look at aeroplanes at a time when they are free to do so. The whole of Saturday, right up till closing time, in spite of the blazing heat and all the other attractions of a London Saturday afternoon, Olympia was simply packed with people.

If only the Show had been properly advertised and if only people were given a chance it would be crowded every evening. One has expressed these views slightly more fluently in words to certain of the Show Authorities, and there is a possibility that during this week the Show may be kept open later, unless the Society of Motor Manufacturers and Traders, who apparently own most of Olympia, turn sticky about it. And if the alteration is made there will be considerable interest in watching the result. But one fears that the harm has already been done, and even if the Show should be kept open later, people will not know about i the Show is over.

AT THE OPENING.—H.R.H. the Prince of Wales, with Lord Thomson, Capt. P. D. Acland, and Mr. C. R. Fairey on the opening day.



Parachutes provided for those inspecting the machines. On the right, Sq. Ldr Waxy, cousin twice removed (by force) of the well-known Sq. Ldr. Sandbags. O.B.E.

The curious thing is that the people on the stands keen and intelligent enough for anything. One impor American visitor said that wherever he went he could full and well-informed information about the exhibits, u the American shows, where the stand attendants k nothing and the principals were in the back-offices tal sales and drinking boot-leg liquor with prospective tributing agents.

That being that, we may now proceed to discuss the S itself briefly. In this article one does not propose to with anything in detail. What is on each of the aero and aero-engine stands is described in its proper pla this issue. Next week the Staff of THE AEROPLANE will with the accessories, materials, component parts, gad and so forth.

IRON VERSUS ALUMINIUM.

The outstanding feature of the Show is the compet between steel and duralumin, and the competition bet air-cooled engines and water-cooled. Years ago one that the all-steel aeroplane was more in our line of bus than that made of aluminium alloy. To-day the situ is somewhat different, because we happen to have ir British Aluminium Company's Works in Scotland one o World's biggest sources of production of aluminium.

We import iron ore to make our steel and we in alumina and bauxite to make our aluminium. We di coal to turn the ore into steel and we make our alumi with the water supply of Scotland. Recently we have told that if we will only take the trouble to dig it up we enough iron ore in this country to make all the steel w ever likely to want. And probably in due course some will discover that we have enough alumina and bauxi the British Isles if only we will scratch for it.

And so we look like being involved in one of thos lightful competitions which are so good for trade, just the eternal war between the maker of armour-plate an maker of armour-piercing shells.

At the Aero Show you can see what can be done steel by such firms as the Bristol Company and the strong-Whitworth-Siddeley group and the Gloster Com and Boulton and Pauls. And you can see what can be with duralumin by Vickers Ltd. and Short Brothers. Fairey and the Hawker firms seem strictly neutral. timber is almost dead, as a material.

The steel people will talk to you about the corrosi

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"THE record of the NAPIER engine is really marvellous.

It now holds four world's air records and three world's land speed records (over one mile, five miles and five kilometres). In addition it was fitted to the Fairey machine which made the first non-stop flight to India, and to the Supermarine seaplane which achieved the fastest speed ever attained in the air.

It was also installed in Miss England, the motor-boat with which Sir Henry Segrave won the championship."

The Graphic,
11th May, 1929

Come and see this remarkable engine on

STAND 100

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International Aero Exhibition
July 16-27

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The finest aero engine in the World

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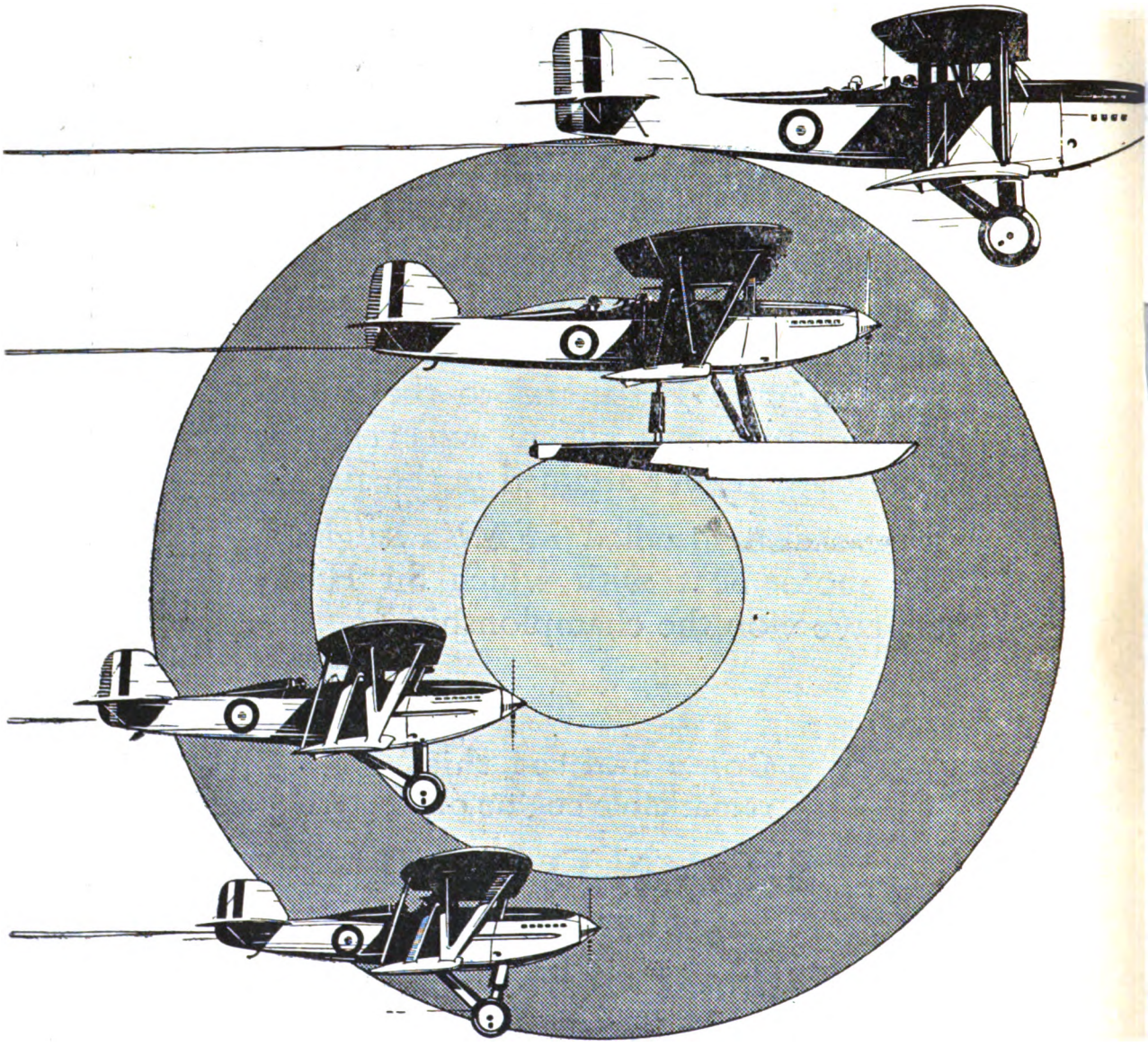

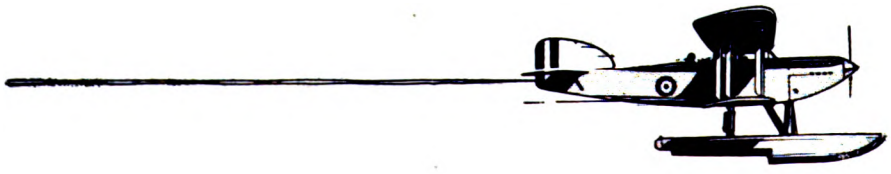

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FAIREY AIRCRAFT

THE FAIREY AVIATION COMPANY LTD., HAYES, MIDDLESEX

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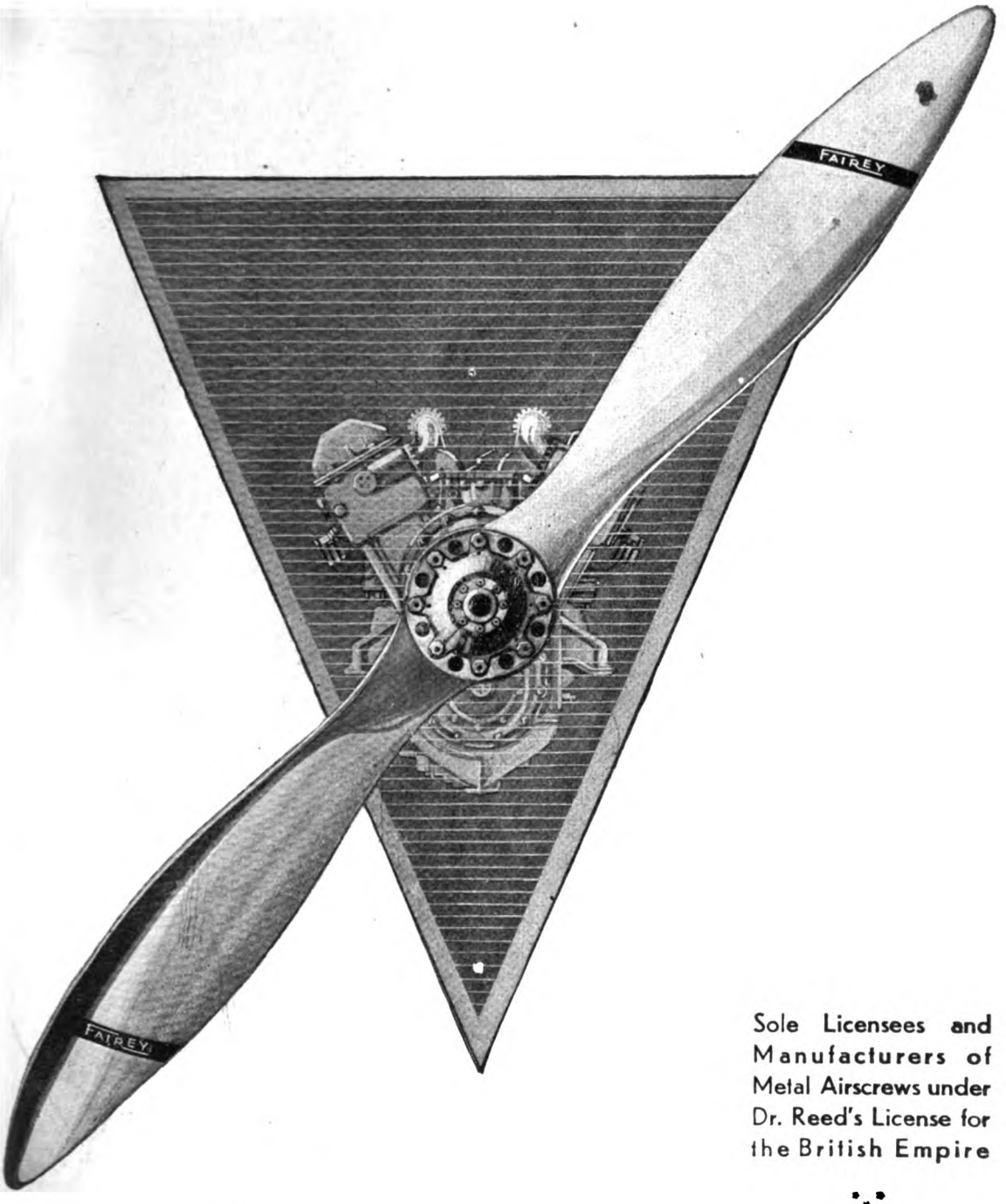
FAIREY

METAL AIRSCREWS



Sole Licensees and Manufacturers of Metal Airscrews under Dr. Reed's License for the British Empire

FAIREY AVIATION COMPANY, LTD., HAYES, MIDDLESEX

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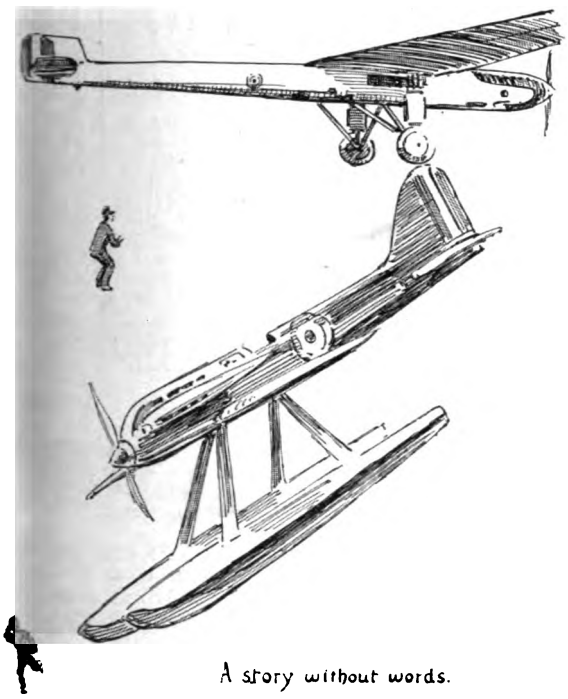
The Effect of Those Vicious-looking Stream-lined Noses and Bodies.



A story without words.

duralumin. And the duralumin people will tell you that steel rusts. The steel people will then talk to you about rustless and stainless steel. And the duralumin people will tell you about a new silicon alloy of aluminium which is even less corrodible than stainless steel.

Between the two we should before very long arrive at aircraft in which steel is used for the purposes for which it is best fitted and in which aluminium is used also in the best way. The result will be the lightest and strongest aircraft in the World made of material which can be left lying about in sea water without any protective covering of any kind.

Then we shall be able to do without all this daubing with anoline and pasting with special protective paints, or even using aluminium and duralumin sandwiches, and all our paint and varnish people will be able to apply themselves to producing beautiful colour-schemes without having to bother about whether certain colours are adequately protective or not. And then our aeroplanes will be not only the best built in the World but the most durable and the most beautiful.—That is of course if the British business man wakes up and gets the market before America needs it.

WATER VERSUS AIR.

Among the engines we are also finding this useful competition which drives trade to wakefulness. The water-cooled engine people are getting their frontal areas down and their pressures up till they are reaching the point of talking about so many horse power to the pound instead of so many pounds to the horse power. And now they have a new line of attack through ethylene-glycol cooling, with reduced radiators and higher temperatures.

The air-cooled engine people on the other hand are pushing up their pressures and getting more horse power for their weight, and they are doing things with Townend rings and N.A.C.A. cowling which bring up the air-streams in the way they should go, and push up the speeds correspondingly.

Some of the efforts in this direction seem to be somewhat misdirected, and there is still a great deal to be learned about what the air-streams do when these rings have dealt with them. There does not seem to be much good in putting a ring all round your valve-rockers and then jambing the air under it straight into a fat exhaust pipe which has a large gap between itself and the fuselage.

THOSE RINGS.

There is no royal road to learning, and still less is there a royal road to a knowledge of what air-streams do. Even in America they do not know all about air-streams, as this little story shows.

The Lockheed monoplane with a 450 h.p. Pratt and Whitney Wasp, of the type in which Captain Aldrin of the Standard Oil Company was recently touring Europe, has a cruising speed between 150 and 155 m.p.h. Without pushing his engine all out Capt. Aldrin actually averaged 155 m.p.h. over the ground throughout his tour over Europe,—which strikes one as a very sensible touring speed for an aeroplane. That same machine with an N.A.C.A. ring has its top speed put up to nearly 200 m.p.h. and it cruises round about 170 m.p.h.

Now the N.A.C.A. tests showed that the advantage of an N.A.C.A. ring on an engine nacelle, or power-egg, such as is used on the wing-engines of two-engined or three-engined machines, is much greater than it is on any engine on the nose of a fuselage. So they fitted N.A.C.A. rings onto the wing-engines of a Ford Monoplane, exactly similar to that which is at Olympia. And they promptly knocked five miles an hour off the speed of the machine. So, as they say in America, what do you know about that?

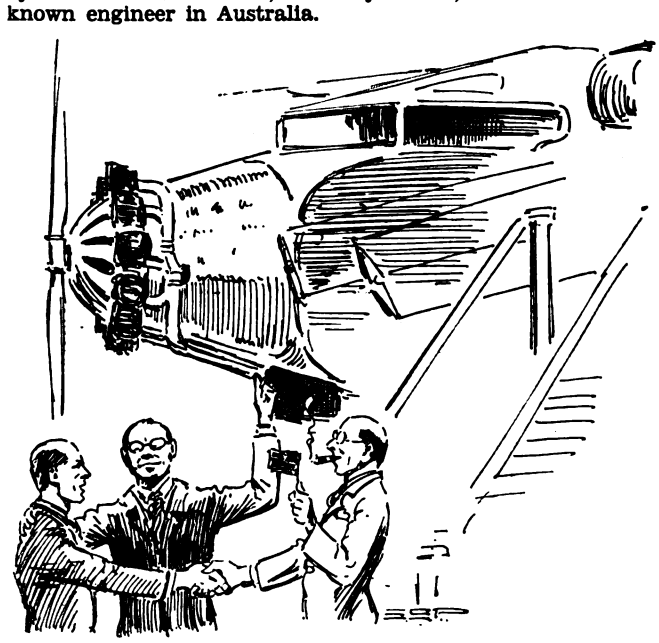
The answer is perfectly simple. The wing engines on the Ford are so much under the wings and so high up that as soon as you put an N.A.C.A. cowling round them you get a hideous air jamb between the upper one-third of the circle of the ring and the under-side of the wing above them. If the engines were built into the leading edge of the wing probably the ring would show a very great advantage. But apparently it has not been tried as yet on a machine in which the engines are so placed.

But anyhow, there are plenty of amusing and interesting problems to be solved in this direction. One of the chief obstacles to their solution seems to be that the average aerodynamic scientist is stone blind where air-streams are concerned, and never seems to be able to visualise what the air does. The result is that he finds out in the course of about two years by laborious research in wind tunnels just about as much as he ought to be able to see in two minutes if he had any mental vision. When he has made his great discovery then a mere practical man comes along and asks him whether he could not have seen as much if he had only tried to produce a mental vision of what air-streams are doing.

CLOSING THE SUNFLOWER.

Apart from the orthodox radial air-cooled and in-line air-cooled and Vee and W and in-line water-cooled engines there are certain other developments which may alter the complexion of things altogether First of all there is the barrel type engine. There are two examples of this at the Show.

One is the Swiss Statax in which the cylinders and the airscrew all revolve together. The other is the Redrup in which the cylinders are stationary and the airscrew alone revolves. One has recently seen an Australian engine also of the barrel type, a model of which has been brought over here by Mr. Kenneth Turner, formerly R.F.C., and now a well-known engineer in Australia.



American pessimists doubtful if the Great Republic stands where it did.

THE TONIC EFFECT OF THE FORD.—America's one effort to show us how.

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The Statax people claim that their engine has done about 100 hours' flying in Switzerland. No performance figures or weight-for-power figures have so far been received. When Swiss official figures are produced they will be believed without question.

The first Redrup engine ever made (it was built a good many years ago) flew in a Spartan biplane at Hamble a day or two after the Show opened. If the people behind the Redrup engine do not bump into any unexpected snags they certainly have got something which will go a very long way to further the progress of flying. Mr. M. L. Bramson, who is the moving spirit behind the engine, says that they are the first people who have successfully "closed the sunflower." The remark is apt, for in effect the arrangement of the cylinders in the Redrup is just what would be achieved by closing down the cylinders of any radial engine as some flowers close their petals at night.

Whenever anything is produced which causes something like a revolution in any line of business it is always invented by about half-a-dozen people at the same time,—without any communication with one another. The Redrup engine actually existed before the War and so did the Statax. When the pneumatic tyre was invented at least six people laid claim to it besides J. B. Dunlop and C. K. Welch about 1890. But a pneumatic tyre was actually patented and used by one Thompson in 1840. So the fact that the barrel-type engine and the swash-plate engine has been in an experimental state for years is no argument against its suddenly becoming a working proposition in this year of Grace.

COMPRESSION-IGNITION.

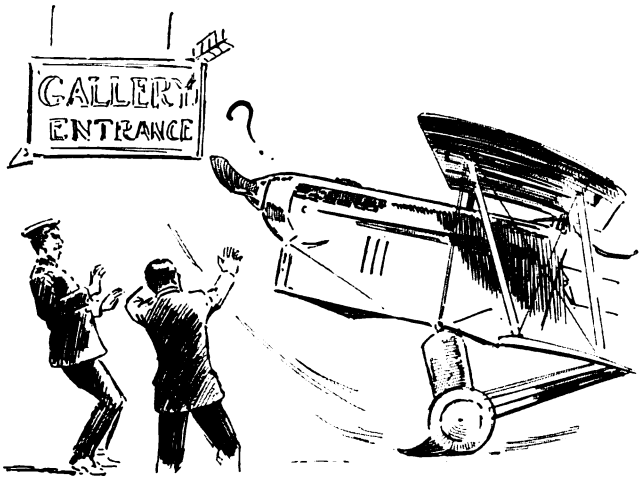
Then on top of that we have the various compression-ignition engines. The Sunbeam people have one at the Show which, one gathers, has run successfully on the bench. The Bristol people have been running a compression-ignition engine as a single-cylinder experimental unit for several years. The Beardmore compression-ignition engines for the airship R.101 has been running on test-benches for months, though at a power considerably lower than that which was originally claimed for them. The Junkers compression-ignition engine has been flying steadily in Germany. And some quite long cross-country flights have been made with the Packard radial air-cooled compression-ignition engine.

So much has been published about the success of the Packard that certain information which one has gathered from certain American friends at Olympia may be interesting.

In the first place the Packard is not running on heavy fuel-oil. It is running on a light grade of oil which is almost a kerosene. That probably makes the job easier. On the other hand, by making it easier it gives the firm a chance of doing experiments with the engine which they could not do if they kept it to the crude oil ideal and were still unable to get off the ground.

Apparently in the Packard design nothing has been done to take care to excessive pressures by way of blow-off valves or anything of that sort. The designer has simply used the best stuff he knew and has left it to look after itself.

The cylinders are not screwed into the crankcases or held down by rods or anything of that sort. They are made with extended feet which sit on the crankcase and butt up against one another. And then steel straps are put round on top of the feet and tightened up with turnbuckles behind and in front of the cylinders, thus forcing them down onto the



THE ASPIRING AVRO.—Or the Antelope that can't elope,—because it is under the gallery.

In Fairey lands forlorn

crankcase, and apparently taking care of all tendencies the cylinders to blow themselves off.

When the machine with the Packard engine lands a the pilot turns off his fuel pumps the engine goes running on its own lubricating oil, and at one aerodrome pipe-line from the oil-tank had to be disconnected bef the engine would consent to stop.

Also our American friends say that after every cro country flight of any considerable distance the engine taken to pieces and reconditioned. Which strikes one being a very right and proper thing to do. There is noth like experimenting under working conditions.

There anyhow are a few major points which may studied by those who go to the Show during the four d which remain after this issue of THE AEROPLANE appe And here are a few more of a minor kind.

HOW TO JUDGE EFFICIENCY.

By this time we ought to realise that to get the best va out of our engine-power, and to get an aeroplane wh will give us enough speed over the ground to make us dependent of the ordinary 30 or 40 m.p.h. wind, we m have high speed. And that means efficiency.

One has come to the conclusion that the best way judge an aeroplane at the Show is to stand in front o with an imaginary axe in your hand and see how ma bits and pieces and excrescences and lumps and knobs could knock off it with the idea of diminishing its he resistance.

Then imagine the whole thing laid out in a big gene arrangement drawing and imagine yourself with a b pencil in your fist and see how many corners can be tur into curves.

The fewer bits there are to be knocked off and the fe corners there are to be abolished the better is the aeropla ninety-nine times out of a hundred. As one has said e where, some of our high-brow designers are stone blind.

Without mentioning any names, there are two makes aircraft in the Show which probably have higher perfo ances with the same engines than anything else. One them is designed by an engineering team, each member which is a brilliant specialist in his own way, and the wh lot are over-looked by one man whose only form of ar ment is to say "That will do," or "Take it away." others are designed chiefly by a man who started life a working carpenter, or wood-butcher as we used to call in the old days, who educated himself at night schools so became a scientist with a real practical knowledge. immediate boss, when one first met him, was one of the fir engine mechanics who ever lived, and to-day he is a n with a great deal of money, a vast amount of business se a thorough knowledge of practical mechanical engineeri and a natural eye for an aeroplane which prompts him go round and knock off the corners.

In each of those firms the scientist is in his proper pla He is just used to tell the practical engineer why his pr tical ideas work, or do not work, as the case may be. because the practical man is at the top, he has in each c managed to collect scientists whose calculations come with amazing accuracy.

When once the scientist comes to the top then perfo

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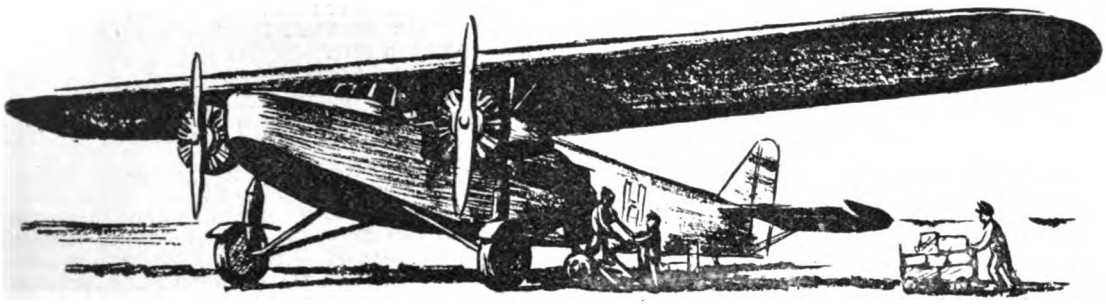
K.L.M



A twin-engined Fokker of the K.L.M. Line.

Amsterdam—Rotterdam—Paris—Berlin—London—a network of air lines links up the great capitals of Europe. That is the splendid K.L.M. service and their fleet of magnificent Fokker liners have a wonderful record of safety and reliability. This famous Dutch air service has used SHELL petrol exclusively and with perfect satisfaction since its inception ten years ago.

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petrol is different

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ance goes to pieces, because he is always ready to prove by mathematics that low performance is due to mistakes on the part of the practical engineer.

Some Things to Avoid.

There are one or two other points which seem worth mentioning in this article, for consideration by buyers and designers alike.

There seems to be a tendency among designers of cabin machines, more especially in the larger sizes, to put a pilot alone in a cockpit separate from his passengers. This strikes one as dangerous. If anything should happen to the pilot, if he should be taken ill or if he should die suddenly, the wretched passengers are condemned to a comparatively lingering death while the machine is going down to crash.

If the driver of a car faints or passes out suddenly there is precious little time to think about anything. But a passenger sitting alongside him who happens to have presence of mind can at any rate grab the wheel and hold the car straight and kick the gears out or switch off or do something. In an aeroplane flying at any reasonable height across country there is heaps of time to pull the pilot away from his controls and for somebody else to take charge.

Any person who is not a pilot, but has done a reasonable amount of flying, ought to be able to make a sporting shot at getting a machine down either in a big field or at the next aerodrome, without killing anybody. So one holds that it is very bad policy to shut the pilot away from the passengers.

At the same time he ought not be jambed up alongside passengers who in a moment of hysteria might grab him by the neck when just coming down to land.

The Place for Engines.

So far as general design is concerned there is not much advance shown by the designers of any country. Everybody seems to disagree about the right place for engines.

Some people build their engines right back into the leading edges of their wings. One is convinced that that is all wrong. The wings spoil a good airscrew and the airscrew spoils a good wing. When the engines are stuck a long way out, as they are in the Rohrbachs, this effect is probably not so bad.

When the designer sticks his engine up on top of a mon plane wing on trestles as does Herr Dornier and Herr Roh bach, and as Mr. Knowler has done on the Saro *Cutty Sar* the centre of thrust must obviously be too high, and must b counteracted by giving a negative set to the tailplane. O the other hand, engines stuck up in that way ought to b very much more efficient than engines which have to pus the slipstream of their airscrews either past a wing through a whole lot of struts and wires and things.

Personally one would very much like to try the experime of turning the engines of the *Cutty Sark* the other wa round, so as to make them into pushers, and then conne ing them by a wing of very small chord extending mere from the front of the engine mountings to the tail of t engine, and projecting on each side just so far as such a wi could be taken as a cantilever.

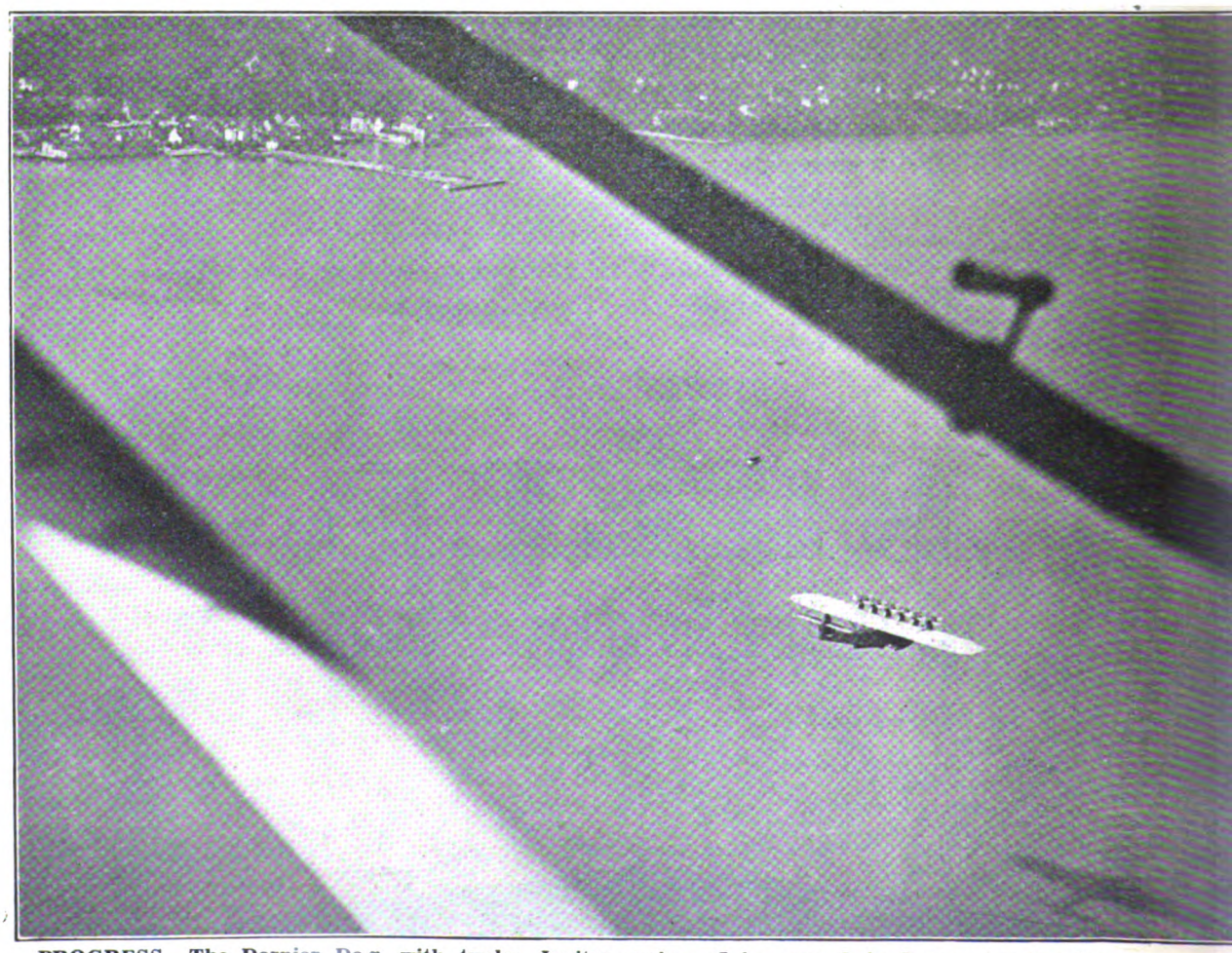
Low-Wing Tractors.

There seems to be a tendency in these days to make lo wing single-seat tractor fighters. The fighter on the Vick Stand is one example. And machines of that type have be built, though they are not being shown, by Boulton a Paul and the Westland people and De Havillands. Th is a good deal to be said for this type of machine as a fight Capt. Frank Barnwell knew it when he built the Bris Monoplane in 1915.

If your machine is fast enough there is no need to wo about what is underneath your wings. All that conce you is what is in front of your gun-sights and whether th is anything likely to pounce on you from above. But th are vast possibilities in a low-wing, pusher fighter.

Another minor point about our general design is t surely by this date we ought to have given up the use tail-skids and we ought to have adopted wheel brakes a trailing tail wheels as standard fittings? In these days can get wheels with brakes which weigh precious little m than our old wheels used to weigh without brakes.

Both in commercial machines and war machines the ting of brakes would save a good many minor accide But brakes in conjunction with tail skids are likely to c a great many deaths. If you jamb on a brake on one wh and spin the machine round on it, sooner or later you going to twist the tail clean off the aeroplane. But it pr ably will not come off till the machine is in the air.



PROGRESS.—The Dornier Do.x, with twelve Jupiter engines, flying over Lake Leman (or Constance).

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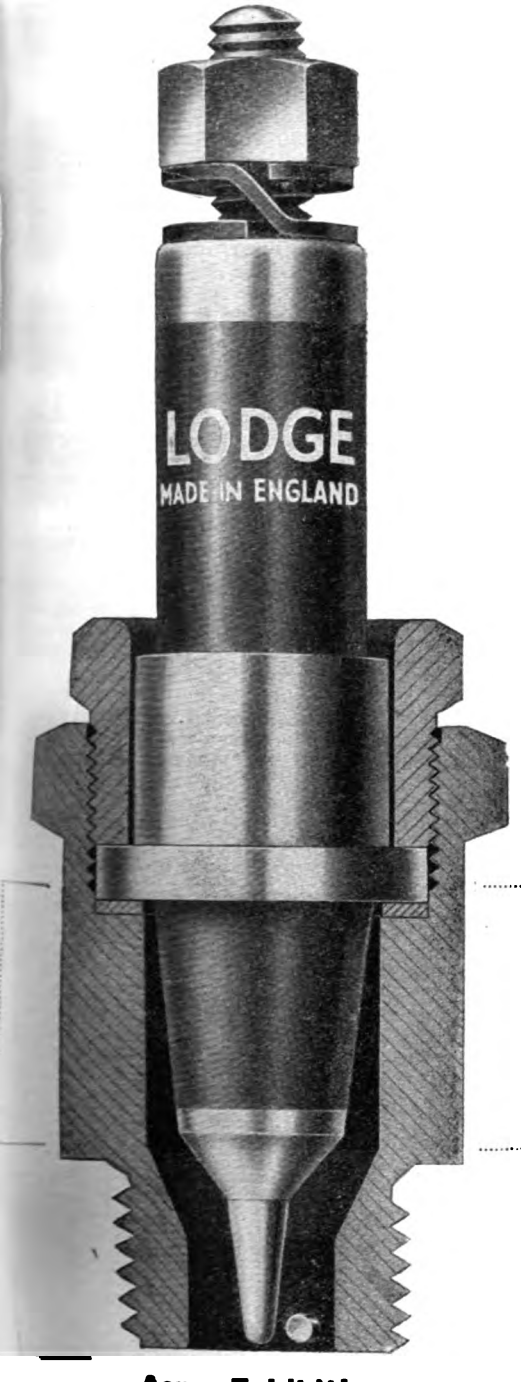

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Our Guests.

Among the most pleasing things in the Show are the exhibits by our friends from Germany, France and Italy. That they should be crowded into the annexe at the end of the Main Hall is a pity, but it could not very well be helped. All the big Stands in the Main Hall and the New Hall were allotted by ballot to British commercial firms. And after all the Aero Show is primarily organised for the benefit of the British Aircraft Industry.

The exhibits in the annexe have in a way an advantage, in that they are not overshadowed by galleries, and in fact are in a better light than any of the stands in the Main Hall or the New Hall.

All three countries deserve to be congratulated on their exhibits.

The German machines have that splendid solidity which is typical of German design and workmanship. Yet we know from experience that those solid-looking metal machines fly just as well as any others in the World. And, judging by the list of World's Records, they fly a great de better than some.

The French machines show that ingenuity which is typically French. And the various gadgets on the Fren Stand are also full of clever ideas.

The Italian exhibit proves once more, as every exhibiti of Italian products of any kind always proves, that t artist-artisan still exists in Italy. Aerodynamic scienti may possibly criticise some of the Italian design, but nobo can find fault with the beautiful Italian workmanship a the artistic finish which is put on everything produced Italian aviation.

We certainly owe a great debt of gratitude to our frie on the Continent for sending us these composite exhib and giving us such a splendid opportunity of compar their ideas and their workmanship with our own.

Hereafter the long-suffering reader will find a few rema on the way in which we have endeavoured to entertain visitors from other countries. And thereafter will be fo the Stand to Stand report of the Show itself.—C. G. G.

ENTERTAINING OUR GUESTS.

On Thursday, July 18, the Society of British Aircraft Constructors entertained to dinner at the Savoy a number of distinguished visitors from other countries, and invited to meet them representatives of all the exhibitors at the Aero Show at Olympia. In justice to the organisers of the affair the fact must be recorded that the entertainment was worthy of the occasion. Having attended similar functions in Berlin and in Paris one can say that, without pretending that we surpassed in any way the hospitality of our hosts on the Continent, we did at any rate give for once as good as we have received in the past.

The Lord Thomson, of Cardington, proposing the toast of the Aircraft Industries of all Nations, said that he imagined that this toast had been committed to him because as he was in power for the time being he was the head of a State Department which was the best customer of the British Aircraft Industry. He hoped that whoever occupied his position 10 years hence would not represent the Industry's best customer. That the Government should be the best customer was a state of affairs which was unnatural and unhealthy.

He hoped to see before he died an air transport system in this country as great as the British Mercantile Marine, supported by an Aircraft Industry as great as our Shipbuilding Industry. And he hoped that the Aircraft Industry of that future would never suffer from such troubles as those which had afflicted shipping of late years.

In thinking over this subject he had reflected on the life history of the Aircraft Industry. It was born before the War a sickly and puling child. He himself as an officer of the General Staff was sent down to Aldershot to report on Mr. S. F. Cody's kites and at that time he regarded Aviation from the point of view of a military Staff Officer as being mildly ridiculous.

When War came the infant Aircraft Industry was subjected to forcible feeding. It was crammed with good things and it was given too much money. It enjoyed a surfeit of good times. He wondered whether even Mr. Handley Page would deny those good times.

Then came peace, and military orders stopped. The infant was left in the cold like a hot-house plant on a bleak hillside. Many men who had dreamed great dreams suffered disappointment.

Looking at this as a philosopher, and not as a Secretar State, his sympathy was with the Aircraft Industry. W he looked back twenty years he found that only two of constructors of those days were with us to-day, namely Short and Mr. Handley Page. [In this statement L Thomson is not strictly accurate. Mr. Robert Blackb was certainly building aircraft twenty years ago. Sir All Roe is still building aircraft,—though in partnership w Mr. Saunders and not in his own name. Mr. G. H. Han syde is with the Desoutter Company. There are many le lights of the aircraft industry to-day who were actively c cerned with making aircraft twenty years ago, but t naturally do not affect Lord Thomson's argument, as he specifically referring to people building aircraft in th days who are still building aircraft under the same name C. G. G.]

Our Visitors.

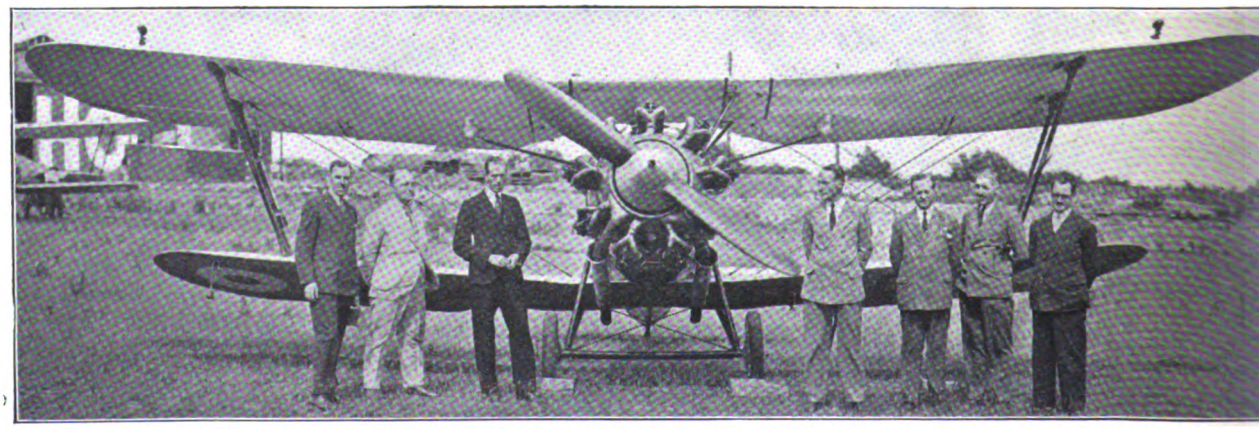
Referring to our distinguished visitors from foreign pa Lord Thomson welcomed them and thanked them for hav honoured this banquet with their presence. He refer specially to His Royal Highness Prince Purachatra of Si He, Lord Thomson, was associated with Prince Purach so long ago as 1902 when he was instructing that Princ military engineering. And in those days, as cox of the b of the Royal Military Academy, Prince Purachatra cur him (Lord Thomson) at bow even then showed a remark command of the English language.

Prince Purachatra, he said, was now here not only as brother of the ruling monarch of Siam but as the Mini of Postal Services and Communications in that country.

Turning to the Aero Show itself, Lord Thomson said it was truly International in character. He himself as unrepentant believer in lighter-than-air craft hoped tha future shows more attention would be given to airships.

The Show was in a sense unique. If it did not m advance it would be a failure. Unwillingly his fel citizens had to admit that we were making progress.

On the opening day of the Show he had the honou accompanying the Prince of Wales round the Show. Prince had shown the adaptability of the typical mo man and his vivid interest in and understanding of airc was remarkable. So far the British Public had not sh the interest which was expected of them.



A ROYAL PILOT.—The Infante Don Alfonso of Spain, while visiting the works of the Bristol Aeroplane Co. Ltd., flew the Bristol Bulldog machine with that skill for which he is so well known. The group on the right of the picture, reading from the middle, comprise: Don Alfonso, Senor Carlos de Quiros, Mr. C. F. Uwins (the Bristol pilot), and M. Robert Esnault-Pelterie (who claims to be the inventor of the type of control-column commonly known as the joy-stick). On the extreme left are Capt. Bartlett and Mr. Burgoine, who represent the Bristol Co. abroad.

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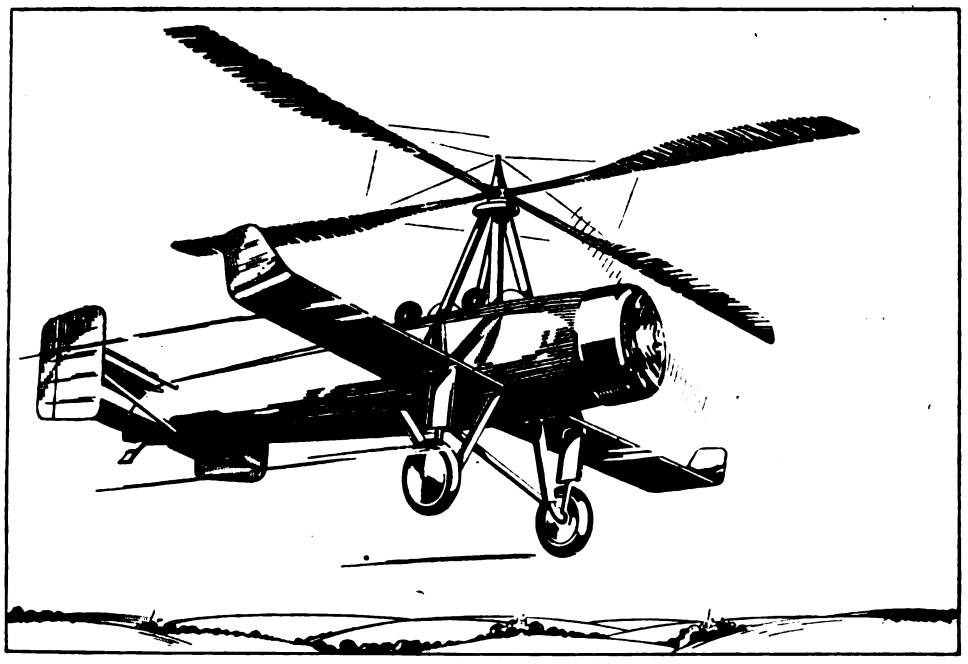

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On the other hand, the people who had shown their interest by coming to the Aero Show were obviously the more intelligent members of the community, and were therefore a minority. Also intelligent people were busy making a living and had not much time to spend at the Show. But he hoped to see a change in this matter during the week-end.

A Word to the Press.

Lord Thomson then appealed to the Newspapers to support the Show more strongly. He said that the newspapers so far had done the Show fairly well, but *only* fairly. He would like to see them advertise it even more. He asked them to give it even half the publicity which they would give to an air disaster.

Supposing, he said, a pilot at the Royal Air Force Display had crashed into the crowd, the whole world would have echoed with it. Could not the Press give part of such publicity to the Aero Show? If only the people of the country were *allowed* to know what there was to be seen at the Show the intelligent minority would overflow Olympia.

[Naturally this biting irony of Lord Thomson's drew enthusiastic applause from his audience. The Press have deserved it. But we could expect nothing more from the Press than we have had. And we must remember that a nation always has the newspapers, as well as the Government, which it deserves.

Those who know anything of the English Press, or rather of those who control the Press and those who are employed by them to edit their newspapers, must realise that from the newspaper point of view there is no story in the Aero Show and no money in it, and that therefore it is not worth the space due to or the work involved by a decent murder or even a first-class street explosion.

Before we entered the banquet hall a friend who is connected with our best newspaper brought along a man representing one of the popular daily papers and asked one to tell him who there was of note among this great assembly. One pointed out to him a few people who having made Aeronautical History on the Continent and in this country and have by doing so indirectly influenced the history of the whole World. One pointed out to him a few men who have made World History direct, and are making World History without having had much to do with aircraft construction.

They were of no interest to him. He wanted to know whether we had not got any famous foreign pilots there, people round whose name he could hang what the newspaper people call a story, and he seemed quite at a loss when one explained that the men who were there that evening were the men who paid his popular heroes, as aerial chauffeurs or jockeys, to do things for them.

To such a man, and to such editors as he serves, a trans-Atlantic stowaway placed next the Chairman at such a banquet would make it worth a double column heading. But they would find nothing of importance in the personality of a Dr. Junkers or a Dr. Dornier, or in the presence of such men as our Messrs. Fairey and Siddeley and Sopwith and Fedden, who have shown us and are showing us how to build up the reputation of British Aircraft. Nor would they see anything significant in the presence of Mr. McCracken, who has charge of all Civil Aviation in the United States, or of the representatives of the great American aircraft constructors who were present.

Under such circumstances Lord Thomson was justified in adopting a kill-or-cure policy towards the Press, in that they can now do no harm to the Show by being huffy at his remarks and ignoring it, whereas they may do a bit of good if his irony spurs them into some show of intelligence.

The only person likely to suffer is Lord Thomson himself, in that he may by his remarks have created for himself a bad press. However, Lord Thomson is a fighting man by nature. And being a Labour minister he cannot expect any of the popular papers to say anything good about him, and so he can afford not to care. But all the same he does deserve the thanks of the British Aircraft Industry for having told the Press exactly what the Aircraft Industry thinks about it.

Having done the same thing oneself for pretty nearly 20 years one knows the result. Just about the finest compliment one has ever had was paid when a friend quoted one's opinion on some aeronautical subject to somebody connected with newspapers, and the newspaper man said "Oh! We don't think much of *him* in Fleet Street." One could not wish for a better epitaph.—C. G. G.]

In conclusion Lord Thomson said that we had at this banquet constructors, designers, scientists and other distinguished visitors of all lands. They were all fighting together as a progressive minority against prejudice. For the public mind was always against any innovation. Let this show be remembered as particularly noteworthy. Aviation would in the end bring all countries together.

The Trade's Reply.

Mr. Handley Page, replying, said that he spoke as the collective representative of the Aircraft Industries of the World. He referred to the period before the War as, in the words of the Bible, "Those time of ignorance God winked at." [Acts 17-30.—C. G. G.]

We could see in the Exhibition groups of people talking in all languages and yet all talking the one aeronautical language. There had been no such gathering since Pentecost.

Referring to airships he said that politicians naturally turned from heavier than air craft to the delightful gas bag, and he hoped that they would see the error of their ways.

When Lord Thomson referred to the fact that Mr. Shor and himself (H.P.) were the sole survivors of twenty year ago he felt that he was becoming less a constructor than curiosity. He said that the Exhibition was showing th brains and ability of the Aircraft Industry and it was wort telling to the world at large. Twenty years ago the questio about any aeroplane at a show was "Will it fly?", that morn ing his old friend Mr. Sopwith had asked "Is there any thing in the Show that won't fly?" and he had replied tha there was not, except for the good-looking fuselage of forty-seater passenger machine on his own (H.P.'s) stand.

As indicating the power of the Press he said that one pape had published the statement that there was in the Show single-seat fighter which would do 300 m.p.h., and he unde stood that when this statement appeared the whole of th Air Council with all their staffs had embarked for Olympi In fact we had to-day aeroplanes which would do 200 m.p. at 20,000 ft. and would climb to the top of Mount Evere incredibly quickly. He referred also to the confidence show by the pilots who embarked in the Fairey Long Range Mon plane on an English Winter day clad in tropical kit, con dent that their next sleep would be in India.

He drew attention to the enormous development in th last ten years, particularly with reference to the aircraft d signed to pack into a submarine, [Mr. Pemberton Billing scheme of 1914.—C. G. G.], and the great twelve-engine Dornier, and the 40-seater passenger machines whic modesty forbad him to mention.

There was no need he said for a universal language convince people about aviation. What could be more co vincing than the Farman which flew to the Far East an back in 17 days. What could be more convincing than th apostolic work done by Charles Lindbergh. In the end was the courage of the individual which carried convictio

There had been no exhibit equal to that of Olympia sin Solomon showed his treasures to the Queen of Sheba—an he hoped that visitors would likewise take souvenirs aw with them.

People, he said, were apt to overlook the work which w

A DISTINGUISHED VISITOR.—Colonel Nawab Mal Sir Umar Hayat Khan, Tiwana, K.C.I.E., C.B.E M.V.O., who has been taking a vivid interest in avi tion of late, with Major H. Hemming, of the Aircra Operating Co. Ltd., examining Mr. Jackaman's Mo at the Aerial Garden Party at Heston.

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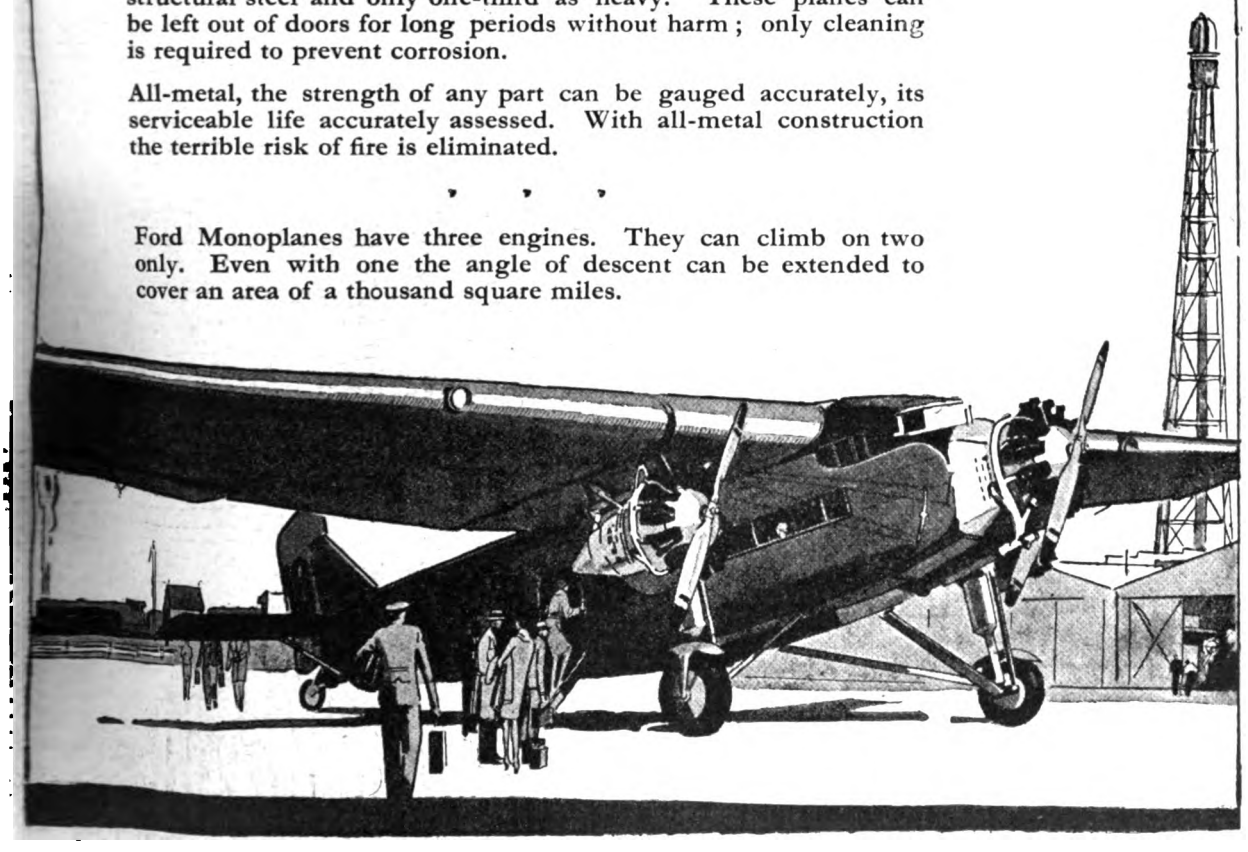

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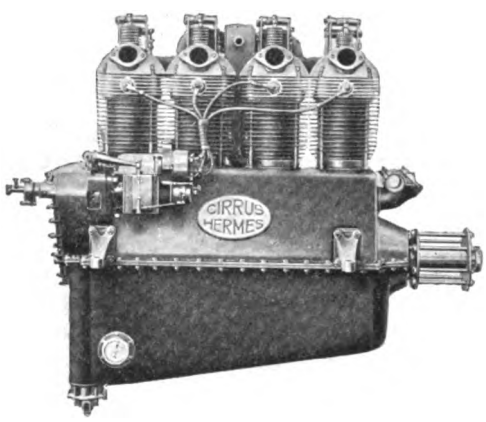

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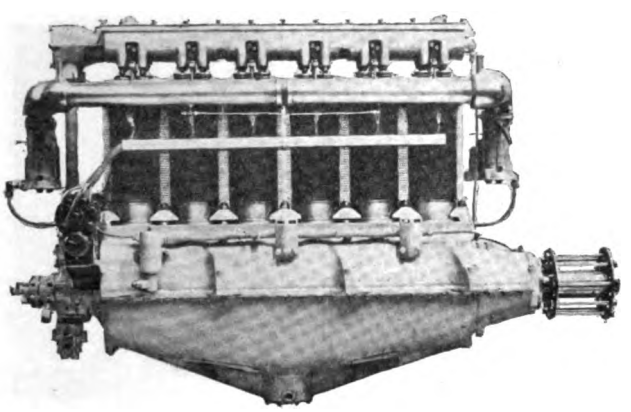

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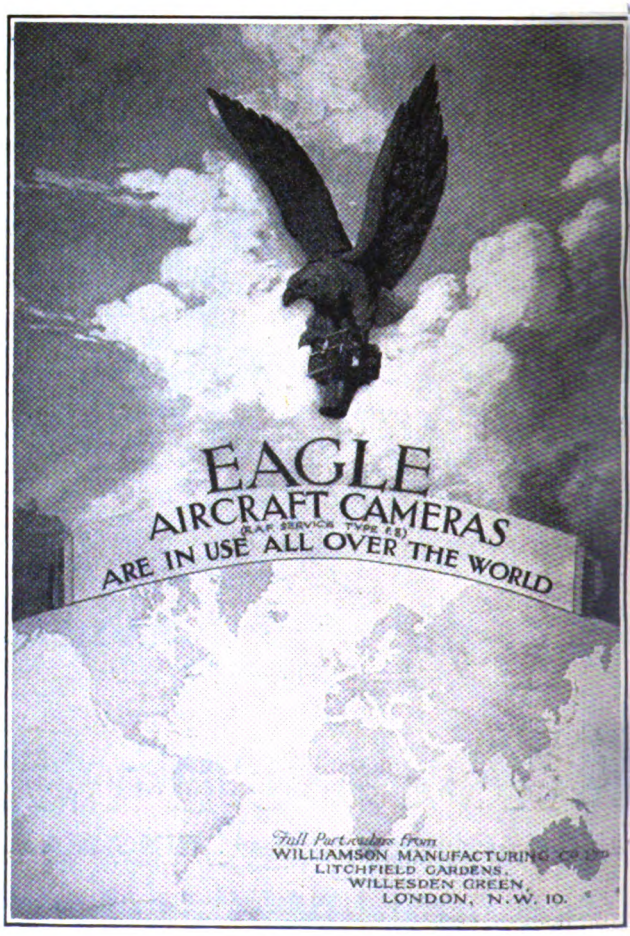

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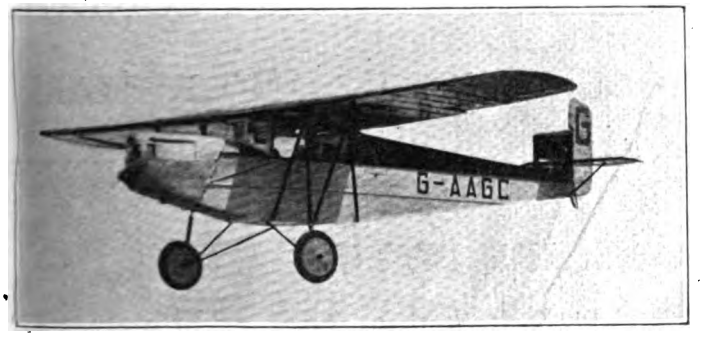

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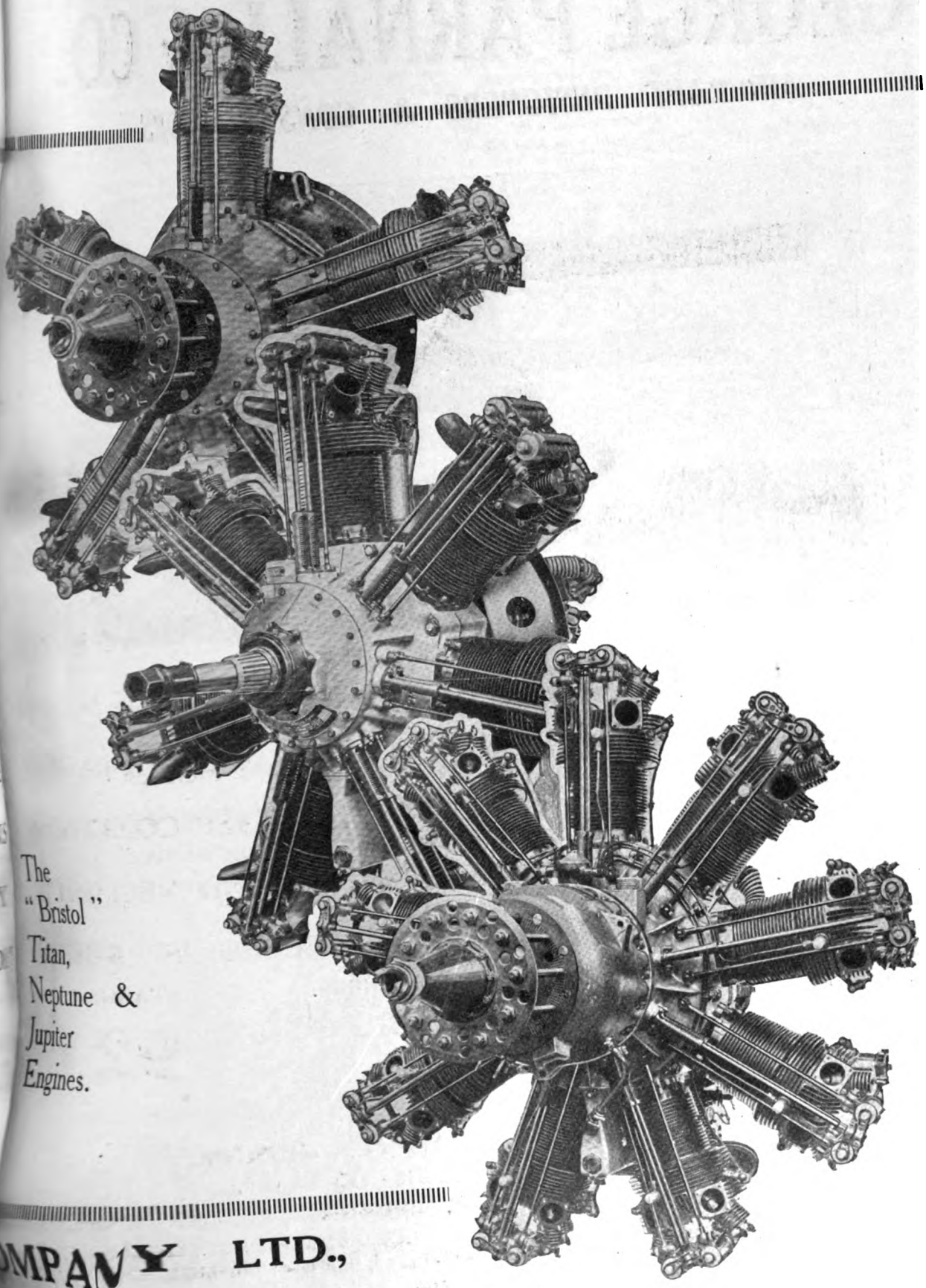

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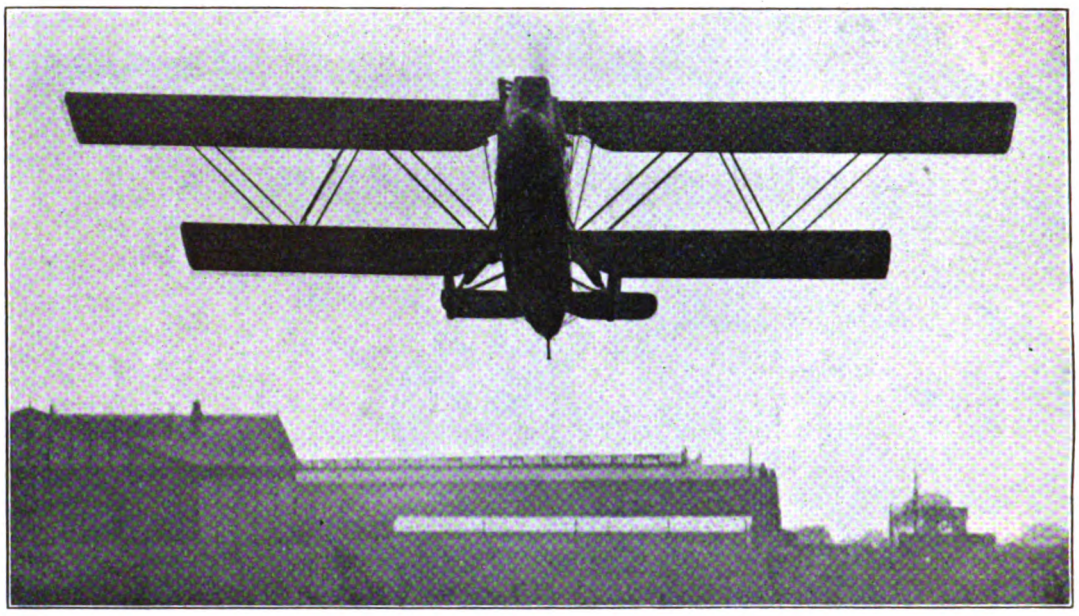

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put into aircraft. The work which was put into British aircraft was overlooked from its birth to the grave by the Aeronautical Inspection Directorate. And this gave British Aircraft a World-wide cachet and recognition where aircraft were known.

In conclusion he said that we could not have progress without a fixed policy of progress and research. He thanked Lord Thomson for his kind words to the Industry. He said how much honoured the Exhibition had been by having the Prince of Wales to open it. And he hoped that they would have as good a Show next time.

AN ORATORICAL ACHIEVEMENT.

PRINCE PURACHATRA OF SIAM proposing the toast of Civil Aviation, in perfect English, said that in spite of Lord Thomson he felt some diffidence in addressing this gathering after such speeches and so many Biblical allusions, though he admitted that Civil Aviation was a subject so soul-stirring as to overcome diffidence.

He said that he had the greatest conviction in the future of Civil Aviation. He had often wondered what such pioneers as Borelli had aimed at. Had they a vision of the importance of aerial navigation or had they merely a personal ambition to imitate the angels?

In the East legend and myth and folk-lore had always held fliers as gods or demi-gods. Human beings were not given the power to fly. But he thought the Wright brothers knew what they were about when they began flying. He reminded those present that the Wilbur Wright Memorial Lecture would be given on Thursday next the 25th. And he referred to the importance of Civil Aviation to the British Empire. [Here by some strange lapse of discipline on the part of the Savoy management waiters were allowed to promenade the room filling glasses, and talking to visitors about what they would have, an act of astonishing discourtesy to a distinguished visitor when he was speaking, and incidentally preventing one from hearing what he said.—C. G. G.]

Finally Prince Purachatra said that he hoped that the Press would rally people to this Exhibition of Aviation. In Siam they held Civil Aviation high. Even the peasants in the field knew that Aviation was doing something for them. They had been running air-mails for six years and the workpeople knew that they got their letters sooner and that if there was urgent need for medical attention it would be brought to them by aircraft.

THE HONORABLE W. P. MCCRACKEN, JUNIOR, Assistant Secretary of Commerce for Aeronautics in the United States, replying, asked whether there could be anything more significant of the influences of Civil Aviation than this toast proposed in England by a member of the Ruling House of a nation in the East and responded to by a representative from the Western Hemisphere?

He remarked that having been told that speeches were to be of five minutes' duration he had been, in the course of the evening, endeavouring to compute the expansion ratio of a five minutes' speech. [Roughly it is 9 to 1.—C. G. G.]

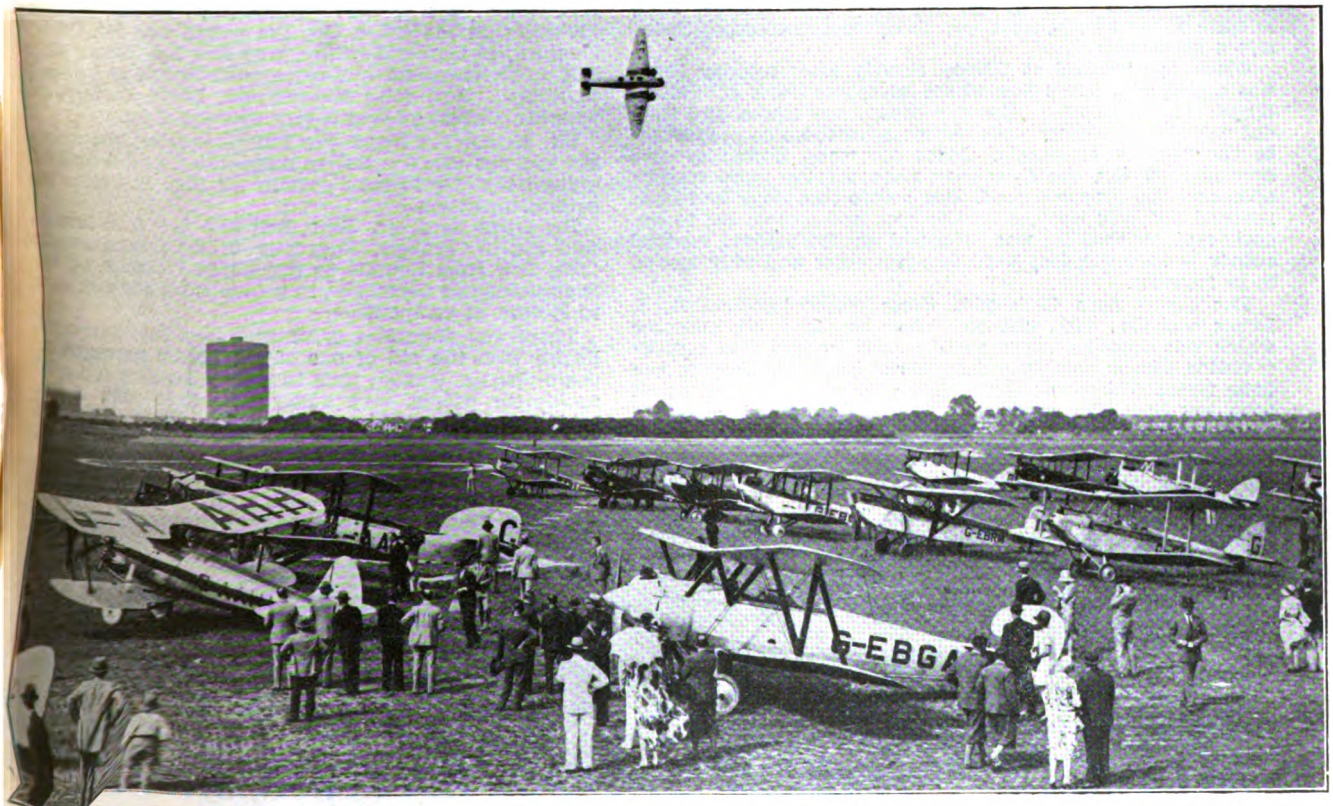
He suggested that he had rather expected that the point of view of the Industry would be "you drop your money in the slot and the machines will do the rest." [His reference presumably being to the way in which capital is being dropped into the Aircraft Industry in the States. We here have not yet reached that happy stage.—C. G. G.]

He said that there were still surprises at Olympia. He expressed his deep appreciation to our hosts. Some people, said Mr. McCracken, thought that Civil Aviation was a romance. It was not a romance it was very practical, but there was plenty of romance in it.

Civil Aviation should be the servant of mankind. It should serve man with transportation, crop dusting, air-mail work, and survey. It was also a great help in recreation, for it gave people more places to go to from the strain of the great cities. And Civil Aviation would do much in promoting the comradeship of nations. Even if one did not know the language it was easy to make oneself understood among aviators. And Mr. McCracken ended by quoting *Locksley Hall* on the subject of the Parliament of man and the Federation of the World.

Mr. C. R. FAIREY, proposing the health of the Chairman, said that it was only on such occasions as this that one heard him called Captain P. D. Acland. More generally his friends called him Peter. Mr. Fairey said that he would refer only to our Chairman's public work, in that he had been on the Council of the S.B.A.C. for nine years and was one of those people whose work showed in itself and not in the amount that he talked about it.

CAPTAIN PETER ACLAND, replying, said that this was about the proudest evening in his life and he had never hoped to preside over such a distinguished gathering.—C. G. G.



AT THE HESTON GARDEN PARTY.—Mr. O'Konnor, of the Swedish Army, flying the Junkers-Bristol-engined fighter. Capt. Barnwell's Bristol Lucifer is in the foreground and the Bristol Bulldog on the left, and a Fairey IIIF behind it. The huge tower in the background is the 300-feet gasometer about which so much agitation is being raised. The flying people at Heston regard it as a useful landmark. The elegant people among the machines are mostly trespassers onto the aerodrome from the select enclosure. Altogether there were sixty-seven more or less civil aircraft on the ground.

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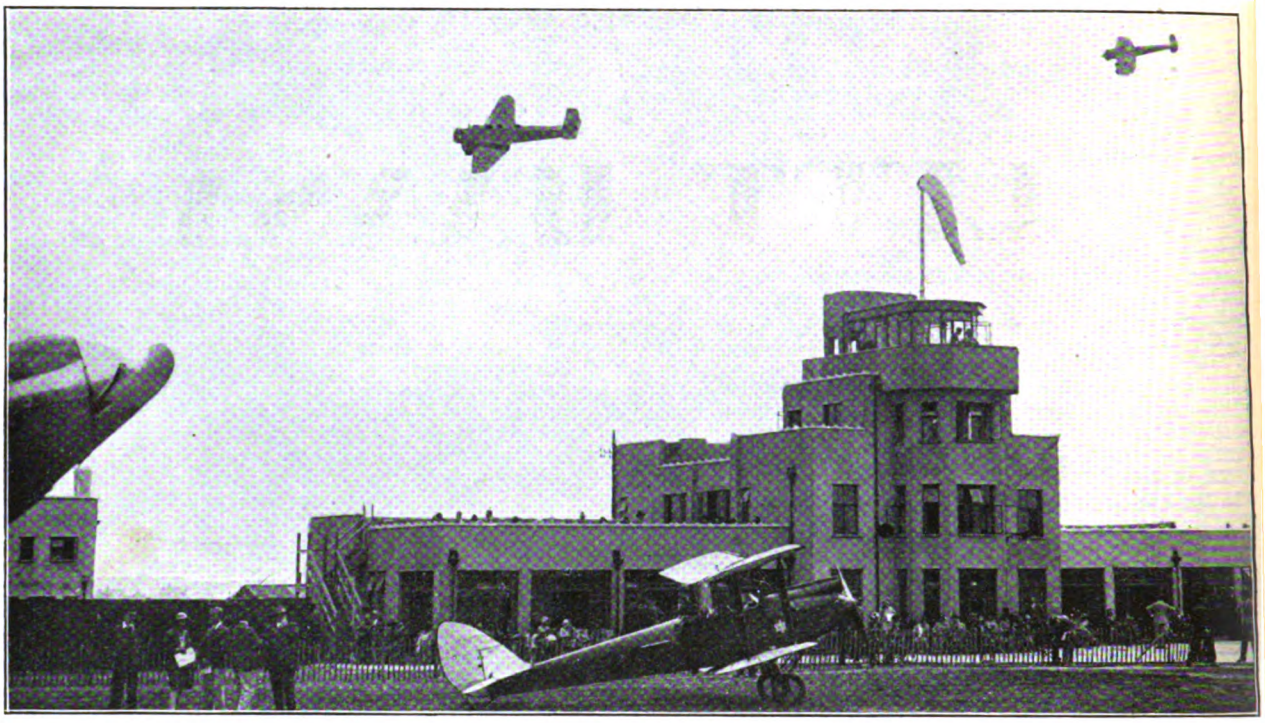
THE HESTON GARDEN PARTY.



AT HESTON.—Before the crowd arrived, the Junkers monoplanes (Bristols) demonstrating round the Social Focus. (*"Aeroplane" photograph.*)

On July 20 the Royal Aero Club, in conjunction with Messrs. Norman and Muntz, who are Airwork Ltd., the proprietors of the Heston Air Park, gave an aerial garden party which was quite the most successful gathering of the kind yet held in this country. There were 67 machines on the aerodrome, which in itself must be pretty well a record for civil aircraft so far as England is concerned. Also there were thousands of people, mostly of the class who ought to be interested in flying and hitherto have not been. And, in spite of the intense heat, everybody seemed to enjoy themselves immensely.

When one arrived at Heston shortly after midday there was a plague of small flies which made one think of Biblical Egypt. It was not that the flies meant any harm, and they did not bite, but there were too many of them in proportion to the number of people. Later on, when humanity also arrived in flocks, the fly-to-man ratio became more reasonable, and the plague ceased. But before this stage had been reached Mr. Will Hay, as broadcaster, had announced to the early arrivals that he was informed on the highest medical authority that the flies were non-poisonous and only meant to be friendly.

The Royal Aero Club, plus those public benefactors, J. Lyons and Co., Ltd., put on a free tea in a big marquee which was described as one of the best he had ever had by a visitor who is notably finicky about his food. Teas in the little restaurant of the Social Focus were not so good as all that, but then, the small staff was terribly overworked.

THE RALLYE.

The first event on the programme was an International Air Rallye. It was not particularly international, because the only competitor who came across the Channel was Lo Carbery. However, he himself is international enough f a crowd, seeing that he is an Irish Peer who has tried renounce his title, has taken on American citizenship, h adopted a mis-spelling of his Baronial title for a surnar instead of his family name, and flew from Cassel in a G man aeroplane with a British engine—and lives in Kenya.

The winner of the competition was Mr. Thorne, of t R.A.E., who flew from Teignmouth, in Devon, a matter 150 miles, in the Avian QN, the second was Mr. Cazalet, Duxford, in Cambridgeshire, who flew his famous Widge RM up to Newcastle, and came down thence as a competi to Heston. And John Evans-Freke, Baron Carbery—oth wise Mr. Carberry—was a very sporting third.

Mr. Kemp, the Newcastle Club instructor, also compet but did not win the Rallye competition, and unfortunat arrived too late to take part in the Club Instructors' ac batic competition.

Dr. Dixon and Mr. John Bell also flew from Newcas And Flt.-Lt. Travers, Instructor of the London Aeropl Club, flew from London to Brough, in Yorkshire, with M Scaramanga as passenger, in a Club Moth, and came the to Heston in competition.

There was some idea of working up a huge Internatio Rallye with the aid of one of the London newspapers, there was not enough time to make a big show of it, so newspaper people, very wisely from their point of v backed out. Personally one thinks that Messrs. Norman Muntz and Airwork, Ltd., and the Heston Air-Park, do very well if they keep quite clear of newspaper boosti

If they go on as they have begun, bringing the r

AT HESTON.—A little Stranger. The Civilian monoplane (4-cyl. horizontal A.B.C. Hornet). (*"Aeroplane" photograph.*)

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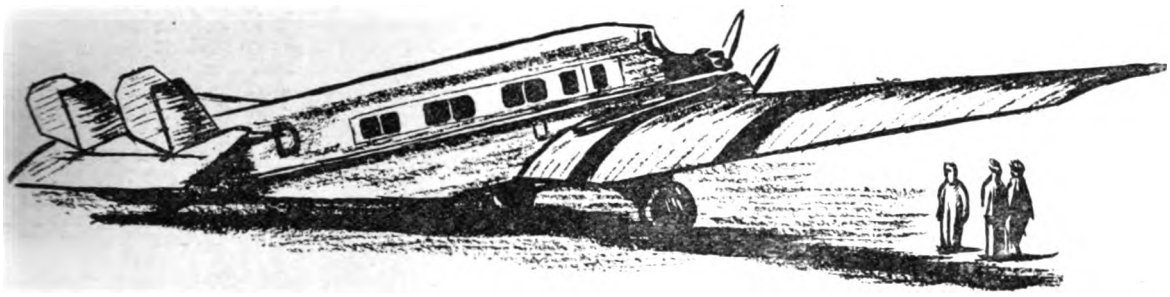
LUFT HANSA



A Luft Hansa Junkers G31, 12-passenger monoplane.

Day after day the magnificent air liners of the Luft Hansa leave Croydon for Hamburg and Berlin. Every one of these great German aeroplanes leaving Croydon—as reliable and regular as an express train service—is fuelled exclusively by SHELL.

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AT HESTON.—Some visitors—a Fairey IIIF, a Bristol Bulldog and a Bristol Lucifer.—(*"Aeroplane" photograph.*)

people by invitation and inducing them to become members of the Club at Heston, not as a flying club but as a social club, they will make Heston the Hurlingham of aviation. And the public of the right kind will come there automatically if they are allowed to pay to come into a well-equipped and comfortable enclosure.

Possibly Stamford Bridge and Harringay, and other places where they provide Dirt Track Racing and Dog Racing, and so forth, may be better-paying propositions than Hurlingham or Ranelagh. But personally one would prefer to own Hurlingham. And if Airwork, Ltd., aspire in that direction they will avoid everything in the way of newspaper boosting and cheap stunts.

Let them provide plenty of passenger flying in good-class machines and so forth at reasonable prices. But let them equally avoid advertising "Joy-Rides," which itself is a vulgar expression, and let them especially avoid advertising, as has been done by other firms, 5s. a roll, or two half-rolls for 5s. It is too much like "Twice Round the Bay in the *Skylark* for Half a Dollar, and a Bob Back if you are Sea-Sick."

Heston Air Park has already acquired something of that Public School atmosphere which is so sadly lacking everywhere else. And it will do well to preserve it jealously, even though doing so may postpone the period at which Heston will provide vast wealth for its enterprising young proprietors.

THE JUNKERS FIGHTERS.

The first display of the programme, just when people were beginning to arrive, was a demonstration by two Junkers monoplanes. These two machines are among the best jokes of the Great Peace. During the week sundry of our German friends at Olympia have been coming along with broad smiles and saying: "Have you seen our—I beg your pardon, I mean the Swedish—new fighters at Heston?" And when one arrived at Heston one began to see the joke still better.

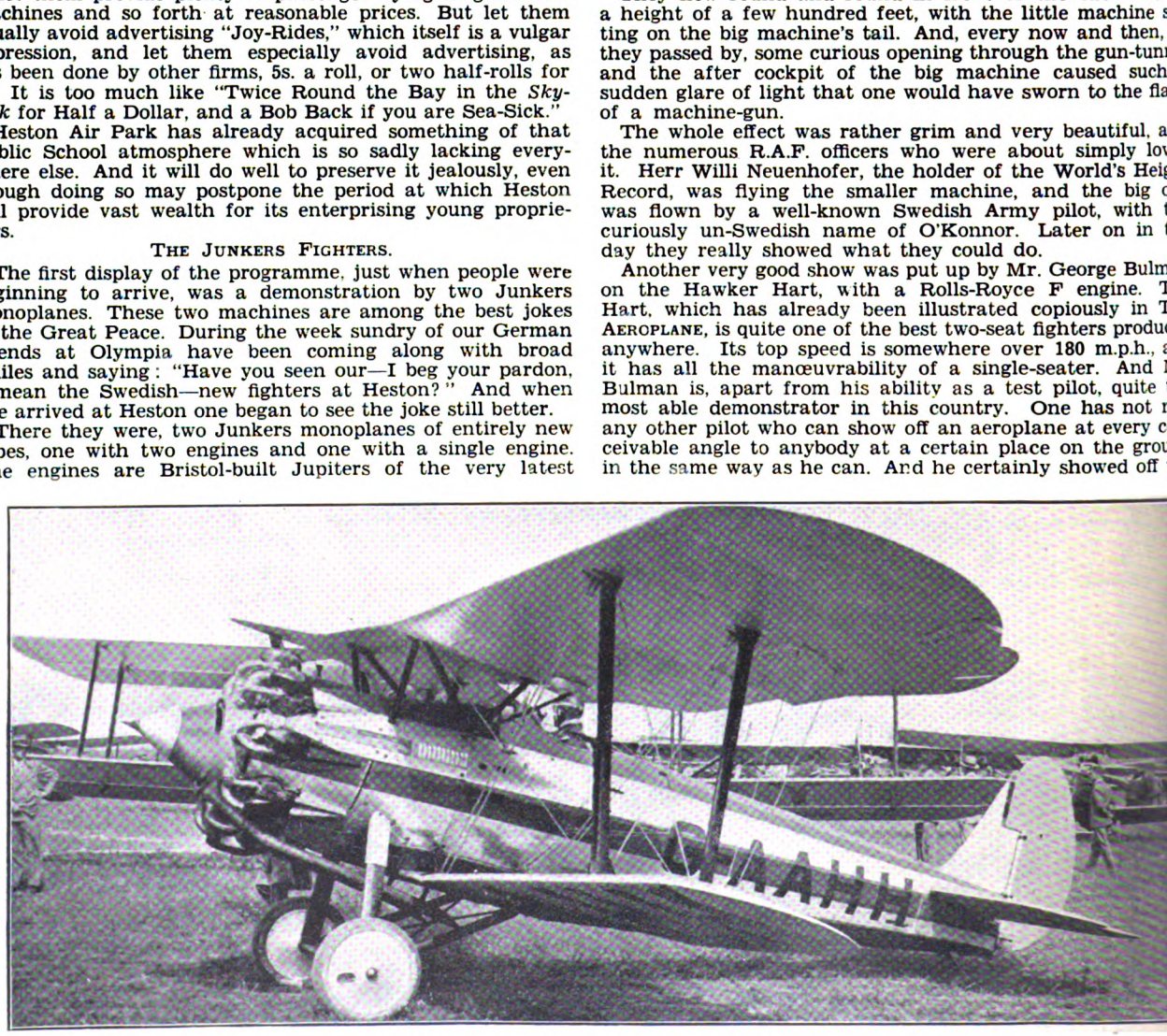
There they were, two Junkers monoplanes of entirely new types, one with two engines and one with a single engine. The engines are Bristol-built Jupiters of the very latest types, because Scandinavia is the only part of Europe i which British-built Jupiters can be sold—all the rest bein under licence to the Gnôme-Rhône Co., of Paris. The ma chines bear Swedish civil markings, because although the were designed at Staaken they were at any rate put togeth at the Junkers works in Sweden, and they simply brist all over with gun-rings and bomb-racks.

They have twin rudders stuck out on the ends of the tails so that the man in the after gun-ring can shoot straigl down the back of the fuselage without fear of hitting h own rudders. And the twin-engine machine has a gu tunnel underneath the fuselage much after the fashion our old enemies the Gothas.

They flew round and round in front of the enclosure a height of a few hundred feet, with the little machine si ting on the big machine's tail. And, every now and then, they passed by, some curious opening through the gun-tunn and the after cockpit of the big machine caused such sudden glare of light that one would have sworn to the fla of a machine-gun.

The whole effect was rather grim and very beautiful, a the numerous R.A.F. officers who were about simply lov it. Herr Willi Neuenhofer, the holder of the World's Heig Record, was flying the smaller machine, and the big o was flown by a well-known Swedish Army pilot, with t curiously un-Swedish name of O'Konnor. Later on in t day they really showed what they could do.

Another very good show was put up by Mr. George Bulma on the Hawker Hart, with a Rolls-Royce F engine. T Hart, which has already been illustrated copiously in T AEROPLANE, is quite one of the best two-seat fighters produc anywhere. Its top speed is somewhere over 180 m.p.h., a it has all the manœuvrability of a single-seater. And M Bulman is, apart from his ability as a test pilot, quite t most able demonstrator in this country. One has not m any other pilot who can show off an aeroplane at every co ceivable angle to anybody at a certain place on the grou in the same way as he can. And he certainly showed off t



AT HESTON.—The Aerobatic Bristol Bulldog.—(*"Aeroplane" photograph.*)

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Hart so that everybody at Heston must have recognised its fine performance and excellent lines.

A lot of flying was also done by a Westland IV., which seemed to be very busy taking passengers.

The aerobatic competition for instructors of the Light Aeroplane Clubs was rather a wash-out, as the only competitors were Mr. F. R. Matthews, of the London Club, and Mr. Bartlett, of the Bristol Club. And each of them is such an extraordinarily good pilot that there was nothing to choose between them.

WHEN A MODEL IS NOT A MODEL.

Following this came a demonstration of model aeroplanes by aircraft apprentices and others belonging to the Halton Model Aircraft Society, and by a number of members of the Society of Model Aeronautical Engineers.

This display carried one back some 20 years to the days when people who are now prominent in the aircraft industry used to do such things on Wimbledon Common and Streatham Common—much to the annoyance of the indigenous inhabitants. One has distinct recollections of such a gathering at which there appeared a long, slim young man named C. R. Fairey, who, without arguing with the other people, who generally used to conduct those meetings in what the late Mark Twain called "a furious state of French calm," merely produced a model which proceeded to wipe all the rest off the map—very much as on certain occasions he has done so with full-size aeroplanes since.

These models amused the flying people intensely, and interested them quite a lot, especially one model, which solemnly circumnavigated the Social Focus and came back almost to its owner's hand. Some of the models kept themselves in the air for four or five minutes at a stretch. Incidentally, one used the word "models" in a purely complimentary sense, because these elastic-driven flying-machines are things apart, which bear no resemblance to any gas-driven aircraft in the heavens above or on the earth beneath, here or hereafter, and they involve a technique which is entirely their own and is apt to be extremely misleading when applied to gasoline-kites unless a high order of intelligence is applied to differentiate between them.

The machines flown by the Halton Model Aircraft Society put up a much better performance than those of the Society of Model Aeronautical Engineers. This seems very right and proper, for one has met so many engineers who are models, according to their degrees and certificates and diplomas and so forth, whose aircraft were far from being models of their species.

This demonstration was greatly aided by the humours of Mr. Will Hay at the broad-blasting machine. From the control-tower of the Social Focus he could see exactly what was going on, and his comments on three-point landings, "two wheels and the propeller," and so forth, were quite worth hearing.

AEROBATICS.

After this came one of the best shows of aerobatic flying that one has ever seen. Mr. Staniland on a Simmonds Spartan threw the machine about in a way which showed that the symmetrical section has nothing to fear from its more orthodox competitors. Mr. Bartlett on a Bristol Club Moth performed with the greatest elegance. Herr Fitz Classen on a Klemm monoplane with a Salmson engine fell about the sky in a way which made one doubt at times whether his machine was a real aeroplane or one of the elastic-driven models. Mr. Hubert Broad did all those things with a Moth which he alone seems able to do. Mr. G. Murray also flew a Moth very well indeed.

Mr. A. M. Blake flew a Blackburn Lincock (Armstrong Siddeley Lynx) quite well, but, being more or less strange to the machine, his performance quite lacked the dash and precision and that consummate finish to each manœuvre which Sergeant Lowdell has accustomed us to seeing wherever the Lincock has appeared hitherto.

But the star performances were undoubtedly those of Mr. Cyril Uwins, in the Bristol Bulldog, Herr Willi Neuenhofer, in the Junkers K47, and Mr. O'Konnor, in the Junkers K37.

One of our German friends had explained that of course the little Junkers could not show itself off properly at such a show as this, because, having a super-charged Jupiter, its performance only began at 15,000ft.—which would be inconveniently high for the spectators. Nevertheless, considering that the little Junkers is a two-seat fighter with a machine gun ring behind the pilot, it did not leave very much to be done. It did flick-rolls and slow-rolls, and loops and spins quite as neatly as any single-seater one has seen.

And, naturally, it was very impressive to all us because we are not accustomed to seeing a low-wing monoplane of any kind being thrown about the sky at high speeds like our Gamecocks and the Lincock.

The big twin-engined job was even more impressive. The pilot did what looked very like flick-rolls with it somewhere between 200 and 300ft. from the ground. It looped in quite a small circle with the most delightful accuracy and steadiness. But its most impressive manœuvre, though probably it was simple enough to do, was a spin from somewhere about 2,000ft. to somewhere about 500ft.—in which the machine appeared to be coming down absolutely vertically and spinning round its own axis. The tail simply seemed to twist round and round instead of flying out like a flail, as most machines do in a tail-spin. Both the Junkers pilots are extraordinarily good, but they could not have done what they did with those machines unless the machines also had been quite exceptional.

The landings of both the Junker machines are a trifle emotioning to watch, especially that of the single-seater, in which the rudders are completely outside the slip-stream so that the pilot has no control on the ground. Like all low-wing machines, they seem to kite for an enormous distance before sitting on the ground. The single-engine fighter when landing runs straight for 100 yards or so and then swings round to the right in a most disconcerting way. Future machines of these types will have wheel-brakes and tail-wheels and then will be very manœuvrable on the ground.

After these two machines had landed and had been parked in their allotted positions, R.A.F. people in the audience went and patted them and cooed over them.

THE STAR TURN.

But with all said and done, much the prettiest show of the lot for sheer grace and address was that of Mr. Uwins, in the Bristol Bulldog. He also had a super-charged engine

AT HESTON.—The Halton Model Aircraft and the Model Engineers.—("Aeroplane" photograph.)

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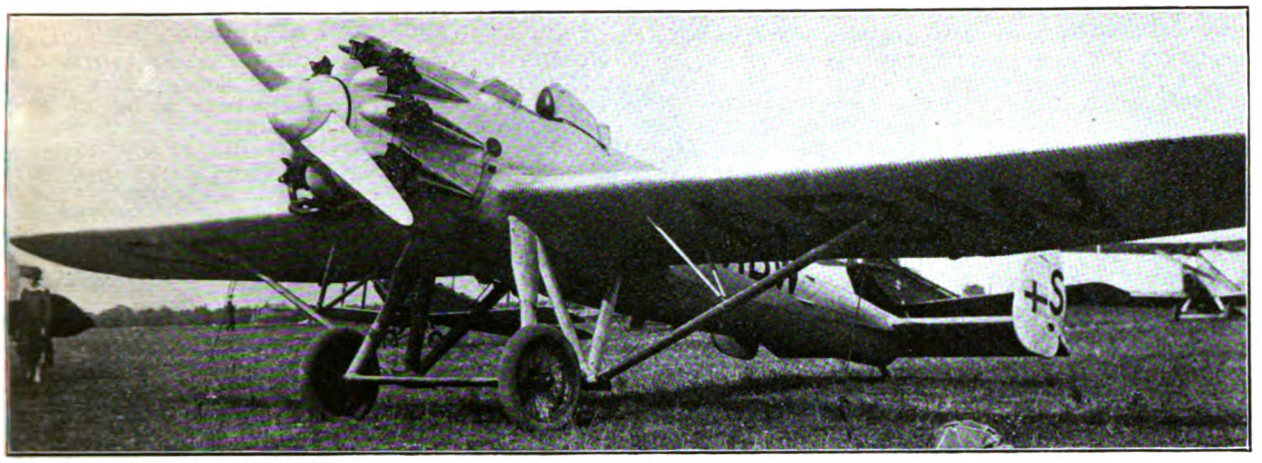

AT HESTON.—The Junkers K.47 (Bristol Jupiter VII, supercharged, engine).—(*"Aeroplane" photograph.*)

which could not be let full out near the ground. But he was still able to show what can be done by a consummate artist on a machine which is properly controllable.

Captain Frank Barnwell, the designer of the Bulldog, is himself a very able pilot. Many years ago he said that his ideal aeroplane was the biggest possible engine with the smallest possible aeroplane stuck on it. He designed the Bristol fighter, which does not accord with that specification. But, all the same, it was the World's very best aeroplane of its time, and did more than any other one machine to win for us the mastery of the air in France.

He designed the Bristol monoplane fighter which, if it had ever been properly used when it was first built, would have wiped the sky clean of all other fighters.

Of late years Capt. Barnwell has been doing an enormous amount of research work, and has built many interesting machines. But he has always been his own most merciless critic, and has never been particularly pleased with anything that he has built. The Bulldog apparently very nearly pleases him. And at a rough guess one would say that its performance is a good many per cent. better than that of any single-seater in the world with a radial engine.

At about ground level its top speed is close on 170 m.p.h., but above 15,000ft., with its super-charger in full blast, it is doing something well over 200 m.p.h., and that is with full load of petrol and guns and ammunition. On the dive it can be pushed up to somewhere about 300 m.p.h. So here we have at last an interceptor fighter which has quite a sporting chance of intercepting something.

To appreciate Mr. Uwins' performance, one has to remember that he was flying a high-speed fighting machine of considerable weight. Instead of jerking it round corners and flopping it over upside down, he flies it with that particular grace which we have so seldon seen since the late Squadron-Leader Longton used to fly a Camel—in a series of graceful curves. Mr. Uwins never seems to fetch his machine round a corner. He always seems to be writing curly things in the sky.

Even when he does an almost vertical dive and then goes up again almost vertically, there is no jerk at the bottom of the dive, and when he does an upward spin on his climb the machine seems to be doing it quite easily and naturally, without any of the flick which commonly goes with this trick.

Announcement of the result of the competition was rather surprising. The first prize went to Mr. Broad, the second to Mr. Murray, and the third to Herr Neuenhofer. Nobody would deny for a moment the cleverness of Mr. Broad's performance on a Moth. Still less would one deny that Herr Neuenhofer deserved a prize. Mr. Murray certainly deserved a prize for flying so well, and so did several of the other competitors.

But, personally, Mr. Uwins' performance seemed so far in front of anything else that one can only imagine that the judges forgot all about him. One has seen the winner of a race forgotten in just the same way because he was so far in front of the rest that nobody believed he had finished.

The last official event of the day was a parachute descent from a Moth by Mr. Tranum. As usual, he judged his landing exactly, and came down well in view of all the spectators. He was using a British Russell Lobe parachute and he delayed the opening of it for what looked like a good 500ft. after he had left the machine. When he did open his parachute there was no doubt about it, for he fetched up with a terrific jerk.

After that there was a good deal of desultory flying by all and sundry. But the bulk of the spectators must have got well away before the storm hit the aerodrome.

Altogether it was a thoroughly jolly afternoon, and one only hopes that Airwork, Ltd., will arrange a good many more like it before the end of the year, if the weather holds good. Even quite late in the autumn there would be a good deal of pleasure to be got out of going down to Heston for an hour or two's flying after leaving the office, and then having a simple meal, so long as it was well served, in the restaurant before coming back to Town.—C. G. G.

AT HESTON.—The Junkers K.37 (two Bristol Jupiter VI engines).—(*"Aeroplane" photograph.*)

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THE NEW CHAIRMAN OF THE ROYAL AERO CLUB.

The Royal Aero Club has now stated that the Chairman of the Club for the forthcoming year will be Sir Philip Sassoon, Bart., G.B.E., C.M.G., Under-Secretary of State for Air in the late Government. The office of Chairman has become vacant as the previous Chairman of the Club, the Right Honourable Lord Thomson of Cardington, has been appointed Secretary of State for Air.

No better Chairman than Sir Philip Sassoon could have been chosen for the very important and critical period which lies immediately in front of the Sport of Flying in this country. And the Royal Aero Club is to be congratulated on having acquired Sir Philip as its Chairman.

The proper function of the Royal Aero Club is to govern the Sport of Flying in this country, and to represent British sporting flying on the councils of the *Fédération Aéronautique Internationale,* which governs all international questions of sporting flying. And naturally the Club should do all that lies in its power to raise the tone of sporting flying, and to keep the sport clean and honourable. Also, naturally, the tone and behaviour of members and their friends in the Club should be above reproach.

Within a few weeks the Aero Club will be grappling at close quarters with all the problems which hang round the contest for the Schneider Trophy. Theoretically the Contest is purely a sporting affair like any international yacht race or horse race or golf competition. In practice it has developed into an International affair of the first magnitude.

Officers of the Flying Services of all the nations concerned in the Contest, and in fact of all nations which belong to the *Fédération Aéronautique Internationale,* have to do with the Schneider Contest. The Italian pilots and the one American pilot and our pilots are all serving officers. The French pilots are civilians but they have all been officers in the French Flying Service and they have the status of officers.

Moreover the French and Italian and our aircraft have been built at the expense of their respective Governments, and only the American entry is financed privately.

Under such circumstances the whole affair becomes of first-class international importance, and any little unpleasantness between local authorities and visiting pilots and their crews, or between officious people on the water endowed with a little brief authority and our visitors, might well assume the importance of an international incident unless handled with tact by the Royal Aero Club.

Likewise, apart from the actual period of the competition, there will be many important people coming over before the contest, and possibly remaining over after the contest, who will have to be treated in a manner fitting to their position. Obviously therefore any Chairman of the Aero Club who is to uphold the dignity of this country during such a period must be a man with wide knowledge of the World and much tact and ability.

All these qualities Sir Philip Sassoon has in a high degree. Those of us who were at Venice heard him speak to a vast assembly of our Italian hosts in excellent Italian,—at any rate so we were told by our Italian friends though Sir Philip himself may disclaim any command of fluent Italian. His French at any rate is that of Paris of to-day, and not of the Paris of Chaucer's Abbess.

As Private Secretary to Field-Marshal Sir Douglas Haig during the latter part of the War 1914-18 Sir Philip came into contact with the higher military officers of the Allied Powers, and in his personal capacity he knows most of the statesmen and politicians of Europe. He has all the natural ability which goes to make a diplomat, and he has had enough experience to qualify for a high place in the Foreign Office.

He has that extraordinary quality of never forgetting a name or a face, as so many quite insignificant people in the Royal Air Force know so well. He has a very fine sense of humour, as any reader of his book *The Third Route* may judge. And he has a habit of getting things done the way he wants them done.

His keen interest in aviation has been shown during his period in office as Under-Secretary of State for Air by the way in which he has flown all over the British Isles and very nearly from one end of the British Empire to the other. But no greater proof of his attachment to and belief in aviation can be found than the fact that he should be willing to devote his time and his high abilities to the Royal Aero Club.

We may reasonably hope that with Sir Philip Sassoon as Chairman the Royal Aero Club, which should obviously be an organisation of great weight and dignity, as befits its position as the controlling body of the Sport of Aviation in the United Kingdom, may at last, with the opportunities which now lie before it, attain to the position of high repute which its Royal title obliges.—C. G. G.

THE CIVIL AIR BALL.

What is the matter with the Air League, apart from its anti-Air Ministry propaganda, is simply lack of any proper sense of dignity. Considered as a cheery party for a lot of people in the Aircraft Industry, all of whom know one another, the Civil Aviation Ball at the Grosvenor House Hotel on Friday night might not have been at all a bad show if the entertainment or cabaret part had been cut out. But considered as an entertainment to which the Royal Aero Club and the Aircraft Industry could take foreign visitors of importance with the idea of showing them the kind of hospitality which English visitors have received abroad it was merely lamentable.

First of all, instead of being allowed to park wraps in the regular cloak room, the in-coming guest was herded down some stone steps with iron railings and was "presented" to the leading spirits of the Air League by a uniformed Toast-Master while wrestling with hats, coats, shawls, handbags or whatnots. Then he found himself in a vast subterranean hall which is normally, one gathers, an artificial ice skating-rink, but on that particular evening was more like the hot room of a Turkish bath. The dance floor was temporary,—and felt like it.

Before descending to this cavern, and after reaching it, the guest was pestered by persistent young women to buy for five shillings apiece buttonholes and/or programmes which chiefly consisted of advertisements.

This sort of thing may be all right at a dance hall in Montmartre, but it is not the kind of thing to inflict on a guest at a function backed by such a grandiose title as the Air League of the British Empire.

The band was fair, but seemed to be playing to a metronome rather than to a baton. At intervals the dancing was interrupted by bits of a cabaret show, which might have gone reasonably well at a minor music-hall.

There was one long interval, during which several good-natured people well-known in Civil Aviation launched onto the dance-floor a number of rubber-driven aeroplanes of the kind which are not models of anything, and performed rather less efficiently than those with which some of the notable people in the Aircraft Industry used to play on Streatham Common twenty years ago. This was supposed to inculcate airmindedness into the assembled multitude composed entirely of habitués of aviation.

Somewhere about 02.00 hours on the Saturday morning there was a tableau, pageant, or display, consisting of a number of enthusiastic females who were dressed presumably to represent component parts of the British Empire, with Britannia as the culminating personage, rather after the style put up at provincial Lord Mayors' shows, or for the grand procession of a travelling circus following the band-wagon, and labelled "The Apotheosis of Britannia."

Supported by a chorus of gondoliers, or Corsican peasants or something of that sort, kindly lent for the occasion by one of the touring opera companies at present in the London area, the tableau sang *Tipperary, Pack Up Your Troubles,* and *Rule Britannia* with considerable vigour, winding up with a thunderous production of *Land of Hope and Glory,*—which, considering that, according to plan at any rate, the guests should have included a number of those who fought against us in the inter-tribal squabble of twelve years or so ago, besides the representatives of that particular nation whose alleged superiority in the air is being continually rammed down our throats by the Air League, scarcely seemed tactful.

To give the tableau an adequate aeronautical flavour a number of young women swathed in the latest thing in ladies' natty flying suitings (*vide* adverts) were interspersed among the components of the British Empire,—and when they turned round displayed the name of Burberry behind.

Before the singing began two persons in Sidcot suits posed in front of the rest of the group and lit cigarettes, presumably to indicate the nonchalance of the war aviator, and at the end the poor old Union Jack was flapped with vigour. The nausea produced amongst some of the audience can best be understood by reading that story in Stalkey and Co. in which Mr. Kipling describes the soul-upheaving activities of the jelly-bellied-flag-flapper.

If the Air League is going to do this sort of thing it is past praying for, even after the influence of Brig.-General P. R. C. Groves has been removed.

Either the thing should have been done properly or it should have been left alone. Members of the Aircraft Industry who wanted to entertain their friends from abroad could have taken them to any of a number of quite cheap night-clubs where they would have had a better floor and a better band, food and drink that was as good, and possibly rather better waiting. The only other alternative should have been a properly arranged ball at one of the great houses of London at which people of real importance in the social world and in politics would have been present.—C. G. G.

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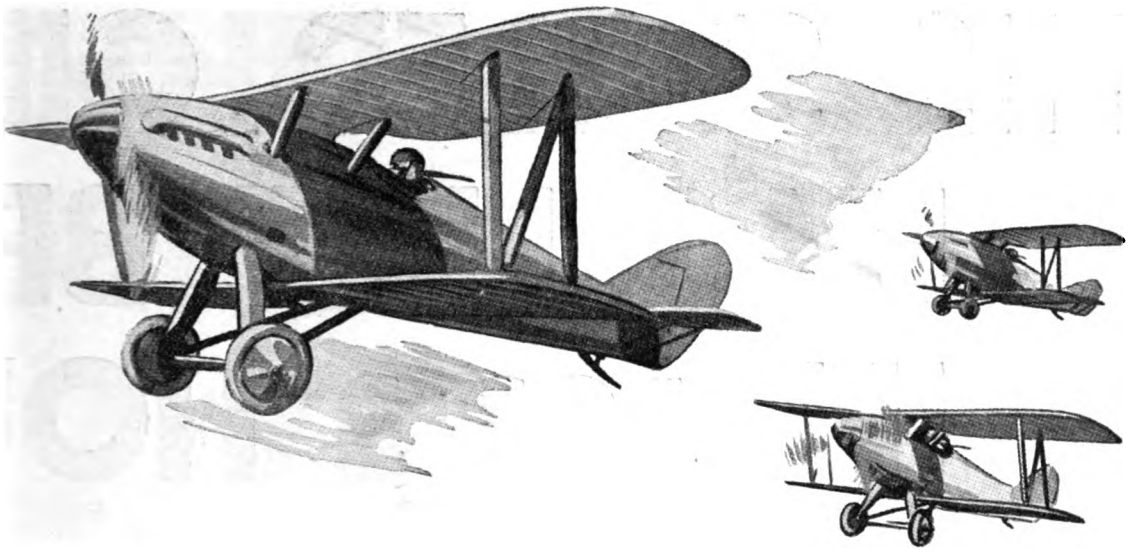

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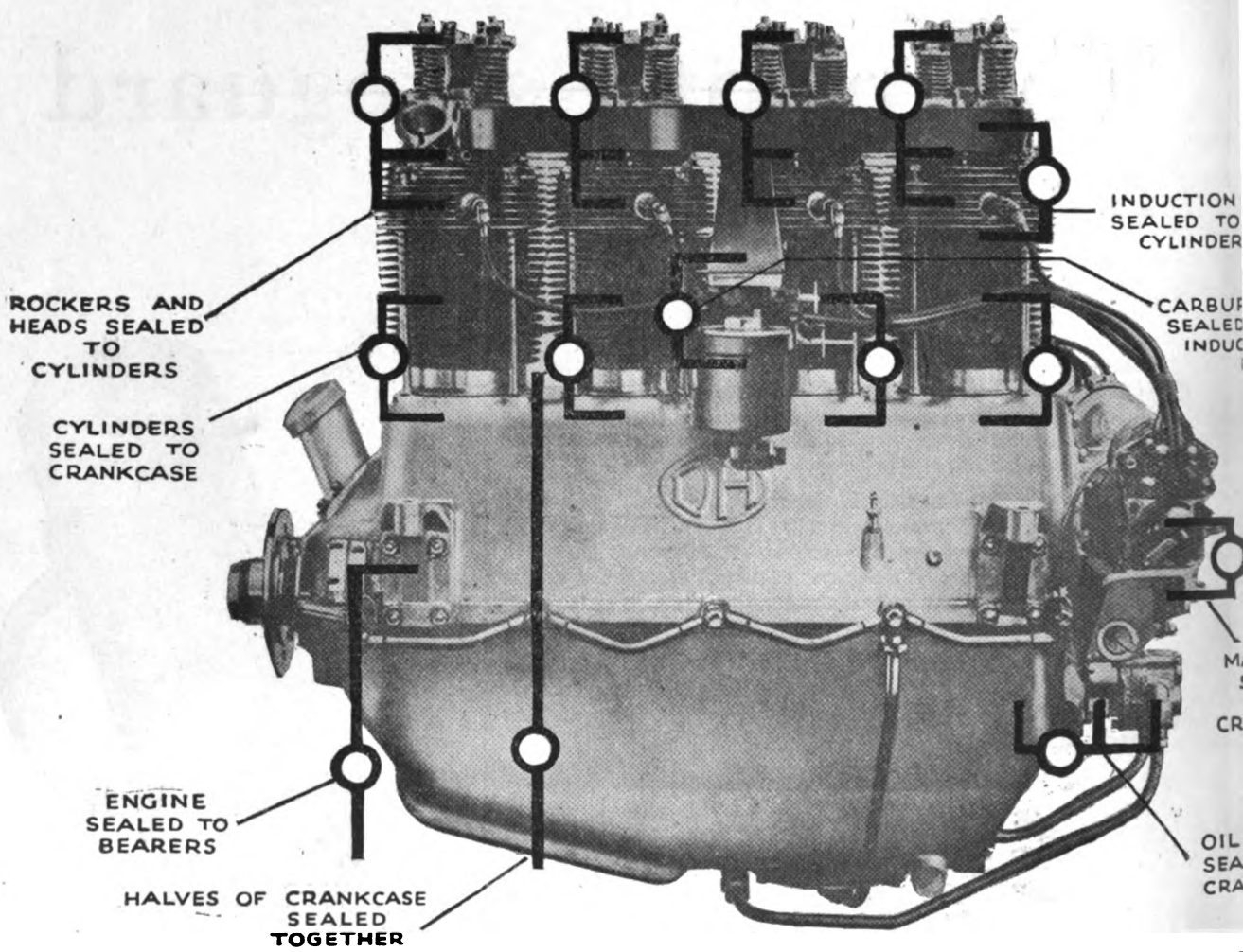

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THE CHALLENGE INTERNATIONALE DE TOURISME.

On Aug. 3 an International Light Aeroplane Round Europe Contest will begin at Orly. This competition will embrace certain qualifying and eliminating tests at Orly after which all contestants will fly round Europe following the route shown on the accompanying map, and returning to Orly on Aug. 20.

A total entry of 82 pilots and machines has been received. Of the pilots, 32 will be German, 17 French, 14 Italian, 5 British, 4 Czecho-Slovak, 2 Belgian, 2 Swiss, 2 Yugoslav, and 1 each American, Brazilian, Canadian and Austrian, entered through the Aero Clubs of Germany, France, Italy, Czechoslovakia and Switzerland.

The only British entries are 4 D.H. Moths and 1 Simmonds Spartan, which have been entered through the *Aéro Club de France*, as the Royal Aero Club did not see fit to support the competition. But a very large proportion of the engines will be British.

There is a very large prize list apart from the *Challenge Internationale de Tourisme* which will be awarded to the winner of the Contest.

Each of the official bodies of the countries visited by the competing aircraft has contributed to the prize list, and in addition the various Aero Clubs are awarding special prizes for its own nationals.

THE AEROPLANE proposes to deal fully with this contest at a later date.

THE AIR RALLY AT SCARBOROUGH.

An Air Rally is being arranged at Scarborough during the August Holidays which should provide an interesting and amusing week-end for private owners.

Substantial cash prizes are being offered. In the "On to Scarborough" Rally, the first machine will receive £15, the second machine £10, the third £7, the fourth machine £5. In addition, the first lady passenger will receive £7 7s. and the second lady passenger £5 5s.

Various events have been arranged, including an Open Handicap Race with cash prizes of £10 and £5, also a Balloon Bursting Competition with prizes to the value of £5 for the winner and £3 for the second. Certain professional pilots will be present to do crazy flying and stunting.

Private Owners and Club pilots are cordially invited.

The old racecourse is being used as an aerodrome and is very large and the surface excellent.

The aviation party will stay at the Grand Hotel, Scarborough, and a pleasant holiday seems assured for any pilot able to attend.

Those intending to be present are asked to communicate with Northern Air Lines (M/c) Ltd., Wythenshawe Aerodrome, Northenden, Cheshire, who will send full particulars and arrange accommodation if required.

THE TWENTIETH ANNIVERSARY OF THE FIRST CROSS-CHANNEL FLIGHT.

The Twentieth Anniversary of the first flight across the Channel, which was made by M. Louis Blériot, who landed on the Cliffs at Dover in a Blériot Type XI monoplane, falls on July 25. M. Blériot had intended to celebrate this anniversary by crossing in one of the latest type Blériot passenger-carrying aeroplanes and landing at Dover on that day, as near as possible to the site of his first landing,—on which a Memorial now stands.

Unfortunately, owing to his engagements in France, he has been obliged to postpone his crossing until Saturday, July 27.

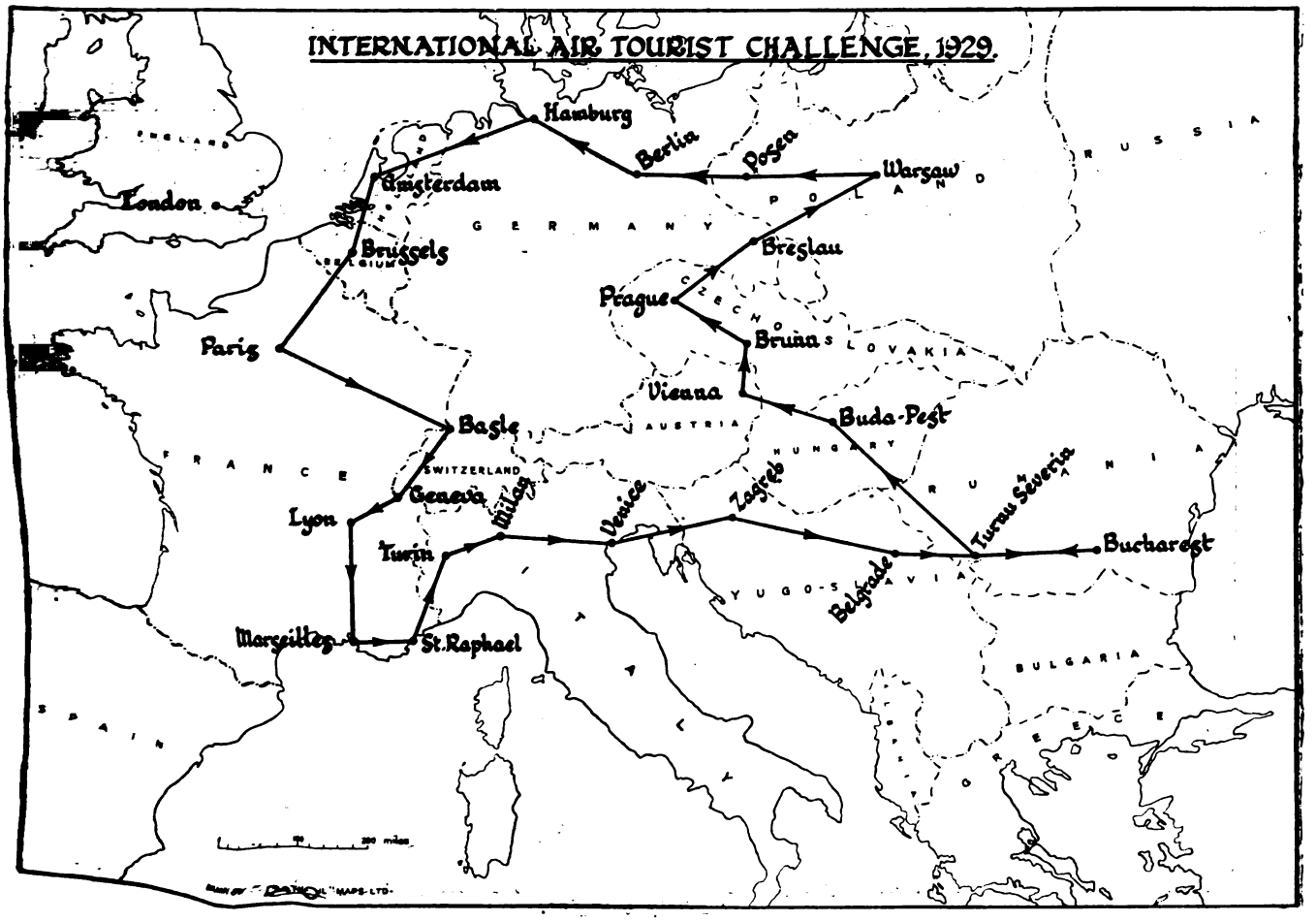
On that day a squadron of the Royal Air Force will meet him over mid-Channel to escort him to Dover, and a landing will be made at 14.30 hrs. at the old R.A.F. aerodrome on Swingate Down, about a mile from Dover Castle, where assistance will be provided by the Automobile Association.

Here he will be received by the Mayor of Dover, Mr. Hilton E. Russell, and conveyed by car to the Blériot Memorial, where a reception will be held by the Mayor,—after which M. Blériot will return to Swingate and leave by air for Croydon at 15.45 hrs.

On arriving at Croydon at 16.30 hrs. he will be received by The Secretary of State for Air, Lord Thomson of Cardington; the Director of Civil Aviation, Air Vice-Marshal Sir Sefton Brancker; representatives of Imperial Airways Ltd.; the President of the Royal Aeronautical Society, Col. the Master of Sempill; Mr. H. E. Perrin, representing the Royal Aero Club, and others.

In the evening M. Blériot will be a guest of honour at the Banquet given by the Society of British Aircraft Constructors at the Savoy Hotel, and during the proceedings a presentation will be made on behalf of the proprietors of *The Daily Mail*.

M. Blériot hopes to leave London at an early hour on Sunday morning, July 28, to be present at Calais, where celebrations, including a Rallye of light aeroplanes, are being held.



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THE ROYAL AIR FORCE.

The London Gazette.

July 16.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—Air Commodore P. F. M. Fellowes, D.S.O., relinquishes his appointment as Air Aide-de-Camp to his Majesty the King on promotion to Air rank (July 1).

The following Plt. Offs. on probation are confirmed in rank (May 25):—J. C. Allan, P. J. Connolly, J. Coverdale, J. Cox, P. J. J. Cullinan, T. W. G. Eady, J. K. Flower, J. C. Harcombe, G. A. E. Harkness, C. V. Howes, R. Louis, A. C. Mitchell, E. C. Passmore, R. C. I. Pearse, P. K. Robertson, J. R. Robins, E. Rotheram, R. E. Watts, J. Wilson.

The following are promoted with effect from July 17:—FLIGHT LIEUTENANTS TO BE SQUADRON LEADERS.—G. W. Bentley, D.F.C., M. F. Browne, H. H. James, O.B.E., J. S. T. Fall, D.S.C., A.F.C., E. J. D. Routh, E. L. P. Morgan, E. H. Hooper, R. Young, H. S. Scroggs, E. F. Turner, A.F.C., C. Boumphrey, D.F.C.

FLYING OFFICERS TO BE FLIGHT LIEUTENATS.—A. E. Rogenhagen, N. H. N. Fletcher, C. F. H. Grace, R. E. B. Rose (Hon. Flt. Lt.), O. B. Swain, M. C. W. C. Flint, M.C., R. W. M. Hall (Hon. Flt. Lt.), R. Duncanson, A. L. R. Duke, H. E. E. Weblin (Hon. Flt. Lt.), F. L. Woledge (Hon. Flt. Lt.), F. G. Cator, M. E. B. P. Storrie, R. A. A. Cole, H. W. Raeburn, F. G. Jennings, F. Boston, T. B. Prickman, H. M. S. Wright, H. M. Whittle, A. E. Paish.

The following Plt. Offs. are promoted to the rank of Flg. Off.:—P. G. Thompson (Mar. 10); R. David (April 9); K. F. Jones (April 9); R. A. Chignell (June 9); S. O. Bufton (June 16) (with seniority of June 9); H. A. Constantine (June 17); S. R. Groom (June 17).

Air Vice-Marshal A. E. Borton, C.B., C.M.G., D.S.O., A.F.C., is placed on the half-pay list, scale A, on relinquishing the appointment of Director of Personal Services, Air Ministry (July 1).

Wing Cdr. G. H. Bowman, D.S.O., M.C., D.F.C., is placed on the half-pay list, scale B (June 7 to Aug. 8 inclusive). Flt. Lt. R. de L. Stedman is placed on the retired list at his own request (July 9).

The following Flg. Offs. are transferred to the Reserve:—CLASS A.—E. L. Leader (July 5) (substituted for notification in *Gazette* of July 9); E. H. Newman (July 15); H. N. Davies (July 16). CLASS C.—A. T. S. Studdert (July 15).

Plt. Off. L. Currie resigns his perm. comn. (July 12). Flg. Off. D. K. Hewison relinquishes his S.S. comn. on account of ill-health (July 16). The S.S. comn. of Plt. Off. on probation L. I. Gibson is terminated on cessation of duty (July 17).

ACCOUNTANT BRANCH.—The following Plt. Offs. on probation are confirmed in rank and promoted to the rank of Flg. Off. (June 11):—M. L. Jones, C. V. Mears, R. Trippett.

MEDICAL BRANCH.—H. C. S. Pimblett, M.B., is granted a S.S. comn. as a Flg. Off. for three years on the active list with effect from July 2, and with seniority of July 2, 1928. The S.S. comn. of Flg. Off. C. Crowley, M.B., is antedated to July 2, 1928, and he ceases to be seconded to the Manor House Hospital, Golders Green (July 2). Flt. Lt. J. Twohill, M.B., is transferred to the Reserve, Class D ii (July 13).

CHAPLAINS BRANCH.—The Rev. T. A. P. King is granted a S.S. comn. as a Chaplain with the relative rank of Sq. Ldr. (July 3).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—The following are granted comns. in Class A.A. (ii) as Plt. Offs. on probation:—G. J. Konried, R. S. Sikes (June 24); J. K. Watson (June 25); E. C. Fieldsen, N. D. B. Wood (July 1); D. Hay (July 3). The following Plt. Offs. of the Special Reserve are promoted to the rank of Flg. Off.:—J. Sillery (Aug. 15, 1928); J. F. Bristow (June 21). The following Plt. Offs. on probation are confirmed in rank:—M. J. R. Alderson, H. T. Edgecombe, D. R. Gray, G. J. E. Howard (July 10); S. R. Herringshaw, G. Leggatt (July 11); T. H. W. Beadle, N. F. Marsh (July 16). Flg. Off. O. V. Lee is transferred from Class A to Class C (July 12).

The following Flg. Offs. relinquish their comns. on completion of service:—E. K. Clifford (June 27); A. L. Harris (June 28); T. J. Shaw (July 5).

Flt. Lt. S. Wallingford relinquishes his comn. on appointment to a comn. in the New Zealand Permanent Air Force (June 21). The comn. of Plt. Off. on probation H. C. W. Brewer is terminated on cessation of duty (May 30).

STORES BRANCH.—Flt. Lt. H. W. Clarke relinquishes his comn. on completion of service and is permitted to retain his rank (June 17).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 601 (COUNTY OF LONDON) (BOMBER) SQUADRON.—The following Flg. Off. to be Flt. Lt.:—J. J. Parkes (July 5).

Appointments.

Week ending July 22.

GENERAL DUTIES BRANCH.—Flight Lieutenants J. W. Colquhoun, to H.M.S. *Hermes*, 27/6, instead of 13/5, as previously stated. E. H. Hooper, to R.A.F. Record Office, Ruislip, 10/7. H. L. P. Lester, to A.G. School, Eastchurch, 16/7. F. F. Garraway, to No. 35 Sqdn., Bircham Newton, 28/7.

Flying Officer S. R. Sherman, to Armoured Car Wing, Iraq, 15/6.

MEDICAL BRANCH.—Flight Lieutenant A. Harvey, M.B., to R.A.F Hospital, Cranwell, 19/8.

STORES BRANCH.—Flight Lieutenant A. H. Allan, to R.A.F. Depot Uxbridge, 11/6.

Flying Officer J. W. Stokes, to Station H.Q., Hal Far, Mediterranean 21/6.

Air Aide-de-Camps.

His Majesty the King has been graciously pleased to ap prove that an officer of the R.A.F. who has held the ap pointment of Principal Air Aide-de-Camp to the King sha be permitted to continue to wear the silver crown an Royal Cypher in monogram style after he has relinquishe his appointment.

The silver crown and Royal Cypher will be worn as in dicated below:—

(1) *Full Dress.—Device*—height 1 in., width ⅞ in.—will be placed o the shoulder straps so that the lowest portion of the device is o inch from the bottom of the shoulder strap. The bird and crow will be removed.

(2) *Mess Dress.*—Device in miniature—height ⅞ in., width ⅞ in. will be placed over the ranking lace so that the lowest edge is lev with the lowest edge of the lace.

The device will not be worn with service dress or on th shoulder straps of the great-coat.

Fatal Accidents.

The Air Ministry regrets to announce that as the resu of an accident off Skipsea, East Yorkshire, to a Fair IIIF machine of No. 207 (Bomber) Squadron, Eastchur on July 17, Flg. Off. Stanley Frank Prince, the pilot of t aircraft, and 363348 L-AC. Edward William Buttensha were killed.

At the inquest at Hornsea on July 18, Flt. Lt. Combe expressed opinion that the accident was caused by an attempt on the part the pilot to roll too low.

The Coroner in registering a verdict of Accidental Death com mented Flt. Combe on having swum out to the machine a the accident in an attempt at rescue.

The Air Ministry regrets to announce that as the result an accident near Boreham Wood, Hertfordshire, to a D.H of a reserve civil flying school on July 19, Plt. Off. Wal Patrick Dillon Bennett, Reserve of Air Force Officers, pilot and sole occupant of the machine, was killed.

THE FAIREY FIREFLY II.—A very high-performance single-seat Interceptor Fighter with the Rolls-Royce "F" type engine.

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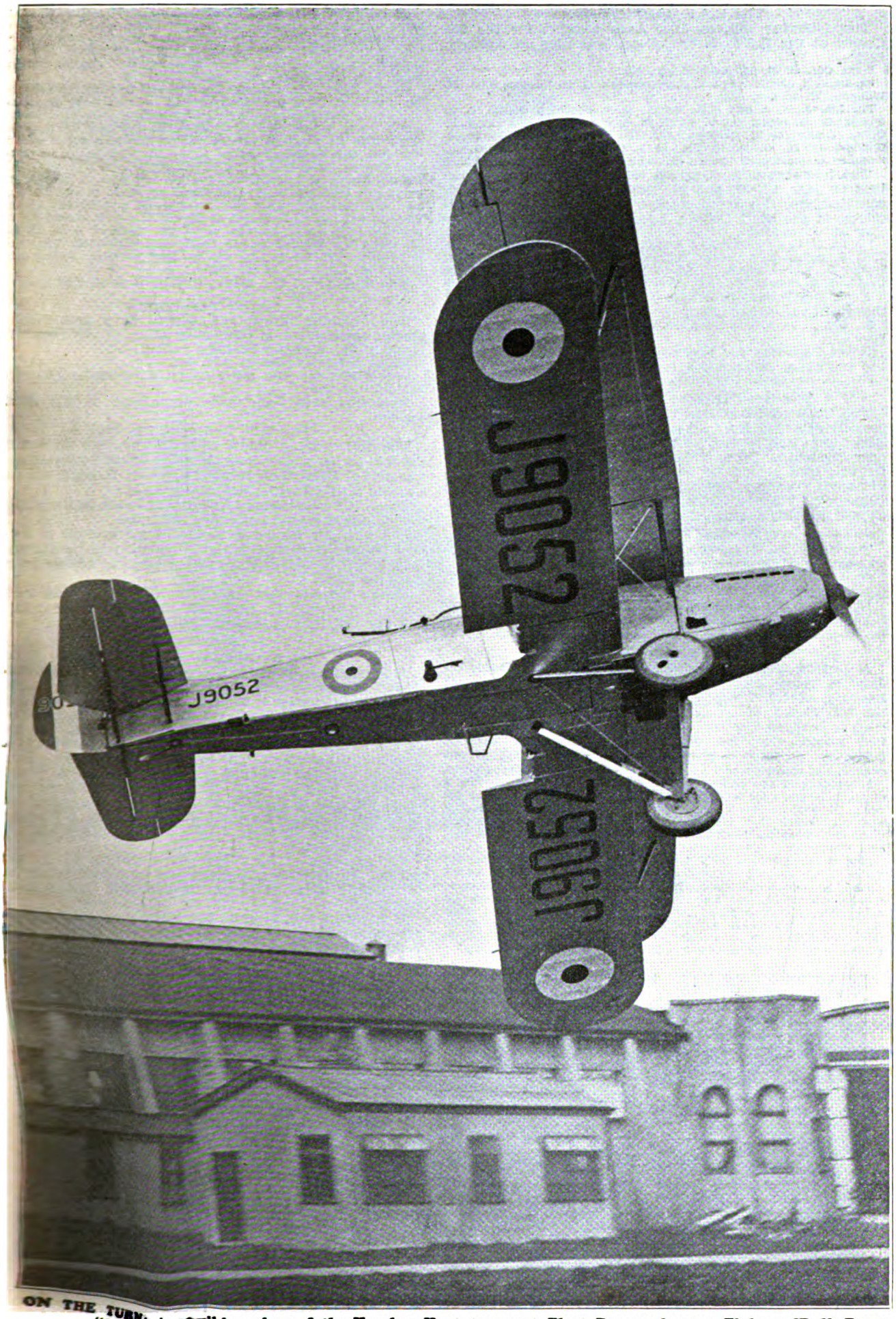

ON THE TURN:—A striking view of the Hawker Hart two-seat Fleet Reconnaissance Fighter [Rolls-Royce "F" engine] turning in front of the main sheds at Brooklands.—(*"Aeroplane" photograph.*)

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

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The R.A.F. Staff College.

The following officers have been selected for the 8th Course at the R.A.F. Staff College, beginning in January, 1930:—

Wing Cdr. G. R. M. Reid, D.S.O., M.C.

Sq. Ldrs. H. H. McL. Fraser, F. Fernihough, G. G. Dawson, F. G. M. Williams, W. R. Cox, M.C.

Flt. Lts. J. W. Baker, M.C., D.F.C., C. A. Bouchier, D.F.C., T. G. Bowler, G. M. Bryer, O.B.E. A.F.C., E. S. Burns, E. I. Bussell, S. D. Culley, D.S.O., C. R. Davidson, M.C., A. B. Ellwood, D.S.C., O. R. Gayford, D.F.C., C. F. Horsley, M.C., D. d'H. Humphreys, G. M. Knocker, G. Martyn, H. D. O'Neill, A.F.C., R. S. Sorley, D.S.C., D.F.C.

The following officers passed the qualifying examination held on Mar. 26, 27, and 28, 1929, and will be eligible for consideration, if recommended by their C.O.s, for the 9th Course at the Staff College, beginning in January, 1931:—

Sq. Ldr. C. W. Mackey.

Flt. Lts. J. L. Airey, D.F.C., J. S. Chick, M.C., A.F.C., A. P. Davidson, E. D. H. Davies, R. A George, M.C., G. C. O'Donnell, D.F.C., C. E. V. Porter, H. V. Rowley, E. H. Searle, F. A. Skoulding, G. F. Smylie, D.S.C., S. E. Storrar, E. J. D. Townsend.

Royal Australian Air Force.—The following officers passed the qualifying examination:—

Sq. Ldr. F. W. F. Lucas, Flt. Lts. F. M. Bladin, G. Packer, D. E. L. Wilson.

Royal Canadian Air Force.—The following officers passed the qualifying examination:—

Flt. Lts. A. Ferrier, G. R. Howsam, G. E. Wait.

The Coast Defence Co-operation Flight.

The Coast Defence Co-operation Flight has been temporarily detached from the Armament and Gunnery School, Eastchurch, and has moved to a temporary landing ground near Plymouth. Up to and including Aug. 2 correspondence for this Unit should be addressed to R.A.F., Crown Hill, Plymouth, Devon. The telephone number is Crown Hill (Plymouth) 276, and the telegraphic address is Aeronautics, Crown Hill, Plymouth.

Permanent Commissions.

The following Medical Officers have been accepted provisionally for permanent commissions in the R.A.F.:—

Flt. Lts. R. J. Irving Bell and James Hill, M.B. Flg. Offs. G. T. O'Brien, G. H. J. Williams, J. C. Melly, B.A., and J. Kemp, M.B.

None of the above-named officers will be required to refund the difference between the war service gratuity of a permanent officer and that of a temporary officer.

A Court Martial at Worthy Down.

A District Court Martial was held at Worthy Down on July 18, when First Class Aircraftman William Charles Baldwin, of No. 7 (Bomber) Squadron, was charged with the commission of an act likely to cause damage to aircraft in that, at Worthy Down on July 2, not being a qualified service pilot or pupil under instruction, without authority, he flew a Vickers Virginia aircraft, which act occasioned damage to the extent of £3,150, or thereabouts.

A summary of the evidence stated that on the morning of July 2 orders were given for a Vickers Virginia bombing machine to be got ready for a flying officer to go up. Baldwin was left in the cockpit with instructions from a serjeant to run the engines until they were warm, and to switch them off if the pilot had not arrived when that occurred.

Baldwin, in a statement read to the Court, said that when he was sitting in the cockpit, running up the engines, he was seized with a sudden impulse to fly the machine. He jumped from the machine, removed the chocks that held the port wheels, got back and took off. After flying for about 20 minutes he decided to return to the camp, but, owing to low clouds, missed the aerodrome. He, therefore, turned to the south to reach the sea and so recover his position. He reached the sea near the Isle of Wight, and then flew back to the camp.

He explained his crash on landing by saying that the weight of petrol in the machine made his angle too steep when he glided down to the aerodrome. That made the machine jump into the air when it touched the ground. Had the machine been less heavily loaded, he thought the landing would have been successful and his comrades would have been spared much hard work.

Flt. Lt. Rogers, who defended Baldwin, said that the case was without precedent. If a previous case had occurred surely regulations would have been framed with a view to guarding against a recurrence and he could find no such regulations. He submitted that there was ample time for somebody in authority to have been warned when it was seen that Baldwin intended to fly the machine, or perhaps to have diverted Baldwin from his sudden impulse. Baldwin was an ex aircraft apprentice from Halton, and was very keen on his work. It would be a great pity if that one foolish act should prevent the young man from achieving what was probably his greatest desire—to fly. The act was not contemplated or done with a view to notoriety. It was not done out of bravado, or as the result of a bet. It was the result of a thrilling thought which came to Baldwin. The chance to fly came, and the impulse was too great to resist. Baldwin threw himself on the mercy of the Court.

The findings of the Court will be promulgated later.

Special Assessments.

The following officer and airmen have been awarded special assessments on completion of an *ab initio* course of flying at No. 2 Flying Training School:—

Special Distinction.—Flt. Lt. B. F. Cox.

Distinguished Pass.—No. 364780 Act.-Sjt. A. Strungell and No. 3641 Act.-Sjt. C. E. Slee.

Notations have been made accordingly in the official records.

The R.34 Re-Union Dinner.

The first re-union dinner of those who were the crew of the R.34 on her double crossing of the Atlantic ten years ago was held at Bedford on July 20. Major G. H. Scott, who was Captain of the Airship, was in the Chair.

The R.34's complement of officers and men on her journey was 33 and of these 14 attended the dinner.

The company honoured in silence the memory of Brig. Gen. E. M. Maitland, Maj. Pritchard and Lieut.-Cmdr. Lansdowne, U.S.A., who have been killed in airship service since the flight.

Among those present were Wing Cdr. G. H. Cook (navigator of R.34, Flt. Lt. R. F. Durrant (W/T officer of R.34) and Flg. Off. H. F. Luck (2nd officer of R.34).

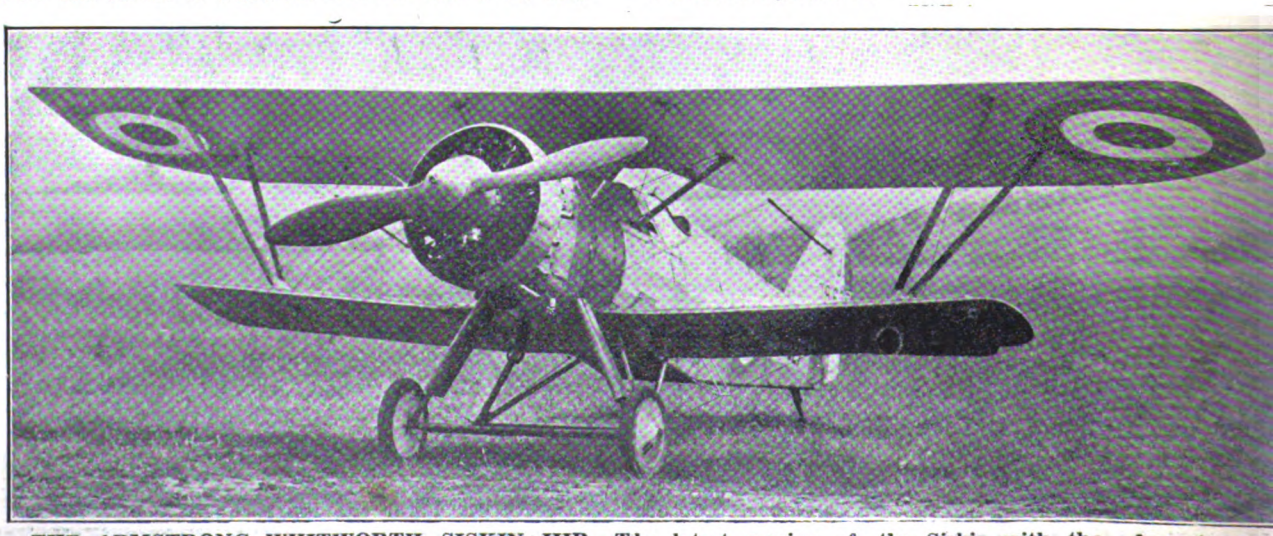
A GERMAN SCARE.

A German newspaper of Bolshevik tendencies, the *Welt am Abend*, claims to have disclosed the existence of a clandestine naval school of aviation on the island of Norderney.

This school is said to be run by the Severa company, one of the creations of the notorious Capt. Lohmann. The head of the school is a naval captain and the instructors are former naval aviators. The course, which lasts for a year, is confined to naval personnel and the usual number of pupils is between forty and fifty. They are not transferred in the usual way, but nominally, on one pretext or another, leave the navy altogether for the period of training. When they rejoin the navy the term of their aviation course counts for pension purposes.

The expenses of the school are, according to the newspaper, "defrayed out of a mysterious fund from which Capt. Lohmann financed his bacon factories and 'patriotic' companies."

If anyone wants to know the truth about this yarn they are recommended to apply to Herr von Gronau, of the Verkehrsfliegerschule.



THE ARMSTRONG WHITWORTH SISKIN IIIB.—The latest version of the Siskin with the Armstrong Siddeley Jaguar engine and Townend cowling ring.

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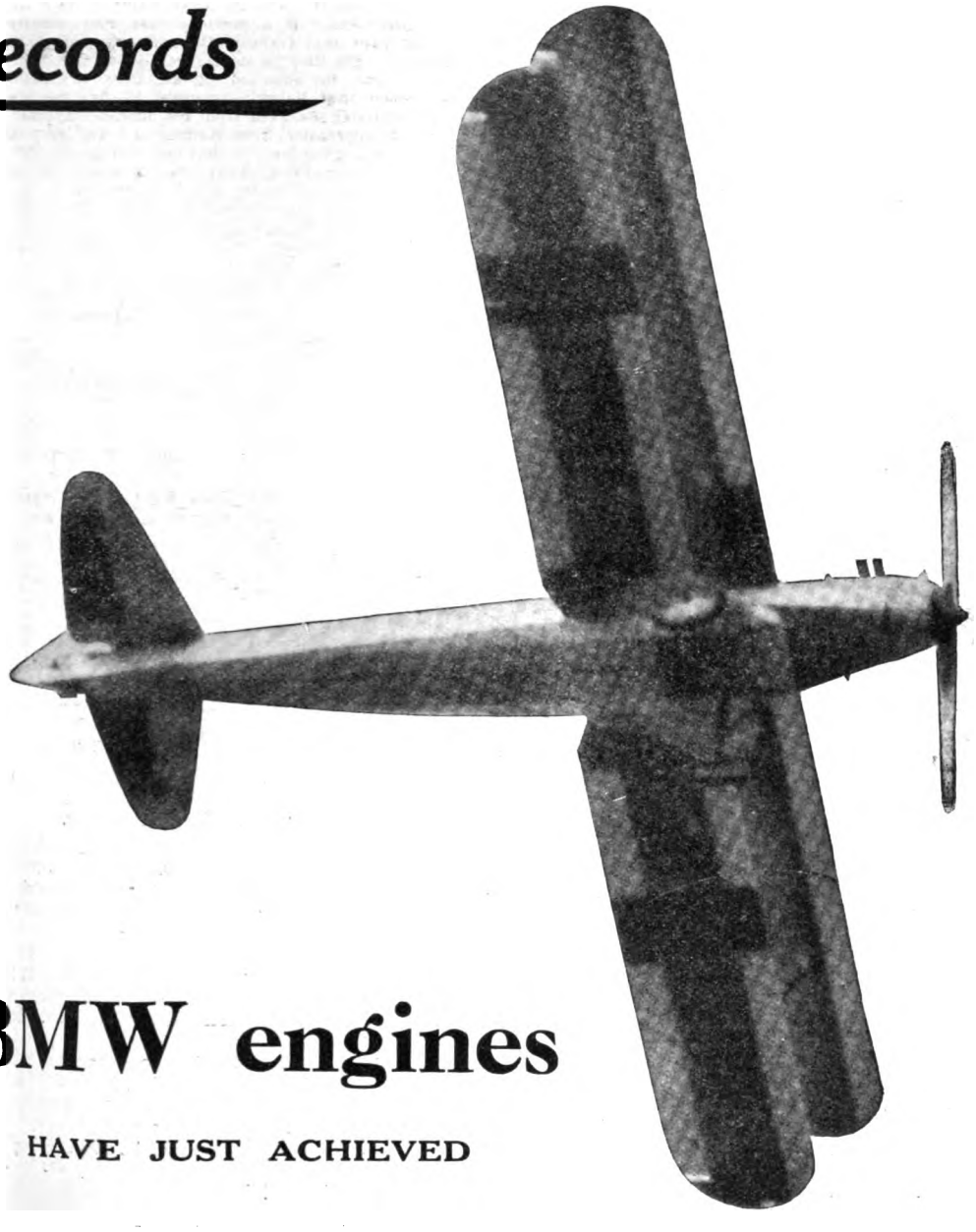
Records



BMW engines

HAVE JUST ACHIEVED

8 New World Records.

Our grand total is now 50, of which 16 are still in our possession, being 20% of all existing aviation records.

Bayerische Motoren Werke,
Munich 13, Germany.

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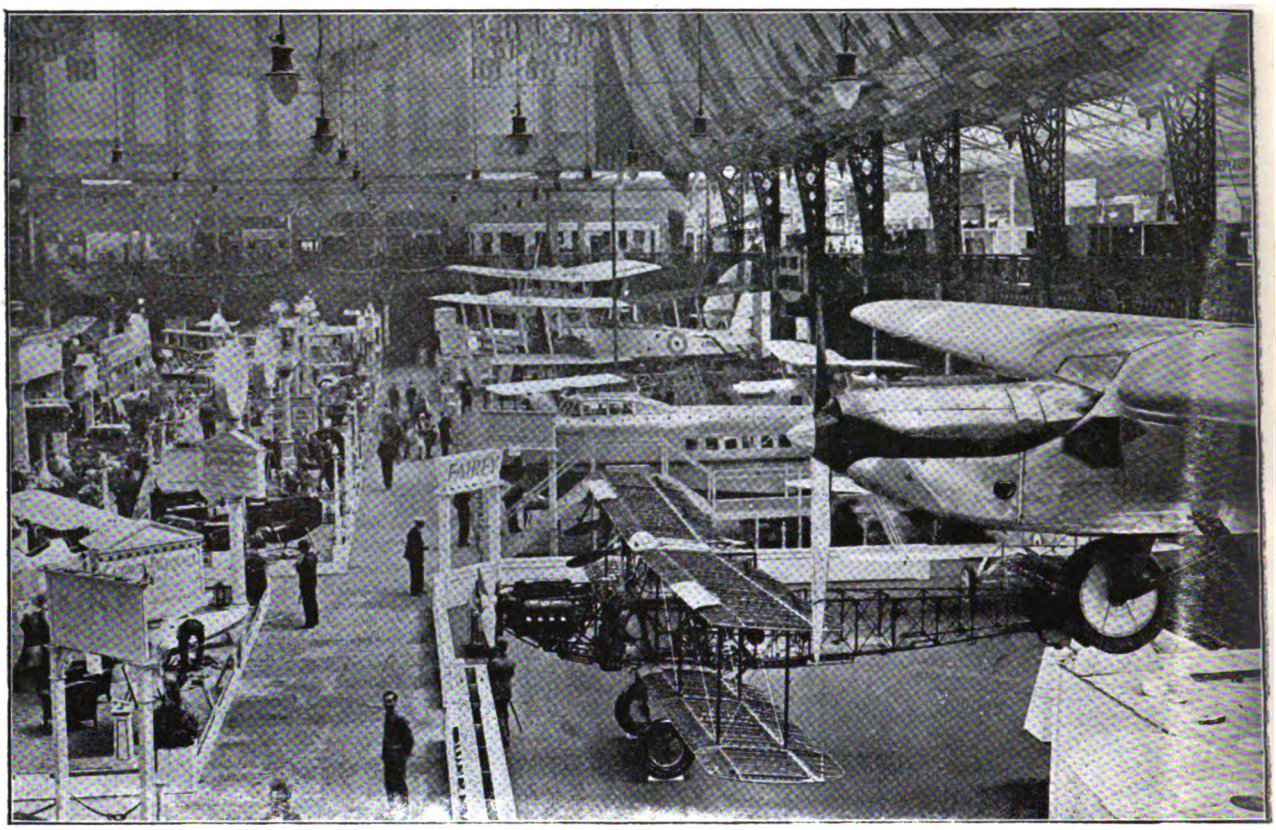
THE SHOW REPORT.

BRITISH AND FOREIGN AEROPLANES.



A GENERAL VIEW.—Looking down the Main Hall, showing on the left the nose of the Fairey Long-Range Monoplane, the skeleton Fairey IIIF, the Blackburn Nile, and in the distance the Boulton and Paul Sidestrand and the Short Singapore. On the left are the principal engine stands.

A.B.C. MOTORS LTD., Walton-on-Thames. Stand No. 13.

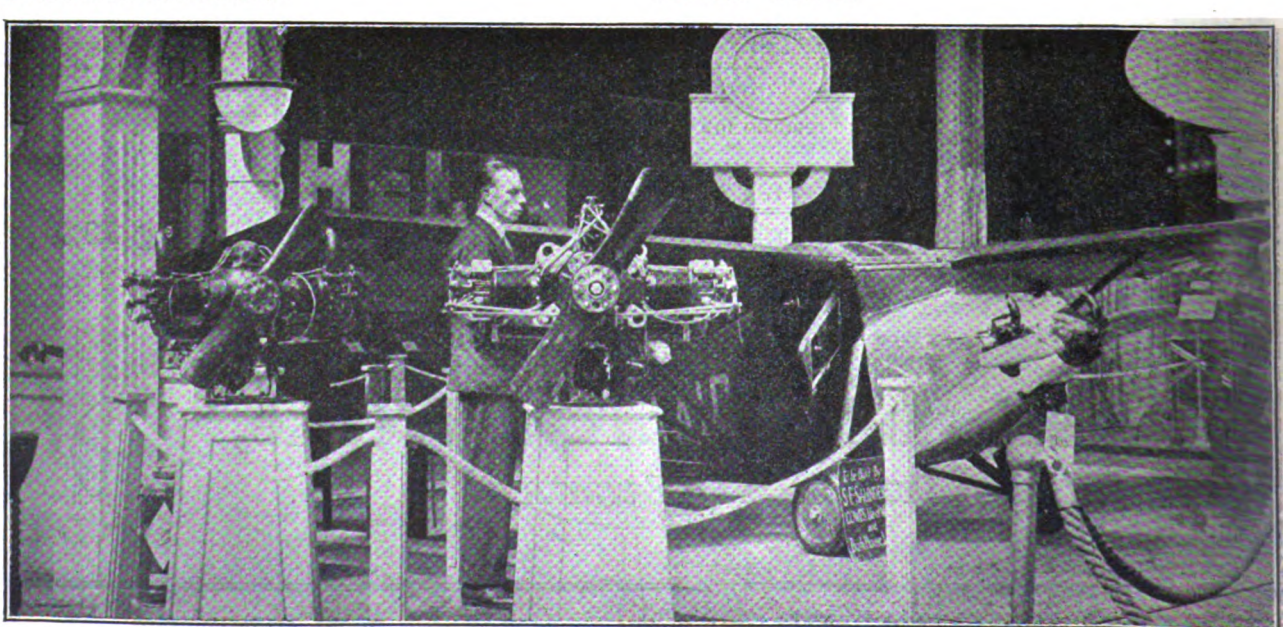
A.B.C. Motors have a comparatively microscopic stand whereon they show a miniature single-seat cabin monoplane with the 40 h.p. A.B.C. Scorpion engine, known as the Robin. Judging from the pictures in the daily press this machine "tickled the fancy" of those individuals who take on themselves the responsibility of telling the public what they are to be interested in. Nevertheless it is an exceedingly attractive little vehicle, but one volunteers the suggestion that the colour scheme of black and orange is not well chosen. Black is too funereal and in some peculiar way the square fuselage painted black looks like a railway sleeper.

The cockpit or cabin is extraordinary for its roominess and is well furnished. All controls appear to be tucked away and yet are accessible, there is an ample side-door, an openable roof and a hinging wind-screen so that there can be no complaints about inaccessibility.

Mr. "Tony" Fletcher, the designer, is highly pleased wi himself about his first A.B.C. aeroplane product. His weig estimate came out exact on the scales, and all his perfor ance figures were exceeded by a comfortable margin.

One of the minor interesting details about the machine that the wheels are retained on the axles by a quick relea pin so that when a wheel wants changing it is not necessa to grovel in the mud or dust of an aerodrome with make-sh tools, but merely to turn the pin with thumb and fore-fing and the wheel is off.

The Robin sells at £375, a reasonable enough figure. [O wishes the A.B.C. Company the best of luck with their n venture, but one is not convinced that there is any co siderable market for the single-seat two-cylinder type. St as *Punch* said, in a famous book-review,—"for those w like this sort of thing this is exactly the kind of thing th will like."—C. G. G.]



THE A.B.C. STANDS.—In the foreground are the A.B.C. Hornet and Scorpion engines and behind is the A.B.C. Robin single-seat monoplane. —(*"Aeroplane" photograph.*)

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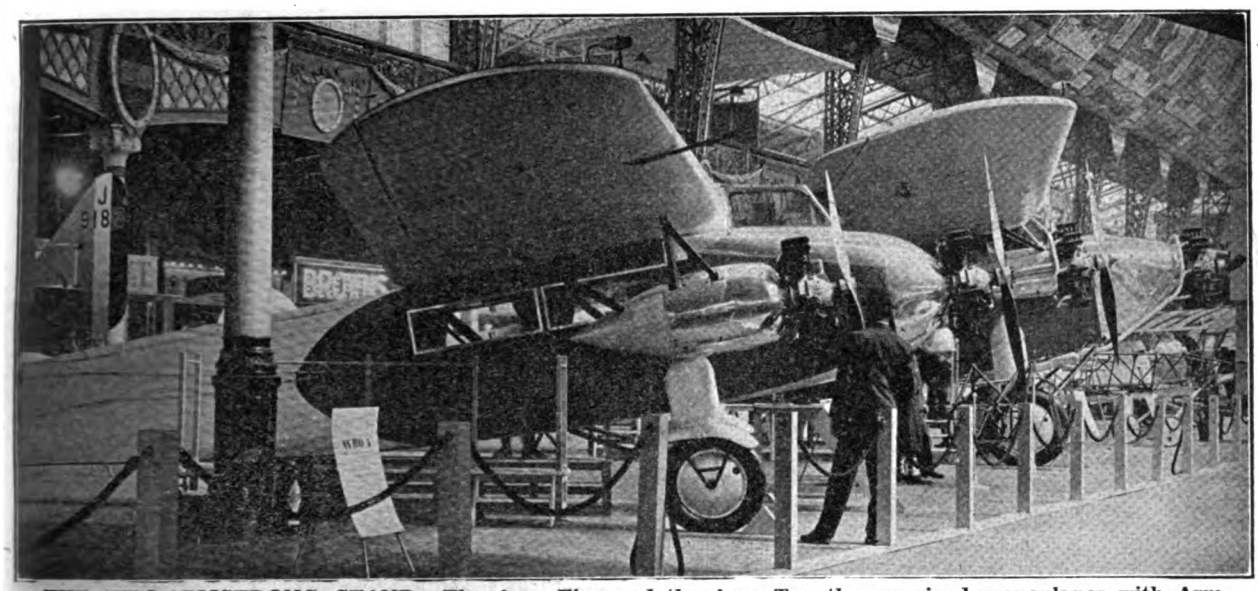


THE AVRO-ARMSTRONG STAND.—The Avro Five and the Avro Ten three-engined monoplanes with Armstrong Siddeley engines.—(" *Aeroplane* " *photograph.*)

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LTD., Coventry. Stand No. 87.

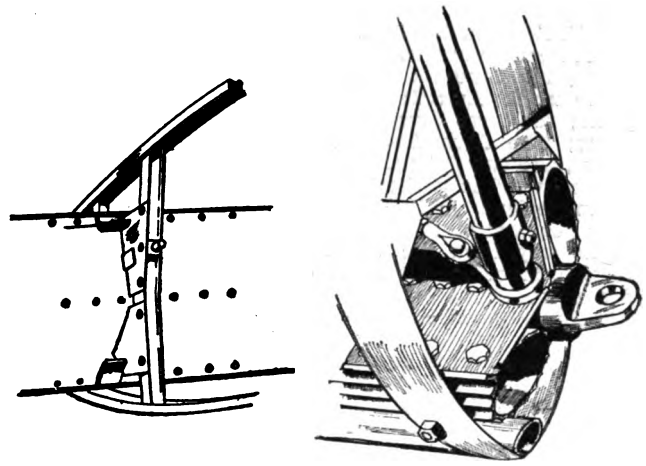
The Armstrong Whitworth Aircraft firm show on the combined Stand, with the Avro Company, three aircraft. These are the Atlas two-seat Army Co-operation biplane, the Siskin IIIB single-seat fighter and the A.W.XIV single-seat fighter, all fitted with the Armstrong Siddeley Jaguar engine and Townend cowling ring. The original intention was to show one of the latest Argosies, but at the last moment this machine was withdrawn as it was wanted by Imperial Airways for use on their Continental services.

Of the three machines shown the Atlas is one of the standard Army Co-operation types in use in the R.A.F. and the Siskin IIIB is a development of the type which forms the largest proportion of the fighter equipment of the R.A.F. The A.W.XIV is similar to the Siskin type but carries less equipment, with the result that its speed and climb are superior to the earlier type.

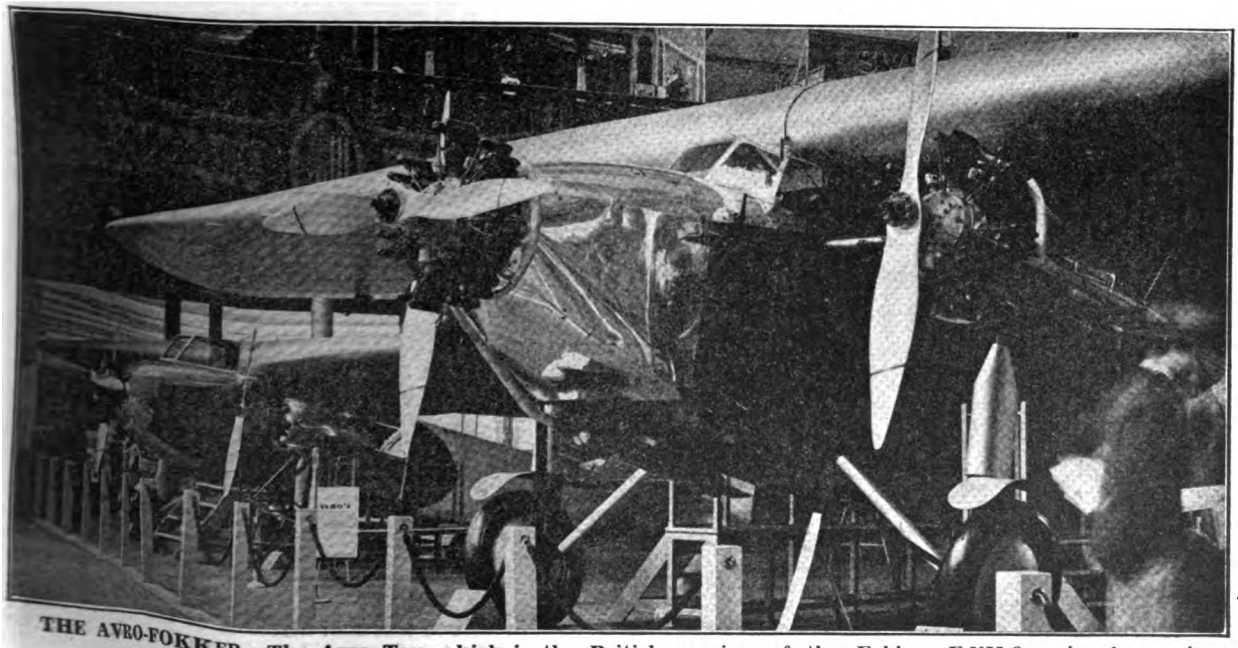
All these machines are of the well-known Armstrong Whitworth metal construction. The machines are covered with fabric but a plentiful display of test pieces and samples of their construction is shown. One of the main spars of the Atlas type is mounted so that a test load can be applied showing the deflection which can be obtained without any permanent set in the spar. A steel rib is shown under vibration test and a large case is filled with specimen ribs and spar sections. There are also uncovered Atlas ailerons and bottom planes.

A Short duralumin float for the Atlas completes this exhibit.

The Armstrong Whitworth Stand together with the Avro Stand is one of the largest in the Exhibition and the absence of the Argosy which would have absorbed quite an amount of this space makes an appreciable difference to its final appearance, for a better display of the other and newer types is now possible.



ARMSTRONG WHITWORTH DETAILS.—On the left a rib attachment and on the right a spar end fitting.



THE AVRO-FOKKER.—The Avro Ten, which is the British version of the Fokker F.VII-3m, is shown in public for the first time on the Avro-Armstrong stand.—(" *Aeroplane* " *photograph.*)

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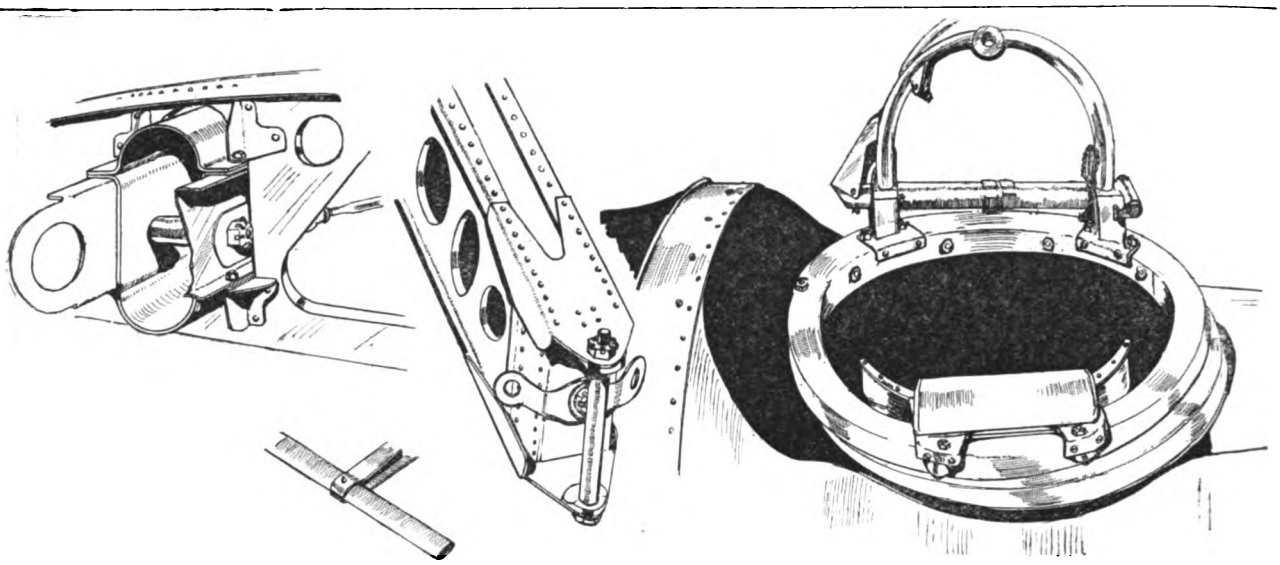


AVRO ANTELOPE DETAILS.—On the left two spar-end fittings and on the right the Avro patent high speed gun-mounting.

A. V. ROE AND CO., LTD., Newton Heath, Manchester. Stand No. 87.

A. V. Roe and Co. Ltd., which is now associated with Sir W. G. Armstrong Whitworth Aircraft Ltd. and is exhibiting on a joint stand with this company, show five aeroplanes. These are the Avro Ten three-engined eight-passenger monoplane; the Avro Five, three-engined four-passenger monoplane; The Avro Antelope General Purposes Type two-seater, and two Avians.

The Avro Ten is the British version of the Fokker F-VII 3m monoplane, the licence for the construction of which has been acquired by the Avro Company. This machine differs in no way from the well-known Dutch type except that certain minor constructional details have been either modified or embodied to meet with the requirements of the British Air Ministry. It has three Armstrong Siddeley Lynx engines mounted one in the nose and one on each side of the fuselage under the wings.

The Avro Five is a miniature version of the Avro Ten but has been designed entirely by A. V. Roe and Co., on the Fokker principle. It has three of the new 100 h.p. Armstrong Siddeley Genet-Major radial engines. The cabin seats four passengers in wicker chairs and is comfortably furnished. The pilot is in a separate cockpit in front of the cabin, the top of which is covered by a transparent cupola.

Behind the cabin is a fairly large luggage compartment with a further smaller one situated under the pilot's cockpit.

The two wing Genet engines are enclosed in completely streamlined eggs suspended below the wing and relatively in a much further forward position than is found on the Avro Ten.

The undercarriage is the wide divided type similar to that fitted to the Avro Ten, and the wheels have brakes.

The Avro Antelope is a two-seat General Purposes biplane with the Rolls-Royce "F" type engine. This machine is interesting in that it has a rectangular fuselage of duralumin channels with an outside covering of duralumin plates rivet- ted on. The fuselage is very narrow and under the nose i mounted a radiator which is cowled into the fuselage an fitted with shutters on the lines which were originated by th Curtiss Co. in their Hawk and Falcon military types.

The wings are of single-bay type and are of all-metal con struction, chiefly duralumin but with stainless-steel fitting

An alternative fuselage for the Antelope is also shown This is of the Fokker welded type and has four steel tub longerons and vertical and cross tube members of smalle diameter.

In the corners of the side, top and bottom bays are welde small steel quarter loops. Through these loops are threade the wire bracing which is tightened up with wire strainer

At first glance this gives the appearance of double bracin but actually it is single.

The two Avians shown are both of the new steel fuselag type but one has the Cirrus Hermes four-cylinder-in-line e gine and the other the Genet five-cylinder in-line radial wi Townend ring cowling.

These two machines provide an interesting comparison b tween two modern types of air-cooled engine cowling. T Hermes cowling completely surrounds the engine, the lin of which continue back into the fuselage. The Genet e gine is attached to the rounded-off nose of the fuselage a a Townend ring exaggerates the diameter of the engine u duly. From an æsthetic point of view there can be no dou as to which is the most attractive looking, whereas from t practical point of view there appears that there should little difference between the performance of the t machines.

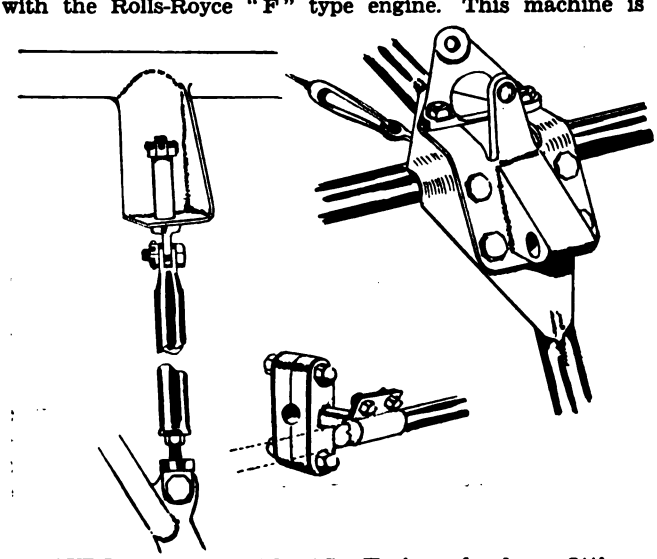
The Hermes-engined Avian is the actual machine flown Mr. Stack in the King's Cup Race and is finished in blue a silver. It has what is known as the "sports type" und carriage, which is the original Vee cross-axle type fitted the original Avian. The Genet-engined machine is done black and silver and has the new divided type undercarria

A skeleton Avian fuselage is also shown. This is of welded round-tube (steel) type and is fitted with the n unit system of Avian controls.

Other examples of Avro metal construction are an ele tor and an engine mounting for the Avro Ten and a alumin skeleton wing for the Antelope and a table laid with a series of typical welded steel fuselage joints som which are sectioned to show the high quality of the weld

A Short metal float suitable for the Avian is laid across of the front corners of the Stand.

[The two Fokker-type machines, the Ten and the F strike one as being quite among the prettiest and most cient-looking machines in the Show. One gathers that price is a trifle high, but the superlative workmanship finish will certainly bring orders. Apart from them standardised Avians fully uphold the Avro reputation design and all-round quality.—C. G. G.].



AVRO AVIAN DETAILS.—Various fuselage fittings, including the main undercarriage leg fittings and a fibre control fairlead attachment.

AUTO-AUCTIONS, LTD. Burlington Gardens, Old B Street, W.1. Stand N

Auto-Auctions, Ltd., the well-known automobile de have acquired the sole World selling rights for the Black Bluebird side-by-side two-seat light aeroplane, and ar hibiting two identical machines of this type on their s one with the Cirrus III. and the other with the D.H. C engine. The latter machine is the first experimental

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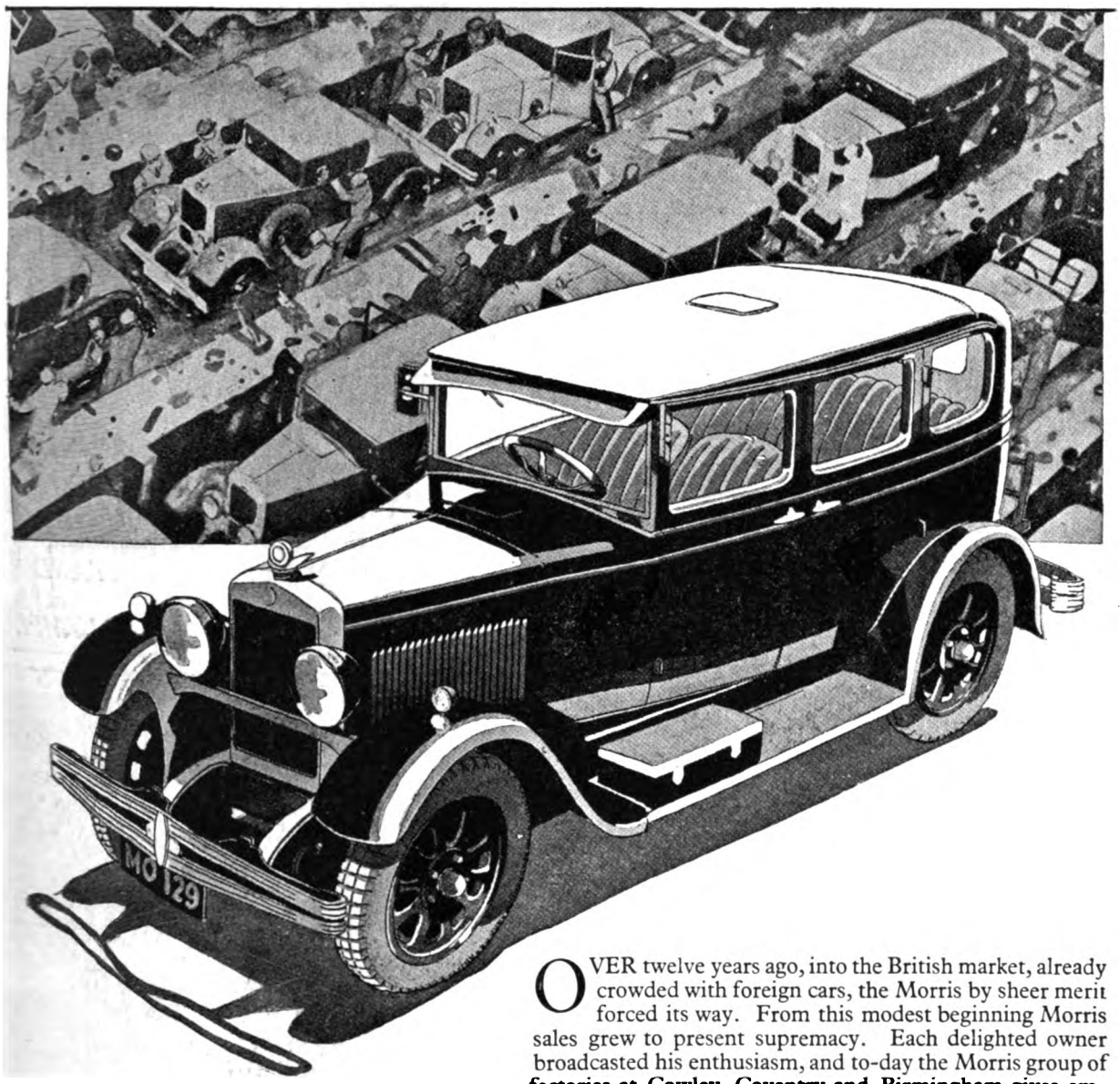

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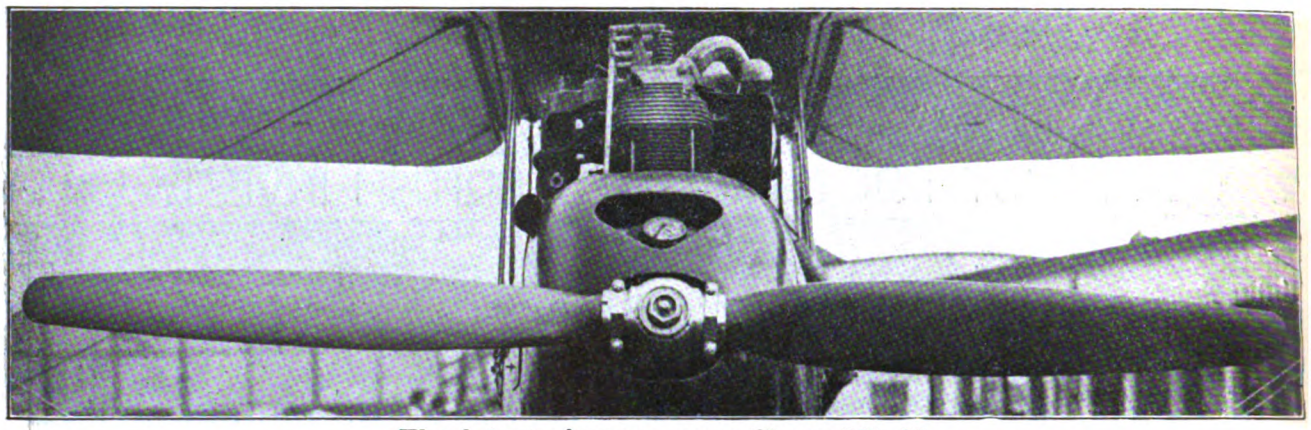

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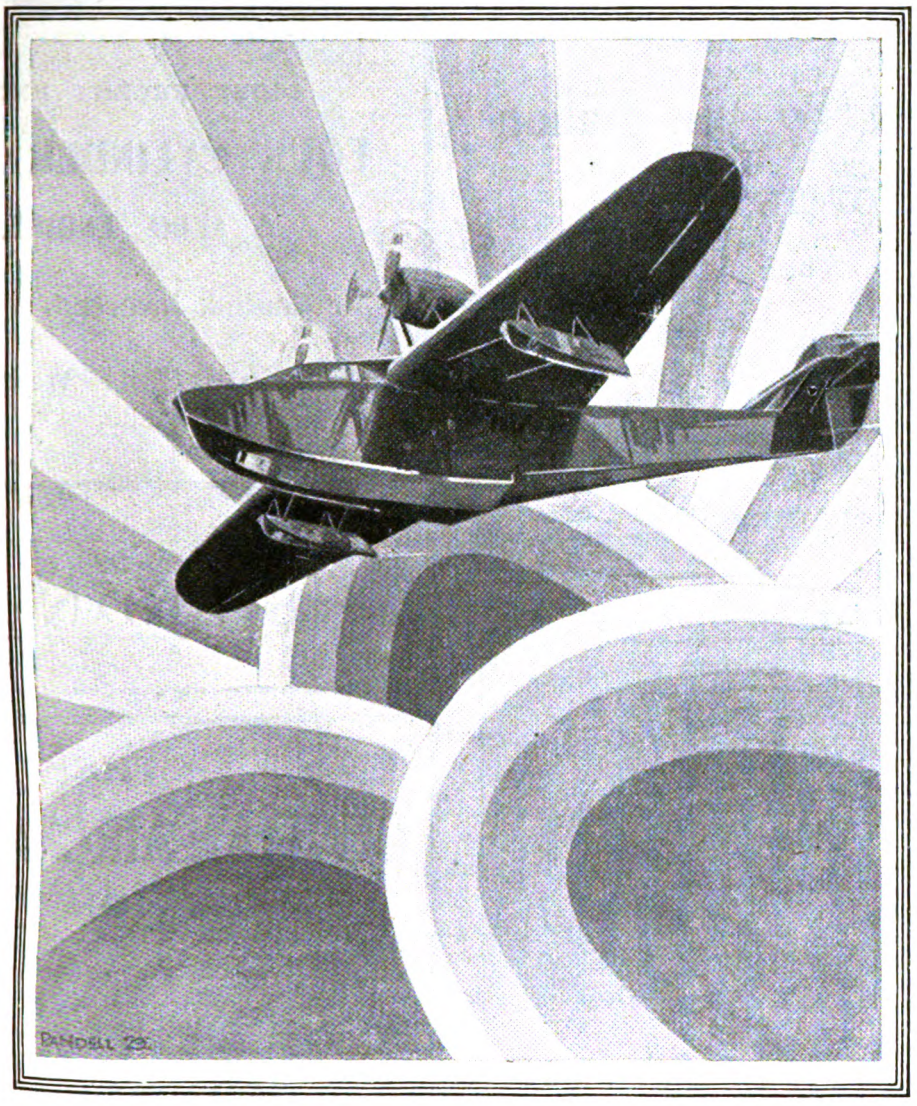

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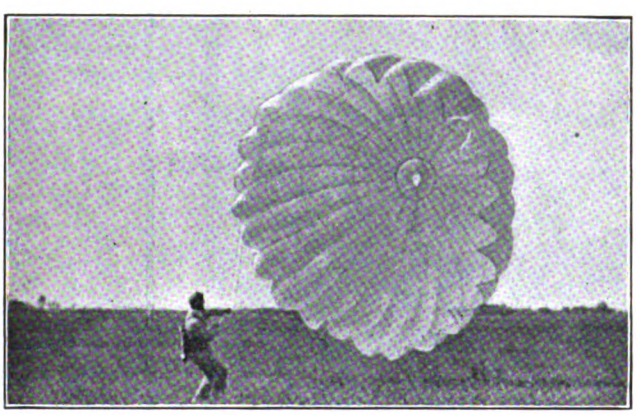

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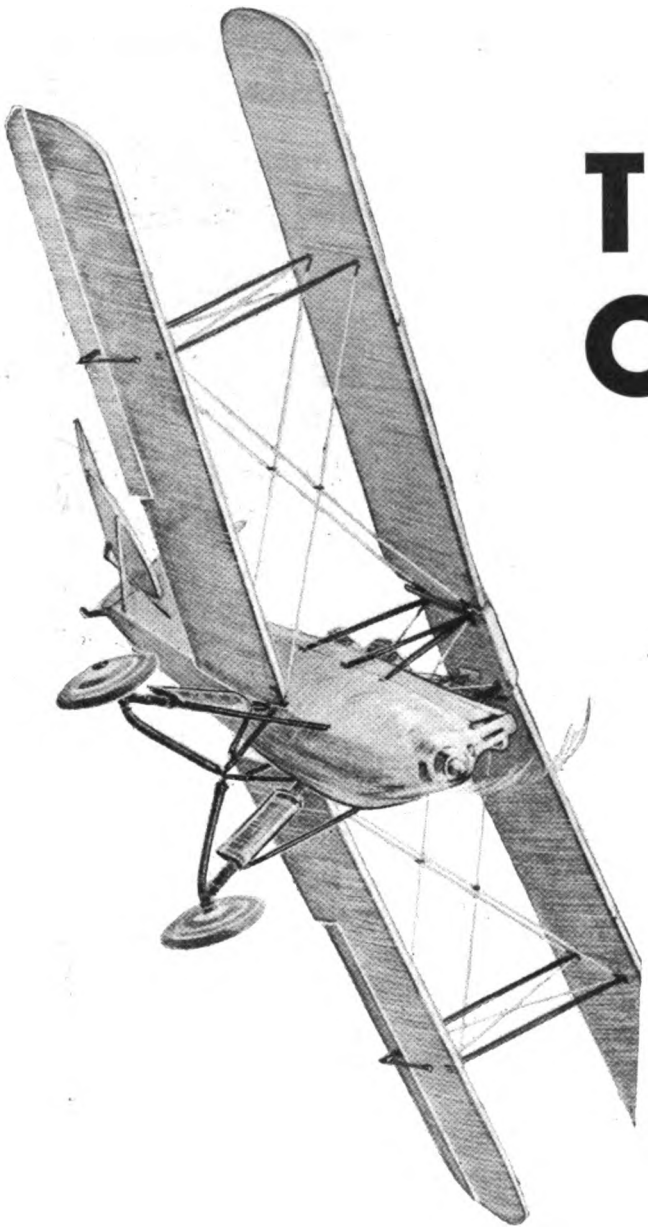

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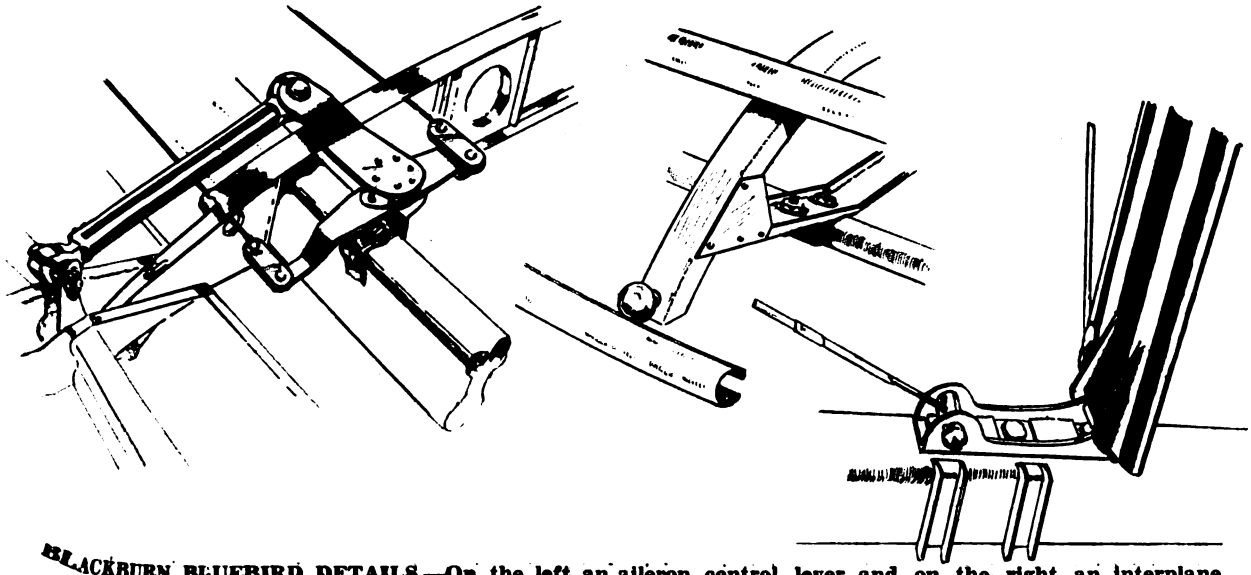


BLACKBURN BLUEBIRD DETAILS.—On the left an aileron control lever and on the right an interplane strut fitting. In the middle is shown the method of attachment of the fuselage stringers.

metal Bluebird in which Sqn.-Ldr. L. H. Slatter, O.B.E., D.S.C., D.F.C., R.A.F., flew from England to South Africa early this year.

The Bluebird is well known as the only side-by-side two-seat light aeroplane in this country, and it has been fully described in previous issues of THE AEROPLANE. Actually it is the only all-metal light aeroplane at present in production, and the particular form of metal construction is simple and ingenious.

The wing spars are made up of two identical hollow "T" type steel sections, the stalks of which slide on one another and are automatically riveted down the centre-line. The ribs are built up of duralumin booms with diaphragms of the same material. The fuselage is in four sections, and with the exception of the main centre-section is built up of steel tubes assembled with flat steel plates. The centre section consists of two built-up duralumin frames and accommodates the pilot's cockpit. This unit also acts as the main anchorage for the wings, undercarriage, engine-mounting and the rear section of the fuselage. The fuselage is streamlined to an oval section above and below by formers, and on the sides by short members attached to the vertical fuselage members. At the extremities of these members and on the formers are either spherical balls or specially shaped tongues over which are sprung U-shaped duralumin stringers. These stringers are quickly removable.

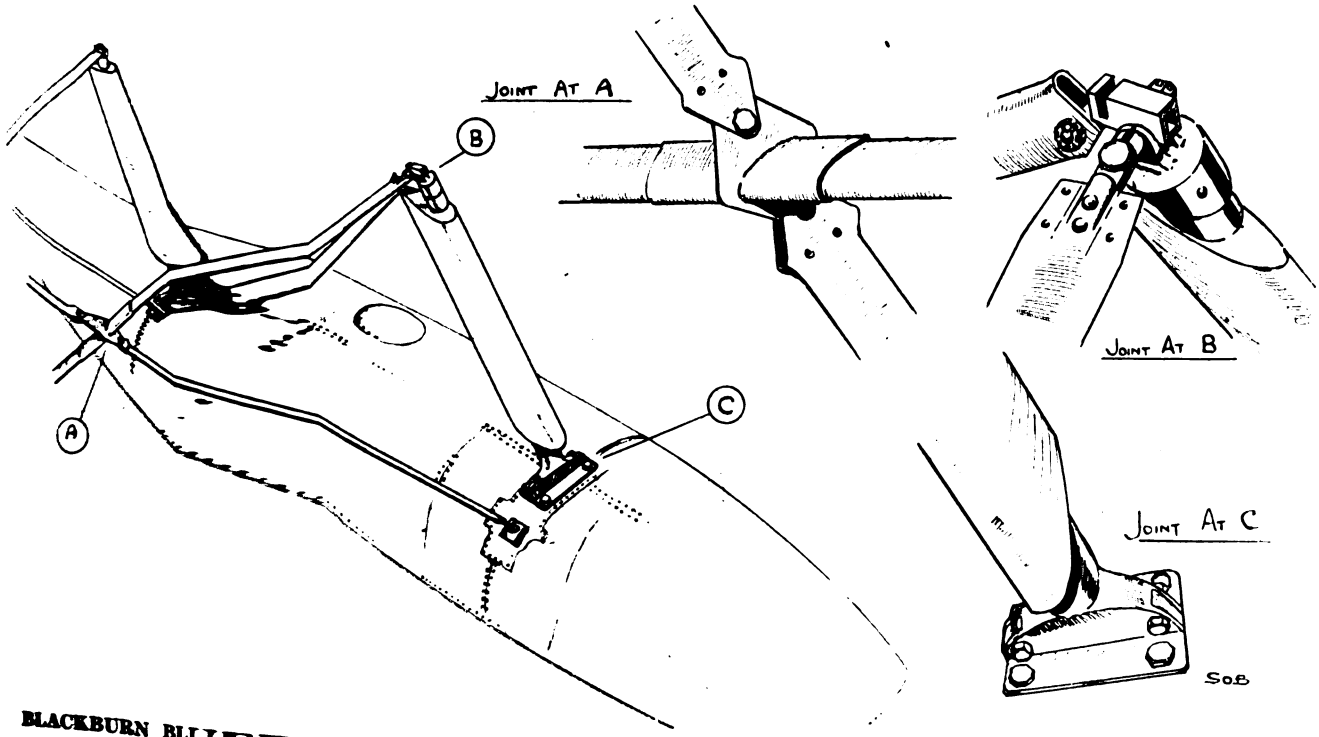
As already mentioned, the cockpit seats two side-by-side, and complete dual control is fitted. The Bluebird control system is very cleverly designed, and throughout employs either tubes or straight cables. Separate seats are provided, either of which may be removed when necessary. A large luggage compartment capable of holding two average-sized suit-cases is situated behind the cockpit, and a further compartment in the top fuselage cowling above the luggage compartment will accommodate various long articles such as guns, fishing rods, golf-clubs, etc.

The under-carriage is of the divided type, and is quickly interchangeable with a twin float-base.

A skeleton Bluebird is shown on the Blackburn stand together with a set of floats. After examining the complete Bluebirds on the Auto-Auctions' stand, it is well worth while to make a point of visiting the Blackburn stand, if this has not already been done, to inspect the interior construction of the machine. Bluebird details are even seen on yet another stand in the show. S. E. Saunders Ltd. have taken over the production of this machine for the Blackburn Company, and on the Saunders stand is shown a board displaying a large number of small parts and stampings made by this company for the Bluebird.

THE BLACKBURN AEROPLANE AND MOTOR CO. LTD., Brough, Yorkshire. Stand No. 109.

The Blackburn Company are showing the hull of the Nile flying-boat, a Ripon, the new Lincock and the skeleton of a Bluebird. The Nile hull is the *pièce de résistance* of the stand, and, one might almost say, of the Exhibition, judging



BLACKBURN BLUEBIRD DETAILS.—One of the Bluebird metal floats with details of the various fittings

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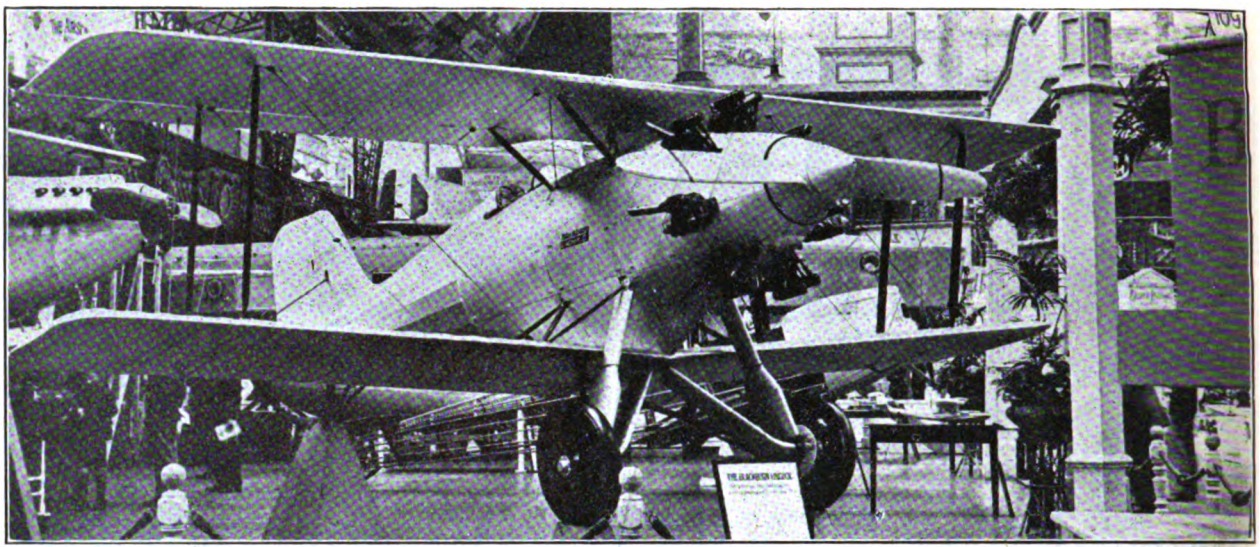


THE BLACKBURN LINCOCK.—The latest model of the Lincock with a geared Lynx engine and divided undercarriage.—(" *Aeroplane* " *photograph.*)

by the interest shown by important visitors, who have, in spite of the heat, lingered long within.

The hull is designed on the experience gained with the Iris, and is a very fine example of metal boat building. Actually the Nile will be a three-engined passenger monoplane. It certainly shows that Major Rennie is still as progressive as ever.

Access to the interior is through a hatch-way aft, and from the bottom of the companion-way a central gangway runs forward to the pilot's cockpit, and a nose cockpit for storing tackle and picking up moorings, etc.

The pilot's cockpit, or compartment as it should really be called, seats two side by side and is covered by a roof which projects above the top line of the hull.

The side and top windows of the roof are openable. Dual controls are fitted but are not complete on the hull shown as no wings, tail, or engines are fitted.

Behind the pilots' room is the main cabin for fourteen passengers. Passengers are seated in pairs facing each other on either side of a central gangway, except in the back seats on the right hand side which only accommodate tw facing each other.

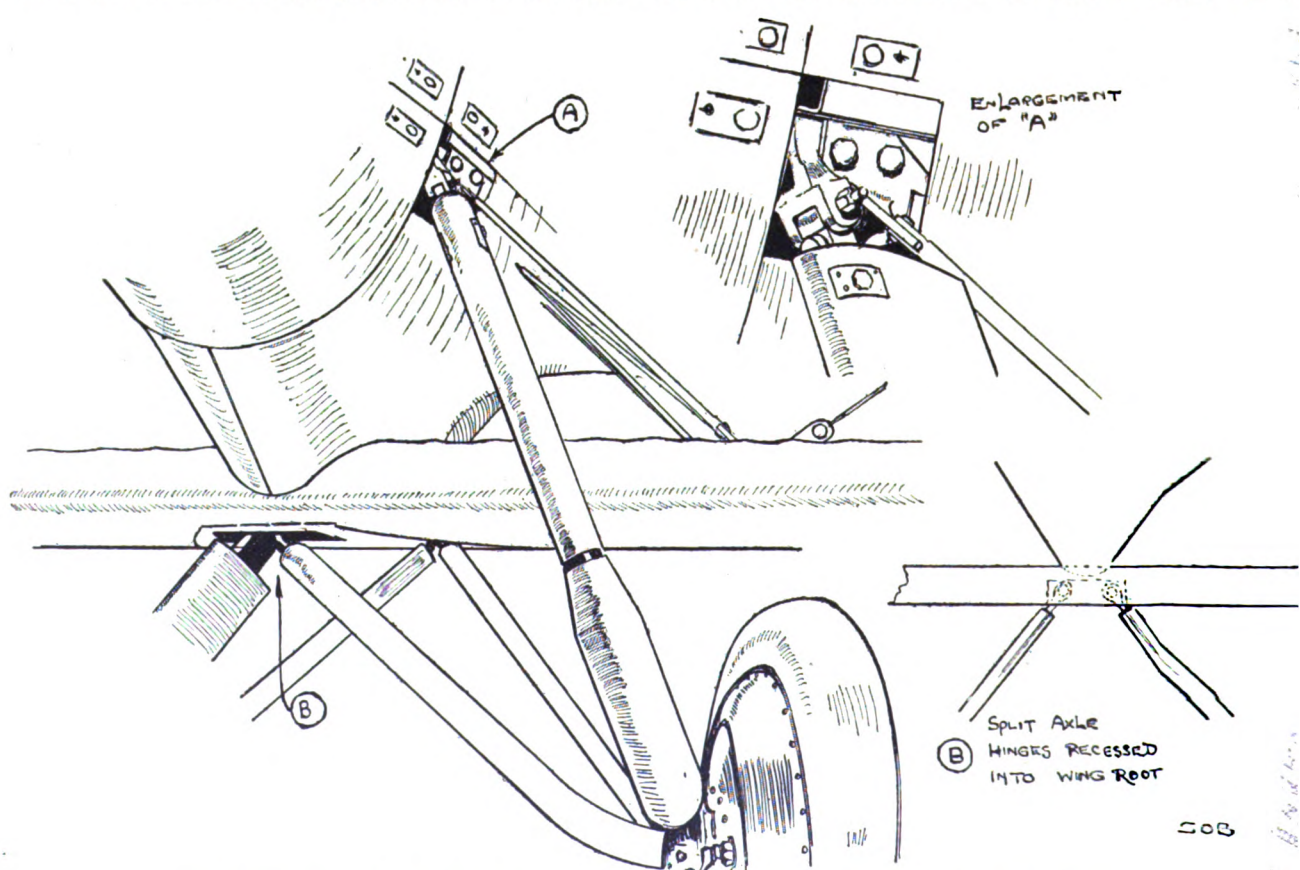
The seats are deep and are fitted with pneumatic up holstery; and between each set of seats is a large table. Be hind each set of seats is room for hand baggage.

Ventilation and heating is controlled and each table provided with a bell-push communicating with the pantry.

Aft of the cabin is the lavatory and a position for the en gine-mechanic, and behind this is a pantry with an oil-cool ing-stove and a small kitchenette. Immediately behind th is the companion way and aft in the hull is room for heav baggage.

The whole hull is adequately lighted by ports and ro electric lights and has a spaciousness which is in stron contrast with that of the average air liner at present in u on Continental air lines.

The new Lincock is an extremely attractive little sing seat light fighter biplane,—much of that terribly secr French class, known as the " Type Jockey," produced to sho that a defensive fighter with a small petrol supply can



BLACKBURN LINCOCK DETAILS.—The new divided undercarriage of the Lincock.

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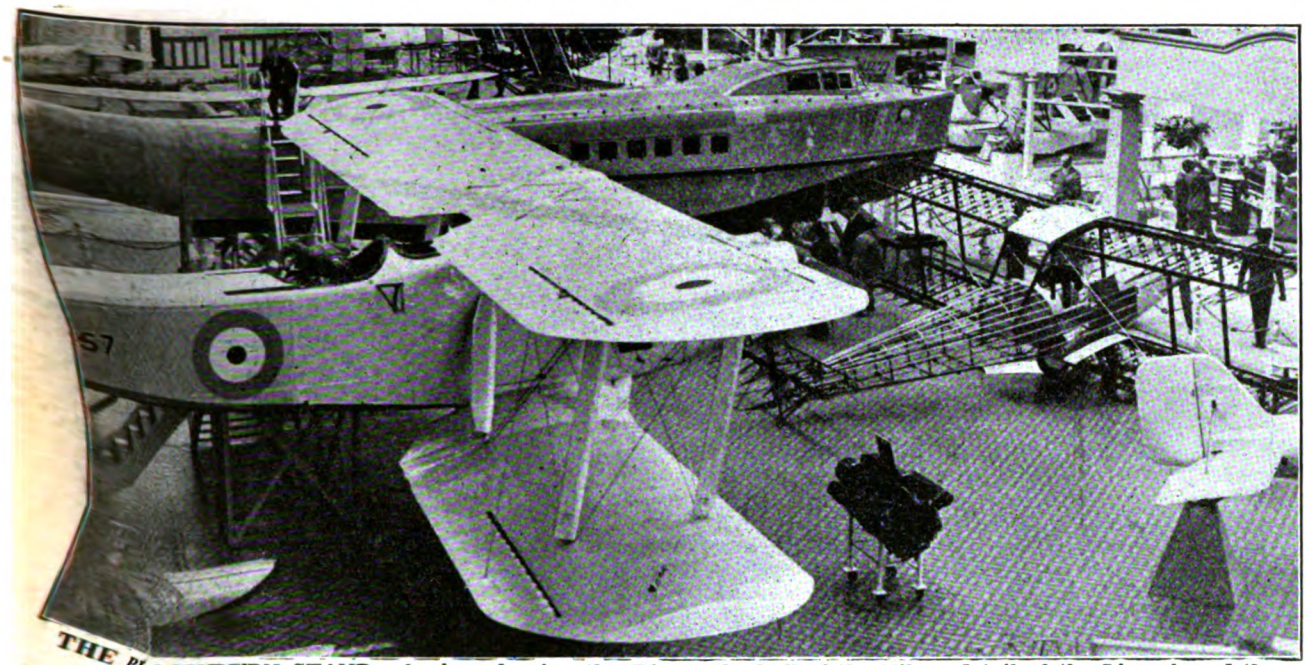


THE BLACKBURN STAND.—A view showing the Ripon, the hull of the Nile and tail of the Lincock and the skeleton of the Bluebird. (" Aeroplane " photograph.)

with half the horse-power which most nations use for the job.

The modifications which include the fitting of a geared Lynx engine and a divided undercarriage greatly improve the appearance of the machine.

The geared-Lynx allows for an improved nose cowling and the new undercarriage has permitted further cleaning up in this locality.

It is now of all-metal construction, the wing being built up with spars of the Bluebird type.

The fuselage is a four-longeron steel tube structure, and is in three sections. These comprise the engine-mounting, the main central structure and the tail section.

The fuselage aft of the cockpit is faired to an oval section by formers, and quickly detachable duralumin stringers, and covered with fabric.

The cockpit is very roomy and arrangements are made for the installation of equipment such as is carried on standard fighters of double the horse-power of the Lynx, although owing to its size it is not possible to install all the equipment at one and the same time.

On a gross loaded weight of 2,000 lbs. the Lincock with a geared Lynx has a top speed of 154 m.p.h. and can carry all the necessary instruments, two guns, parachute and oxygen gear or if only one gun is fitted full electrical equipment or wireless apparatus may be substituted.

Provision is made for fitting the standard 215 h.p. ungeared Lynx IV, the 200 h.p. supercharged Lynx or the 250 h.p. Lynx-Major, in place of the geared Lynx, and the performance varies in consequence.

With the Lynx Major the Lincock has a top speed low down of 164 m.p.h. and with the supercharged Lynx it has a speed of 170 m.p.h. at 15,000 ft.

The Ripon shown is one of the standard service type two-seat torpedo-carriers with the Napier Lion Series XI engine. It has been designed as a general utility Fleet Air Arm type.

As shown it is arranged as a torpedo-carrier, and in this guise the Ripon achieves the remarkable performance of carrying a load of over 3,700 lbs. at a maximum speed of over 132.5 m.p.h. at sea level.

Unlike previous torpedo aircraft in use in the R.A.F. the Ripon has a second cockpit for an observer-gunner, which not only extends its utility for the alternative purposes of bombing and reconnaissance, but also makes the torpedo-carrying type capable of defending itself and dispenses with the need for a protective escort.

The aft cockpit is fitted with the new patent Fairey high-speed gun mounting. This mounting, apart from giving a large firing area, does not restrict the space in the back cockpit, is lighter than the older type, and when not in use is locked, with its gun, in a concealed position in the top fuselage fairing.

The wings are fitted with interconnected slots and ailerons.

The Bluebird skeleton fuselage is of the type that has been fully described in the past. This skeleton is shown in place of the Nautilus two-seat Fighter-Reconnaissance ship plane which at the last moment was withdrawn from exhibition owing to service requirements.

Other exhibits on the stand include specimens of metal construction, photographs and a model of the Nile flying-boat and one of the new 60-passenger 6-engined flying-boat which is now being developed. This latter boat is similar to the Nile in general arrangement and will have six Rolls-Royce H engines, the middle four engines being in pairs in tandem with two tractor engines, one on either side, all on the wings.

BOULTON AND PAUL LTD., Norwich. Stand No. 108.

The Boulton and Paul stand, although of comparatively small size, is full of meat, or perhaps one should say, of metal.

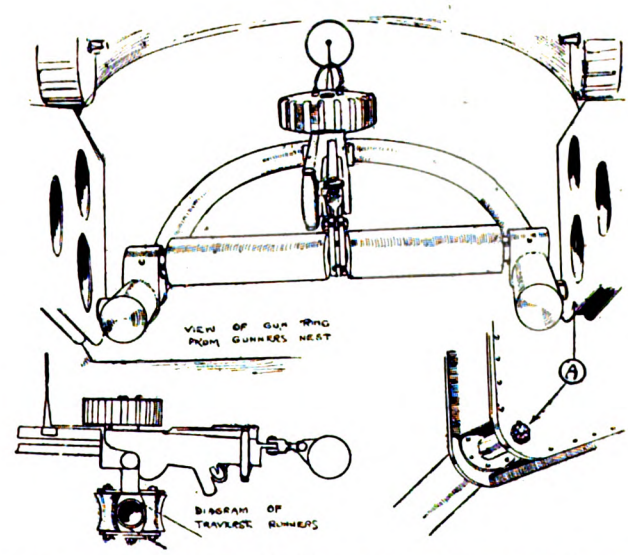
Raised above the stand is the main exhibit—the Sidestrand twin-engined medium-range bomber. In one corner is the Phœnix two-seat light monoplane and disposed round and between these two machines are a large number of specimens of B. and P. metal aircraft and airship construction.

The Sidestrand is shown half covered and half uncovered and is fitted with every form of equipment demanded by the Air Ministry. The construction of the Sidestrand is fairly well-known. The fuselage is a tubular structure, the main central section being of solid drawn tubes and the rear section of the patented B. and P. closed-joint drawn tube.

The nose section is now arranged to hinge to one side to allow for the easy insertion and extraction of equipment and for inspection.

Three gun positions are provided, one in the nose and two behind the wings, one above and one below the fuselage.

The bottom rear gun position has a special gun-mounting, which, owing to the shape of the bottom forward fairing of



The Boulton and Paul bottom rear gun mounting from the gunner's seat, looking aft under the fuselage.

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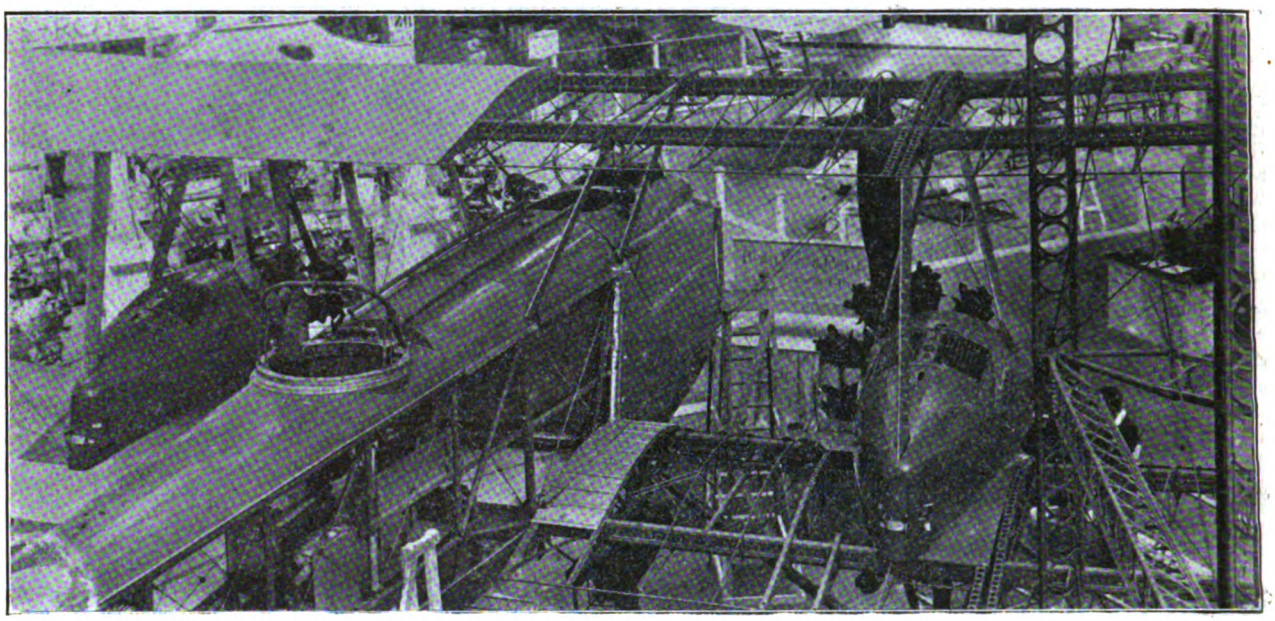


THE BOULTON AND PAUL STAND.—A view from the Gallery showing the partly uncovered Sidestrand and on the right a portion of a section of the framework of R.101. —(*"Aeroplane" photograph.*)

the fuselage is brought fairly low and below the rear longerons and provides an extensive field of fire aft, but it must decrease the speed of the machine.

Under the centre-section of the wings is stowed the bomb load. Within the bottom fuselage fairing, out of the air flow, but not enclosed, are racks for four 112 lb. bombs, and on either side under the centre-section roots are carried two 230 lb. bombs.

The engines are two 480 h.p. geared Bristol Jupiters. They are mounted on swinging engine-mountings to give access to the rear of the engines.

The rear cockpit is very completely furnished with wireless, guns and the usual military impedimenta. The new Irving observer's parachute pack, which is not worn until an actual emergency occurs, is stowed in a compartment on the right side of the cockpit.

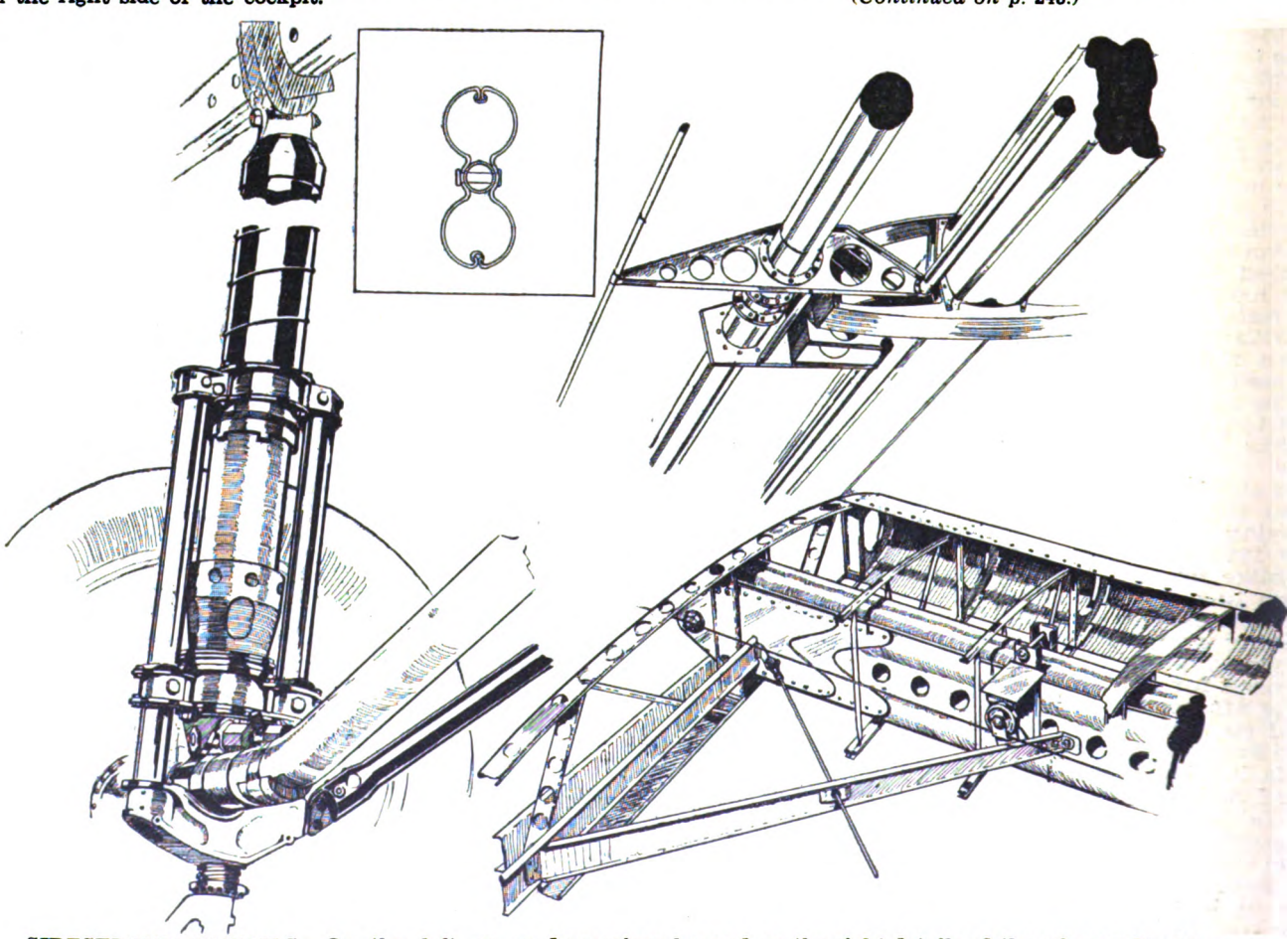
The tail control surfaces have ordinary horn balances and a servo rudder control in place of the earlier shielded horn balances.

The Phœnix two-seat light aeroplane is a small braced parasol monoplane with the 40 h.p. A.B.C. Scorpion engine. One feels that in this design bare utility has completely overruled any considerations of appearance or efficiency. It may be argued that this is a minor point so long as it flies, which it is said to do quite well, but the modern aircraft owner is becoming more particular about appearance in the same way that the car owner has in the past.

However, the machine shown is only a wooden experimental model for the production metal type, and several alterations will be embodied in the subsequent type.

The main undercarriage legs will be taken to the front centre-section fittings on the wing instead of to the top

(*Continued on p.* 243.)



SIDESTRAND DETAILS.—On the left an undercarriage leg and on the right details of the wing and aileron construction. Inset is a section of the new closed tube spar for light aircraft.

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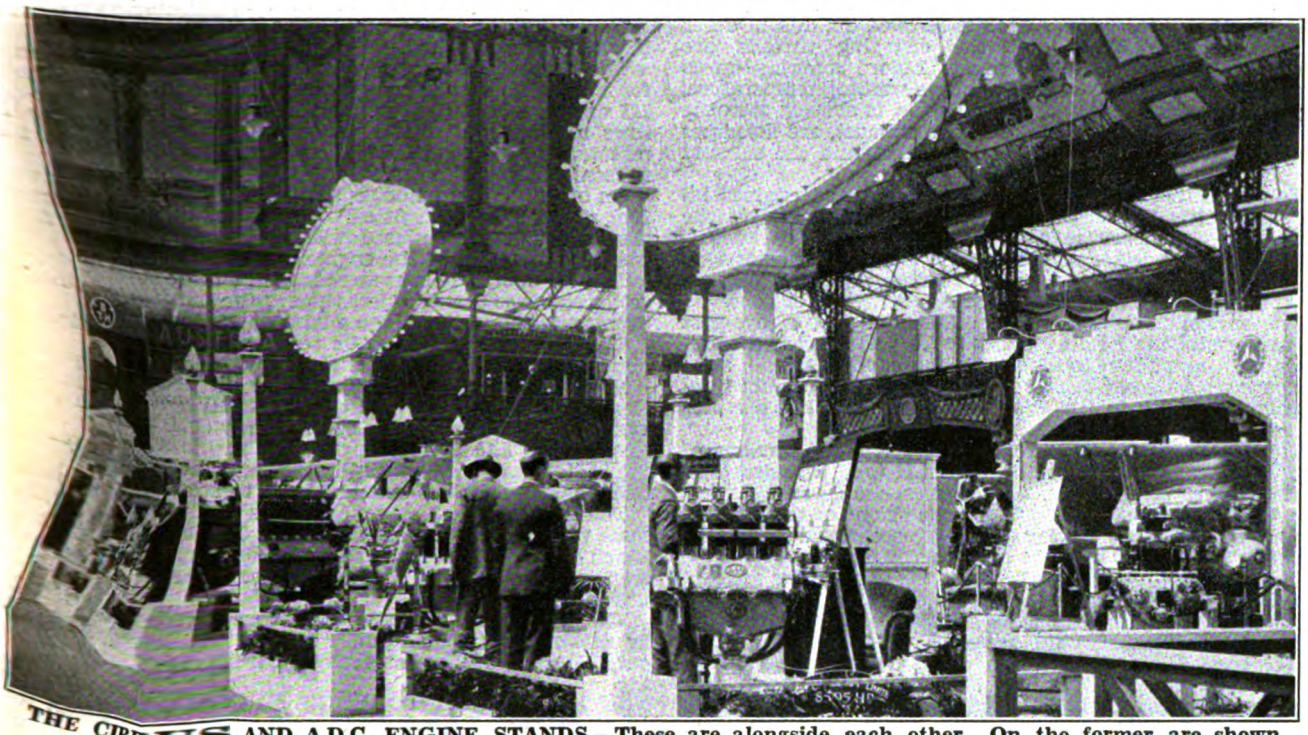
ENGINES AT OLYMPIA.



THE CIRRUS AND A.D.C. ENGINE STANDS.—These are alongside each other. On the former are shown the Cirrus and Cirrus-Hermes engines and on the latter the Nimbus and Airsix engines.
("Aeroplane" photograph.)

A.B.C. MOTORS LTD., Walton-on-Thames, Surrey. Stand No. 14.

Both types of aero-engines produced by A.B.C. Motors are shown on their stand together with a number of parts illustrating the detail design.

The lighter of the two engines is the A.B.C. Scorpion which is a horizontally-opposed air-cooled cylinder engine of 35/40 h.p. Owing to the increased interest shown in really light aeroplanes abroad these engines are being used all over the world. A number of new types for the owner pilot have recently been produced in this country which incorporate this engine. These are the A.B.C. Robin, the Glenny and Henderson Gadfly, the Comper Swift and the two-seat Boulton and Paul Phoenix.

The performance of the Scorpion has been improved by the fitting of a new carburettor which makes for smoother running.

The A.B.C. Hornet is virtually a double Scorpion and develops 80 h.p., so that it competes with the popular in-line air-cooled engines of roughly the same power. As the engine has two cylinders arranged in pairs on each side, when fitted in an aeroplane there is a very clean line to the top of the fuselage. This makes the engine an attractive proposition for use with the cabin monoplane type.

Originally the Hornet had four long bolts passing through the crankcase which were used for mounting. The latest improvement is the fitting of four tubes for the same purpose. These tubes finish in flanges which will pick up fittings on the main fuselage structure, thus considerably facilitating the work of the aircraft designer.

A number of parts in both engines are interchangeable. They both resemble each other in having a similar type of push-rod and rocker-operated valve gear, together with a dry sump lubrication system, and the employment of dual ignition from a twin-spark magneto.

A.D.C. AIRCRAFT LTD., Regent House, Kingsway, London, W.C.2. Stand No. 96.

A.D.C. Aircraft Ltd. are showing two engines which bear a very strong resemblance to each other and one can safely say that the air-cooled one was developed from the water-cooled one.

The latter is the 6-cylinder-in-line 300/330 h.p. Nimbus and is well known as an efficient successor to the war-time Puma. The former is the Airsix and is similar in many respects to the Nimbus, but is air-cooled.

The six large cylinders are set in one line and are relatively tall in comparison with the rather shallow crankcase, and have fins right down almost to the base.

The valve springs are sunk low in the deeply-ribbed head and the valves are operated with an overhead camshaft. In the Airsix the two carburettors are arranged one at each end of the cylinder block, thus decreasing the width of the engine as compared with the Nimbus, where the carburettors are at the side.

The two magnetos are, in both engines, across the rear end.

The Airsix is shown in two models—one cowled and one uncowled. The cowling is very neat indeed, and separate air chutes have been arranged for each cylinder, but though it might do for the engines under the wings of a multi-engined aircraft, it looks distinctly the work of an engineman and not an aircraft designer if it is meant to be applicable to the engine of a single-engined machine.

One has not heard of it being flown as yet, but, if successful, it should fill a definite want for the higher-powered class in air-cooled engines which at present is only catered for by the radial type.

ARMSTRONG SIDDELEY MOTORS LTD., Coventry. Stand No. 86.

This stand shows a range of the engines made by Armstrong Siddeley Motors Ltd. A Jaguar 460/500 h.p. engine is mounted on a frame so that it can be shown running. It is driven by an electric motor, and has several of the most important parts sectioned so that one is able to see all the parts actually working.

The other engines shown are the Leopard 700/805 h.p. 14-cylinder, the geared Jaguar 480/510 h.p. 14-cylinder, the Lynx 225/235 h.p. 7-cylinder, the Genet Major 103/110 h.p. 5-cylinder, the standard Genet 80 h.p. 5-cylinder, and the Mongoose 155/165 h.p. 5-cylinder.

All Armstrong Siddeley engines are of the static radial type. A point which speaks well for the makers is that all the engines shown are finished in the standard way and have no special show finish at all.

The engines are well shown on raised stands, which makes seeing them an easy matter. A box at the base of each engine is filled with leaflets in four languages,—so that foreign visitors are kept well informed.

A table in the middle has a display of different parts of the engines. This brings out the fact that many of the parts are interchangeable among the various engines.

THE BRISTOL AEROPLANE CO., LTD. Filton, Bristol. Stand No. 103.

The Aero-engine Department of the Bristol company are showing four radial air-cooled engines. These are the Mercury, Series III.A., the 515-550 h.p. Jupiter, Series IX.F., the 290-315 h.p. Neptune, Series I., and the 205-225 h.p. Titan, Series II., engines.

The Mercury engine is still on the Air Ministry Secret List, therefore little can be said about it. In general arrangement it is similar to the Jupiter engine. It is a nine-cylinder radial with a bore and stroke of 5.75in. by 7.5in. Unlike the Jupiter, the overhead-valve gear is enclosed in one large flat cover instead of two separate covers, and the push-rods are also enclosed.

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The Jupiter Series IX.F. engine has the new Bristol open-ended cylinders, with separate forged cylinder-heads of "Y" alloy. The cylinder barrel is a carbon-steel forging with integral fins. The cylinder head is screwed on, and in order to ensure a gas-tight joint, the engaging threads are machined with an interference fit. Before screwing on to the barrel, the head is heated to above working temperature, and after it is screwed on a steel band is shrunk over the joint. Four valves, two inlet and two exhaust, are fitted per cylinder, the inlet ports being at the back and the exhaust ports at the front of the head.

The induction system of the unsupercharged engines incorporates the Bristol patent spiral distributor, and in the F engines—that is, those fitted with the new type cylinders—six deflectors in place of the three fitted to the earlier type are used. This new arrangement reduces the spiral passage traversed by the mixture by approximately 25 per cent.

The induction elbow is exhaust-heated and a bye-pass valve permits the heating effect to be varied from a minimum to a maximum to suit operating conditions.

The engine shown is fitted with a Farman type 2 : 1 reduction gear, and in the F series engines this has a stiffer airscrew shaft and a large front bearing.

The Neptune and Titan engines are smaller versions of the Jupiter, and incorporate Jupiter F type cylinders and various other components. The former has seven cylinders and the latter five. There are seven versions of the Jupiter, including direct drive, geared and supercharged types, the first two with three different compression ratios.

These seven engines, together with the two smaller engines, provide a complete range of air-cooled radial engines with horse-powers ranging from 200 to 550. And this does not take into consideration the Mercury, which is still a semi-secret service engine giving a considerably higher horse-power than the Jupiter. The Bristol company have thus a range of engines, all based on the well-tried and world-famous Jupiter for the military and civil requirements of almost any nation.

To dilate on the merits of the Jupiter would be a sheer waste of time and space. Not only is it being used in almost every country boasting of an air service of any size, but it is also being built under licence in nine different countries. With such a popularity it is perfectly obvious that to anyone who is remotely interested in aero-engines, the claims and the performance of Bristol engines in general and of the Jupiter engine in particular are well known.

There is also shown on the stand a model of the latest Bristol Triplex carburetter with pump accelerating device and automatic boost control, an assortment of Jupiter components both rough and finished, and a Bristol Gas-Starter.

CIRRUS AERO-ENGINES LTD., Regent House, 89, Kingsway, London, W.C.2. Stand No. 99.

The Cirrus Engine stand is in the middle of the Main Hall.

Two examples of the new Cirrus-Hermes and one Cirrus Mark III are exhibited.

The Hermes has been developed in answer to the demand for an engine of somewhat greater power than the Cirrus III and has been designed as far as possible on motor-car lines so that the private owner will have no difficulty in maintaining his engine in perfect running order without the necessity of going to a skilled mechanic.

On one of the two models a Heywood starter and a patent fuel pump have been fitted to show how these accessories may conveniently be used without greatly increasing the overall dimensions of the engine.

The air intake has been redesigned, bringing the carburettor closer to the cylinders than in the Cirrus III and thus decreasing the width of the engine at the top.

On the Cirrus III is to be seen one of the M.P.L. steel airscrews, in which the blades are adjustable.

Both engines are of the 4-in-line air-cooled type. The Hermes is 105/116 h.p. and the Cirrus III 85/95 h.p. They were fully described in the special Show Guide issue of The Aeroplane. The Cirrus, anyhow, is now in such common use in light and medium-sized aeroplanes in almost all countries that descriptions should hardly be necessary.

The Hermes in an Avro Avian, as all the World knows, came very near to winning the King's Cup Race for Mr. T. N. Stack on its first public appearance, and but for the unforeseen trouble caused by a defective piston casting would have undoubtedly done so.

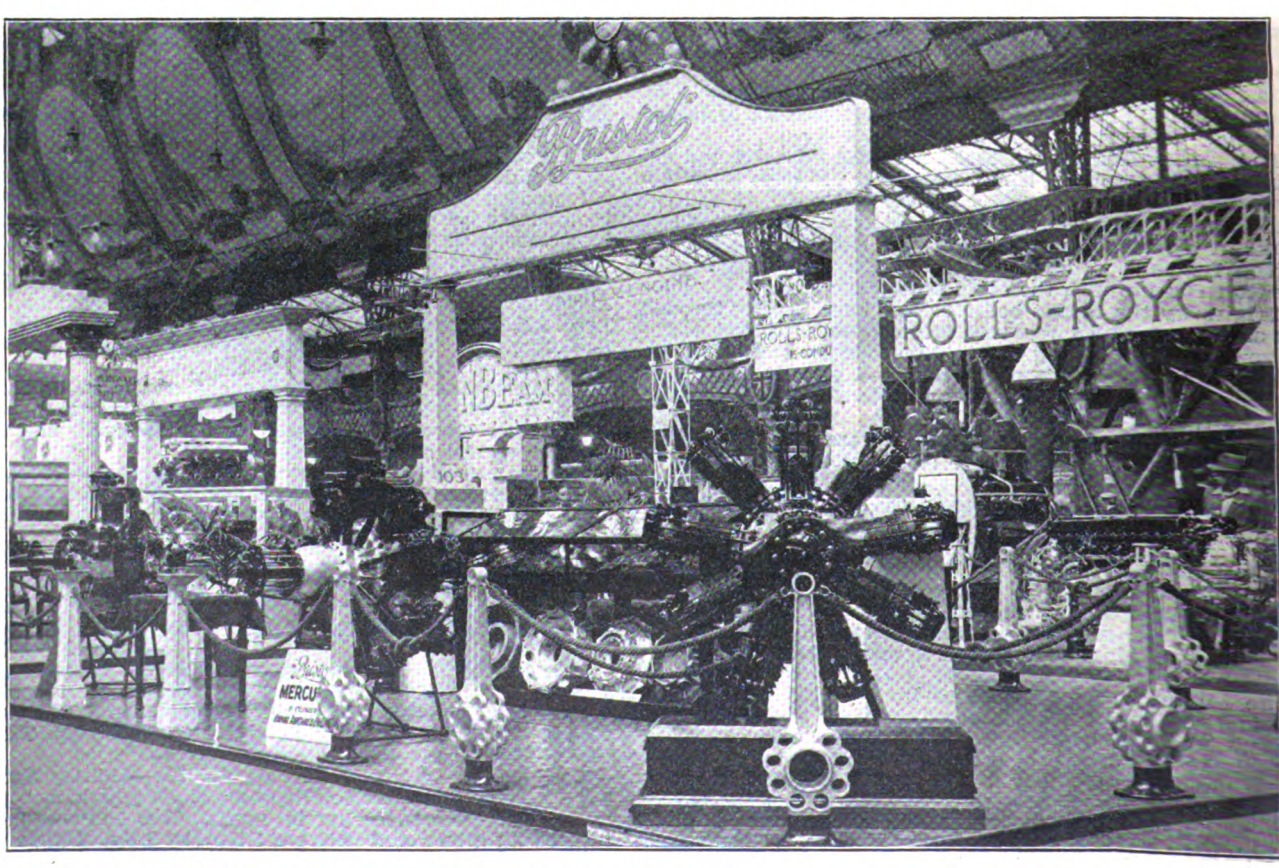
The makers have shown their confidence in the engine by making the trouble public instead of leaving people to guess about it and to be deceived by rumours.

THE DE HAVILLAND AIRCRAFT CO. LTD., Stag Lane Aerodrome, Edgware. Stand No. 15.

The De Havilland engine stand is a very small corner section of the aeroplane stand and thereon are shown two Gipsy engines. One of them is sectioned to show all working parts, the various components and "innards" being painted in distinctive colours to make inspection easy.

The other engine is a standard service Gipsy and is actually the sealed engine which has been flying continuously in a Moth for over 500 hours. It is shown just as it was taken out of the machine, except for a wash down.

A large card announces the latest score for the engine, and red ribbons, attached to the sealed points, all converge at a large red seal in the middle of the card.—A clever piece of showmanship.



THE BRISTOL STAND.—The two most prominent engines in this photograph are the new Jupiter XIF and the Mercury IIIA, the former on the right and the latter on the left.—(*"Aeroplane" photograph.*)

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This engine has now been flown for 502.3 hours, which represents a distance of 42,695 miles. The average petrol consumption over this distance was 19½ miles per gal. The oil consumption was 1,400 miles to the gallon. The tests will be continued after the Exhibition.

An additional announcement card at the back of the stand gives further information about the Gipsy engine, particularly with regard to its extended use all over the World. This card announces that the weekly production is 25 engines, which must represent the biggest production output of British aero-engines since the war.

The engine itself is too well-known to need description here. It has been twice described in THE AEROPLANE, the last occasion being in the special Show Guide published on July 12, 1929.

H. and M. FARMAN, Billancourt (Seine). **Stand No. 89.**

A 9-cylinder air-cooled radial 280 h.p. type 9EA geared engine, and the 18-cylinder inverted, water-cooled, supercharged 650 h.p. engine, are the two engine exhibits, and well show the diversity of types made by this firm.

FIAT (ENGLAND) LTD., 43-44, Albemarle Street, London, W.1. **Stand No. 91.**

Two models of the well-known Fiat water-cooled engines are shown on this stand. The first is the A.22, 620 h.p., and the second the A.25, 1,000 h.p.

There is a distinct family resemblance between the two engines. Both are clean, and the larger one differs only in minor details, such as having three carburettors and also four sparking plugs per cylinder. Both are direct-drive and not supercharged.

The A.22 is the same as was used by the well-known Italian pilots Ferrarin and del Prete in their flight from Rome to Brazil in a Savoia monoplane.

AUTOMOBILES HISPANO-SUIZA (GT. BRITAIN) LTD., 71, Carlton House, Regent Street, S.W.1. Stand No. 65.

The Hispano-Suiza stand is close to that of the Italian Air Ministry at the front end of the annexe. On the stand are examples of the familiar Hispano-Suiza types developed from the famous wartime models. Of especial interest are two samples of their latest design, one of these is a 12-cylinder Vee type developing 500 h.p. suitable for high-performance military aircraft and an in-line 6-cylinder engine giving 100 h.p. suitable for light aircraft. All the exhibited Hispano-Suiza engines are water-cooled.

The latest types incorporate some interesting features. In the early engines the steel cylinders were individually bolted to the crankcase, their upper ends being screwed into the aluminium water-jacket casting. In the latest types the cylinders are made from a special steel and afterwards treated with nitrogen, which results in a glass-hard surface. These steel cylinders are then screwed into a monobloc casting which is bolted direct to the crankcase. By this design it has been possible to increase the diameter of each cylinder by 10 mm. without increasing the overall dimensions of the engine. Apropos of the aforementioned nitrogen treatment there is on the stand a demonstration cylinder so treated, which visitors are invited to scratch with a file, whose efficiency they are first asked to test on ordinary mild steel.

All Hispano-Suiza engines are very clean in appearance, especially the 6-cylinder-in-line 100 h.p. engine.

The 12-cylinder Vee engine of a nominal 500 h.p., which, however, develops a maximum output of 750 h.p., has the remarkably low power-weight ratio of under 1½ lbs. per h.p.

A detail improvement is the fitting of a special bye-pass arrangement in the lubrication system so that on starting oil may be immediately supplied to the big ends, whence it is splashed over the cylinder walls. By this means the necessity for slow running up to warm the oil is obviated, and in an emergency a start may be made in 16 secs.

FABRICA AUTOMOBILI ISOTTA FRASCHINI, 89, via Monterosa, Milan, Italy. **Stand No. 98.**

Three "Asso" engines are shown on this stand, the 1,200 h.p. 18-cylinder broad arrow water-cooled geared engine, the "Asso Caccia" 420 h.p. 12-cylinder Vee, direct drive, air-cooled engine, and the "Asso 500" 12-cylinder Vee, direct drive, water-cooled engine.

This stand cannot fail to attract a crowd owing to its "flower-garden" layout. In fact, the people in charge have had difficulty in defending the flowers against being picked.

The 1,200 h.p. engine is mounted on a stand about 9 ft. high and has a large four-bladed airscrew. The pedestal is completely surrounded with flowers and "grass," and the whole is surmounted by an ornate archway, which makes an exhibit that certainly forced one to look at it.

The firm makes engines from 80 h.p. to 1,200 h.p., with and without reduction gear, and is amongst the first to make extensive use of magnesium alloy castings, as they have their own foundry for this purpose.

BRITISH MERCEDES-BENZ LTD., 37, Davies Street, Grosvenor Square, London, W.1. **Stand No. 97.**

The engines shown on this stand might almost be called the Alpha and Omega, for the two exhibits are about as far apart as it is possible to be in every way. The smaller is the 20 h.p. 2-cylinder type F.7502 and the larger the 800/1,000 h.p. 12-cylinder type F.2.

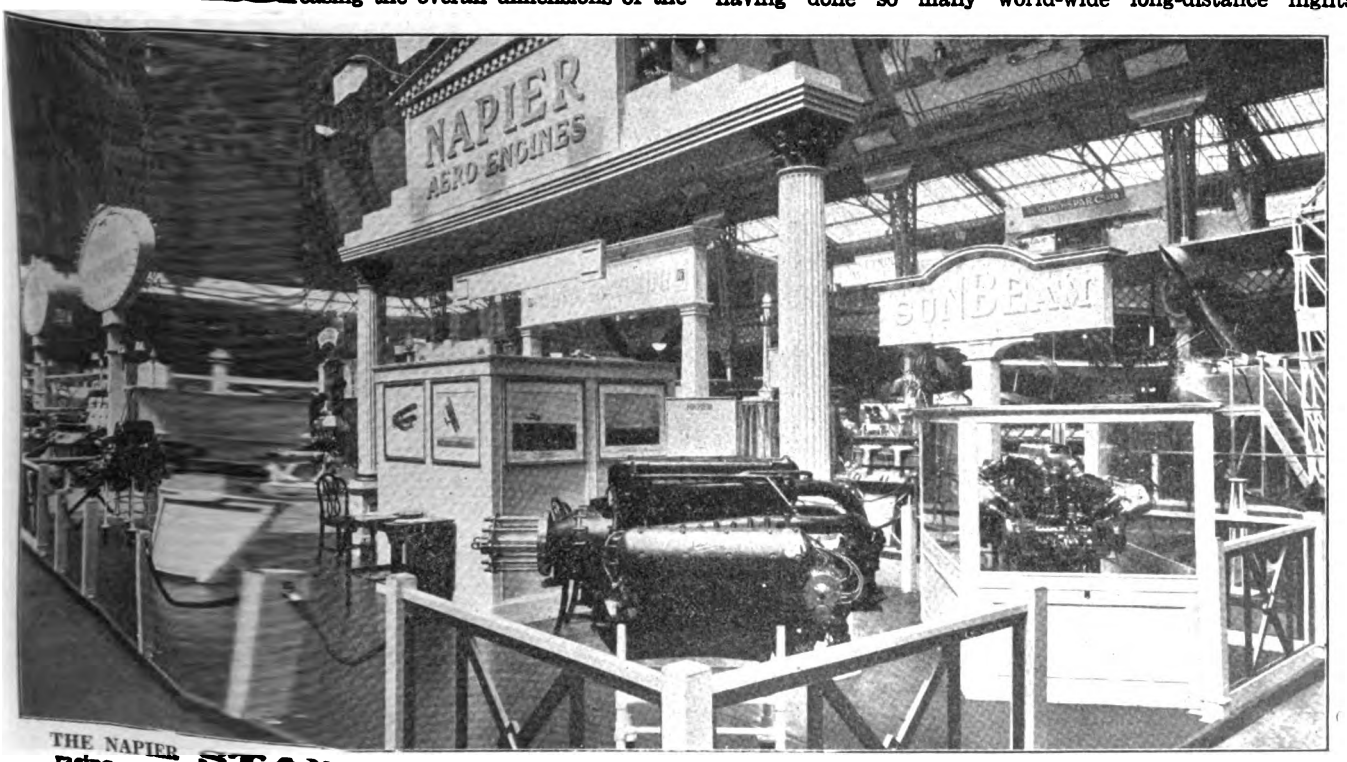
The F.7502 is chiefly known in this country in connection with the Klemm light aeroplane. It is horizontally-opposed flat twin and the airscrew is driven through a planetary gear with a ratio of 3:1 and is air-cooled.

The larger is a Vee type water-cooled engine of massive construction and has a compressor in the induction system and a spur-wheel reduction gear to the airscrew shaft.

Externally this engine is clean and accessible but gives one the impression of unnecessary bulk. In actual weight it is, however, not over-heavy, being 1,800 lbs. with the compressor.

D. NAPIER AND SON LTD., Acton. **Stand No. 100.**

Napier engines, holding as they do so many records and having done so many world-wide long-distance flights,



THE NAPIER STAND.—The three engines seen in the photograph are, from left to right: the Series VIIB racing engine, the Series IX standard service type engine and the one in the glass case, on the right, the sectioned Series V engine.

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should not need any introduction, and detailed descriptions have already been given in previous issues.

The Napier stand is in the middle of the main hall and in comparison with its flower-bedecked foreign competitors is distinctly austere in yellow and gold. The engine exhibits are relieved by a selection of pictures showing well-known aircraft with Napier engines, most of which are well known to the general public.

Four engines are shown on this stand. Two are Series XI engines as used in the Fairey monoplane (exhibited in the Show) which flew non-stop from England to India. These are widely used in the R.A.F. to-day in all classes of aircraft.

The Series VIIB, the racing model of the same engine, gives 875 h.p. at 3,300 r.p.m. This engine, with a weight of 1.063 lbs. per h.p., must be the lightest water-cooled engine in the world.

Engines of this type were used in the last Schneider Trophy Contest at Venice, in the machine which gained the fastest speed in the air, namely 319.57 m.p.h., the car which holds the World's Land Speed Record, the boat which won the World's Motor-boat Speed Championship, and the car which broke the World's Land Speed Record over 5 miles and 5 kilometres.

This engine differs from the Series XI in that the magnetos are put in the front, the gearing is neater, the carburettors are closer to the engine and the cylinder-head casings are neater. And, naturally, the compression-ratio and tuning generally are suitable for this type of work.

The remaining engine is the Series V, a type that was used on the Far East cruise of the four Supermarine "Southampton" flying-boats and also the 1926 and 1927 Cairo to Cape Town flights with four Fairey IIIF aircraft.

The Vickers Victorias which recently evacuated the foreign inhabitants of Kabul were fitted with this engine. The model shown is show-finished and sectioned and is displayed in a glass case driven by an electric motor so that all moving parts may be seen at work.

In this model the carburettors are placed in front of the engine and it is slower running than the other models, but the other differences are not visible to the eye of the layman.

GEORGE PARNALL AND CO., Yate, Bristol.
Stand No. 93.

Alongside the Parnall Aeroplane Stand is a small island occupied by the Pobjoy engine, which is shown attached to a light tube mounting. This engine, which was designed by Mr. D. R. Pobjoy, is being assembled by George Parnall and Co., hence their presence as an aero-engine exhibitor. There is also a cabinet containing the major parts, such as connecting-rod assembly, crankshaft and gears.

The Pobjoy engine seems to be the ideal engine for the light aeroplane. It has low weight—including the mounting plate it weighs under 2 lbs. per h.p.—there are seven cylinders making for extremely easy hand starting, and the engine turns round at 3,000 r.p.m., making it delightful to fly behind. As the engine is geared a very much larger airscrew can be used. The gearing is so arranged that the thrust line of the airscrew is above the centre line of the crankshaft. This permits the use of a larger airscrew without lessening the normal ground clearance.

Tests with a light aeroplane which had previously been fitted with a heavier and more powerful engine showed greatly improved performance when fitted with the Pobjoy engine. This is really interesting, as the trend at the moment is to fit higher and higher powered engines; yet here is a way out,—a small smoothly running engine with a geared airscrew and low weight per h.p.

Another particular feature of the engine is the fitting of hand starting gear. The number of cylinders and their small individual volume make it easy to turn the engine over by means of a simple quadrant and ratchet device to which a cord pulled from the cockpit is attached.

The engine has already been described in THE AEROPLANE but its essential features are as follows. It is a seven-cylinder air-cooled radial with reduction gear. The cylinders are of steel and are screwed into aluminium heads. Dual ignition is fitted. The Zenith carburetter feeds to the centre of a spider of induction pipes through which the gas is distributed to each cylinder. The airscrew is driven by a double helical spur gear with 1.91 to 1 reduction.

A flywheel steadies the torque on these gears and at the same time is used as a centrifugal filter for the oil, any dirt being deposited inside the wheel whence it may be removed by detaching a cover.

The whole engine is mounted on a simple plate pressed from stainless steel which also serves as a duct for the ignition wires.

THE REDRUP LEVER ENGINE SYNDICATE. 4, Broad Street Place, E.C.4. Stand No. 12.

The Redrup Lever Engine Syndicate is showing in public for the first time the Redrup "Fury Mk. II.," axial air-cooled lever engine, suitable for light aircraft. On the stand is shown a sectioned engine which is being operated by an electric motor to demonstrate its action, and two empty "power-eggs," one designed for a Redrup Fury engine and one suitable for a standard radial air-cooled engine of similar power, the relative sizes of which are adequately shown.

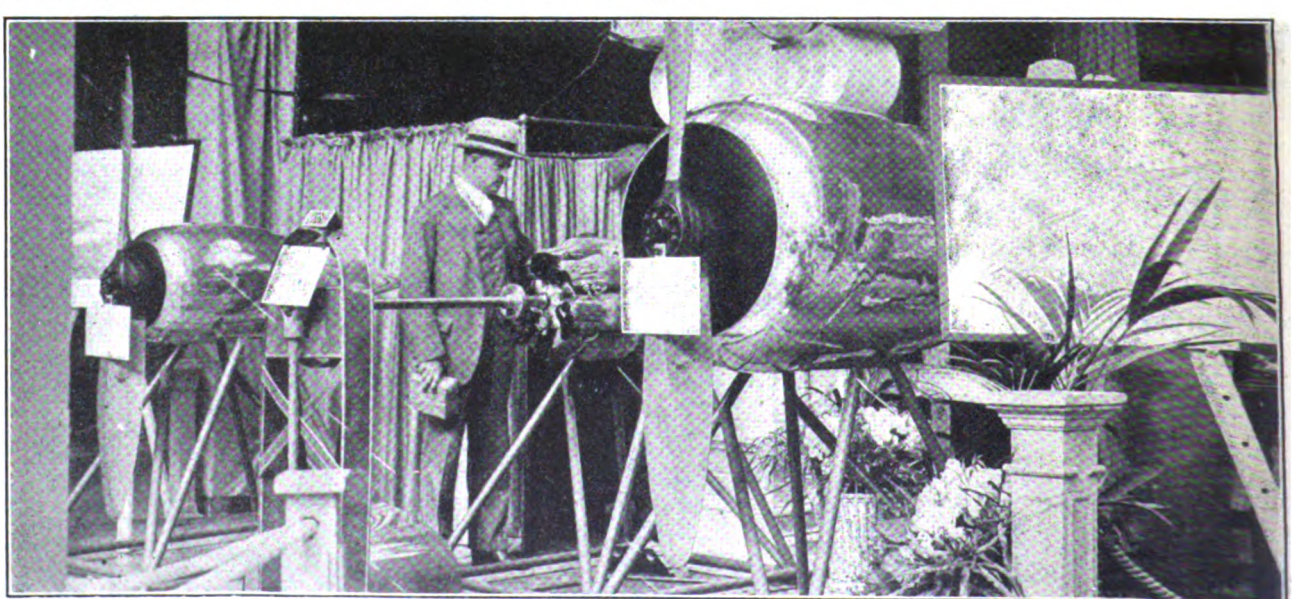
The Fury is a 90-95 h.p. engine with seven cylinders lying parallel to and around the crankshaft. The crankshaft is of a flattened "Z" type, and carries on ball bearings on the middle leg of the "Z" a seven-pointed star member. The seven ends of the star member are opposite the seven cylinders, and are connected to the pistons by connecting rods through universal joints at the star end and gudgeon pins at the piston end. The star member is prevented from rotating by a stabilising fork or gimbal hinged at the centre of oscillation and held at a point of the crankcase where the full torque reaction of the engine is taken.

A single carburetter is mounted below the engine, and feeds to a central chamber, and thence by radial passages cast in the crankcase to the inlet valves. The valves are operated radially by a campack on the crankshaft, the inlet and exhaust ports being on the outsides of the cylinders and disposed radially round the engine.

Two B.T.H. magnetos fire two plugs per cylinder.

The Fury is designed to develop 85 h.p. at 2,000 r.p.m., with a maximum output of 95 h.p. at 2,250 r.p.m. The cylinders are 3 7/16in. by 4 5/8in. bore and stroke, and the weight is 220lb., which gives a weight-power ratio of 2.61lb. per h.p. The overall diameter of the engine is 18¼in., and the length is 37in.

The engine has already flown in a Simmonds Spartan, and an example is being prepared for the Air Ministry Type Test.



THE REDRUP LEVER ENGINE STAND.—In the centre is the sectioned engine and on the left and right respectively are cowlings suitable for the Redrup Fury axial engine and a radial engine of equivalent power.
("Aeroplane" photograph.)

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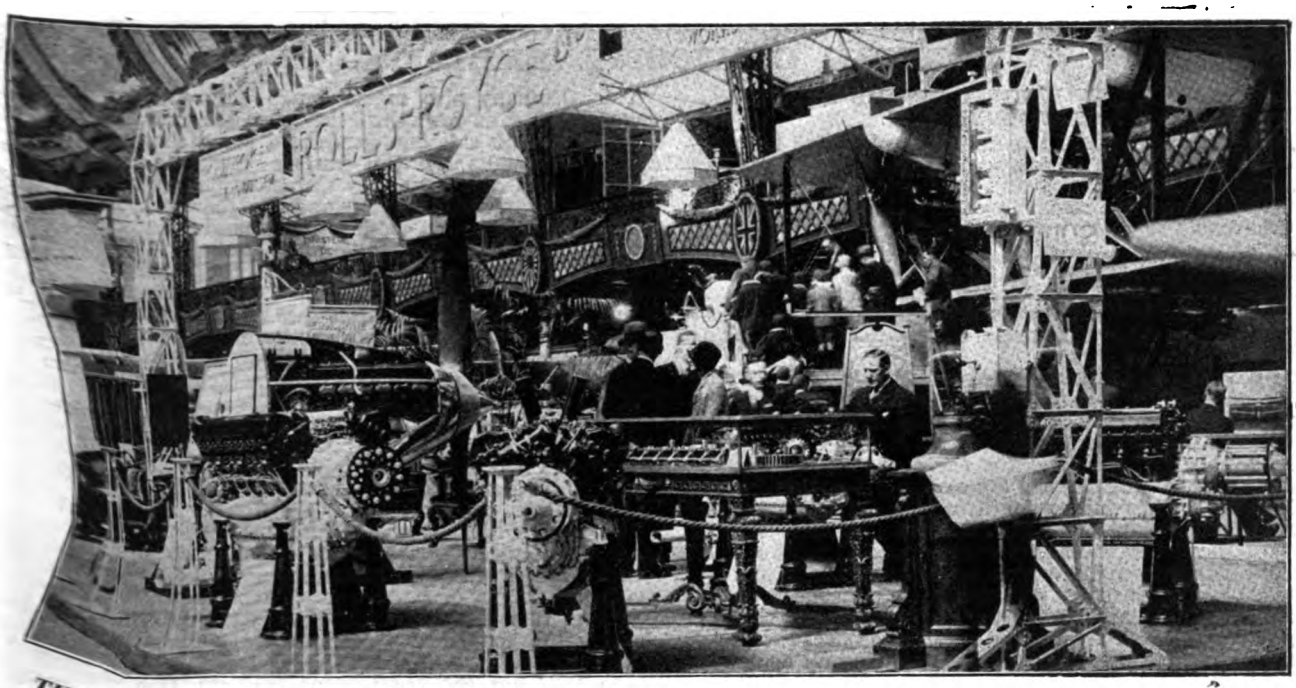

THE ROLLS-ROYCE STAND.—On this stand are shown various specimens of the "F" and "H" type engines and in the middle of the stand may be seen the "F" type engine in the standard cowling of the Hawker Hart day bomber.

The Fury has considerably less head resistance than any radial engine of equivalent power. An engine of this size (18½in. diameter), however, should best be able to demonstrate its real merits when installed on the wings of a multi-engined machine which has engines either in streamlined nacelles or mounted direct in the wing. The size of the nacelle cowling shown on the stand as suitable for this engine amply demonstrates this.

In larger sizes, developing correspondingly greater horsepower, the engine opens up an entirely new field for itself. For high performance military aircraft an engine which combines a small frontal area with the simplicity and low frictional losses of the Redrup Lever engine is very desirable. At any rate, Mr. M. L. Bramson claims that the firm is the first to have solved the problem of "closing the sunflower."

ROLLS-ROYCE LTD., 14/15, Conduit Street, London, W.1, and Derby. Stand No. 102.

Two types of engine are shown on this stand, the H and F.

The H type is normally rated at 830 h.p. and the F type at 400 h.p.

The former is shown in its standard condition with gearing to the airscrew shaft and a moderate supercharger in the induction system. The latter is shown with and without supercharger, and also on a mounting similar to that used in the Hawker Hart and fitted with a complete set of cowling.

The F type is now well known as a 12-cylinder Vee, water-cooled engine and has been thoroughly described in the Show Guide issue of THE AEROPLANE.

The H type follows the F in general design, but the bore and stroke have been increased and the supercharger is fitted as standard.

Compared with the old familiar Falcon, Eagle and Condor engines the F and H types are remarkable for their cleanliness of outline. No engine in the World gave more faithful service in the War 1914-18 and since than did the Rolls-Royces, but their multiplicity of external parts scared some people. The new types are not surpassed by any engine in the World for external simplicity and internal goodness.

STATAX-MOTOR A.G. Zurich, Switzerland. Stand No. 63.

The only rotary engine at Olympia is the 40 h.p. 7-cylinder Statax. It is of an unfamiliar type, and was, one believes, designed before the war. It has recently been resurrected by the Statax-Motor A.G., of Zurich, Switzerland, who exhibited this engine at Berlin last year, at Geneva this year and now show it at Olympia.

The Statax engine has its seven cylinders arranged parallel to and circumscribing the axis of rotation. The connecting rods are ball-ended and carried by a so-called stroke-ring which rotates in an inclined plane about a fixed shaft in the axis of rotation. All the cylinders and the stroke-ring revolve about the fixed shaft, and as the stroke ring revolves in an inclined plane the pistons travel in and out. The connecting rods are slightly inclined to give initial motion. The fuel is fed into the hollow fixed shaft and passes thence by annular slats to the cylinders. The valve gear consists of a single sleeve per cylinder which opens and closes the inlet ports in the fixed shaft and the exhaust ports. These latter are in the outer cylinder walls and exhaust straight into the atmosphere.

The main features claimed for this engine are its low frontal area and good cooling. The overall diameter is 16½ in.

One was told on the stand that the Statax company hope to be able to demonstrate one of their engines fitted in a German light aeroplane in this country before the end of the Aero Show.

THE SUNBEAM MOTOR-CAR CO. LTD., Moorfield Works, Wolverhampton. Stand No. 101.

Two engines are shown on the Sunbeam stand, one an internal combustion engine of 1,000 h.p., and the other a compression-ignition engine of 104/112 h.p.

The 1,000 h.p. is designed by Mr. Coatalen and is probably the largest engine in the show.

It is a 12-cylinder Vee type, geared, water-cooled. So far as one can understand, it is still in the experimental stage and is likely to remain so. The model shown is the property of the Air Ministry, and consequently details are not given to any extent.

The smaller engine is a six-cylinder, vertical, water-cooled, compression-ignition engine. Many of the difficulties of this type have been overcome, but, as with the former engine, it is still only experimental, and with its present weight can hardly be a feasible proposition for aeroplane use.

With a B.M.E.P. of 102, and weighing 4.35 lbs. per h.p., it has obviously a long way to go yet. Solid injection is used at a pressure of 10,000 lbs. per sq. in., and good atomisation is got by injecting direct onto the apex of the conically-shaped piston.

Excellent results have been obtained with one and two-cylinder test engines of this type and the Sunbeam Co. deserves every credit for the development work they have, and are doing with this type. It is to be hoped that we shall shortly see a flyable engine marketed by them.

J. WALTER AND CO., Prague XVII-Jinonice, Czechoslovakia. Stand No. 94.

The engines shown by the firm of J. Walter and Co. are the Vega 85 h.p. 5-cylinder, the Venus 110 h.p. 7-cylinder, the Mars 145 h.p. 9-cylinder, and the Castor 250 h.p. 7-cylinder.

These engines are all of the static radial, air-cooled type and are thoroughly up to date in all respects. The firm has a large factory in Czechoslovakia at Prague and is exporting their engines to all parts of the world.

Large numbers of International Air Records have been gained with Walter engines, amongst which may be mentioned the closed circuit for both single and two-seater light aircraft, and the great flight of Major Vicherek from Prague to Bednyl Dimyanovsk, near Spask in Russia, a distance of 1,245 miles.

These engines are robustly built and simple, and the chief aim of the firm has been to produce an engine which will run for a long time in amateur hands without needing overhauling, and from the results they have obtained in tests they would seem to have succeeded.

A show stand in the middle shows photographs of aircraft of various types fitted with Walter engines.

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FOREIGN COMPOSITE EXHIBITS.

THE COLLECTIVE EXHIBIT OF THE GERMAN AIRCRAFT INDUSTRY.

Along the north side of the Annexe, and behind the Simmonds and Dessoutter stands, are the German exhibits.

The first to which one comes, walking along by the wall, is a two-seat machine resembling the Hill Pterodactyl. This machine has two seats in tandem, with a Bristol Cherub engine at the back driving a pusher air-screw. The wings, which are covered in three-ply, are swept back, but without being tapered. Along the trailing edge are flaps, two on either side. One was given to understand that the outermost pair take the place of the normal elevators, while the inside ones are used as ailerons.

The place of the rudder is taken by spoiler-plates which can be extended above and below the leading edge of the wing just before the front spar. This machine is made by Soldenhoff-Langguth and Friedman of Berlin.

Next to this comes the stand of the Argus Motoren-Gesellschaft, which is probably the oldest aircraft engine factory in Germany. They built quantities of six-cylinder engines during the War 1914-1918. Recently the firm has designed a new four-cylinder in-line inverted air-cooled engine of 80 h.p. and it is this engine which is shown on the stand.

Two 80 h.p. engines are mounted back to back on an inverted pyramid of steel tube. These engines are particularly clean and are beautifully finished. And it is easy to see what a good streamline may be obtained by fitting an engine of this type, especially in cabin monoplanes.

While on the stand one was shown a photo of the new high-wing cabin monoplane recently built by the Arado firm, which is equipped with this engine. The forward view from the cabin is remarkable. There are no projections.

The Argus engine has an electron crankcase, steel cylinders and light alloy heads; the oil is carried in a separate compartment in the crankcase above the crankshaft. Two magnetos are above the front bearing of the crankshaft.

There are two scavenger pumps and one pressure pump. Each cylinder has one exhaust and one inlet valve operated by push-rods.

Next door is the stand of the Haw Propellerbau. Above this stand is a three-bladed airscrew rotated by an electric motor. This is fitted with variable pitch mechanism which can be operated from the foot of the stand. Round the stand are more airscrews of various shapes and sizes illustrating the Haw type of construction.

The particular feature of these airscrews is that the blades are cast in a light alloy, but all the loads are taken by a system of steel rods inserted from the inner end of the blade and screwed into place. These blades are then placed in a two, three, or four-armed boss and locked in position at the required pitch.

For the variable pitch airscrews a similar type of construction is used, but the mechanism used for turning the blades is neither illustrated nor described.

These blades have been tested under flying conditions with a piece cut out of the outer blades. No damage resulted from this test as the interior system of steel rods took all the various forces.

This Company also makes brake airscrews for testing engines and fans for ventilation purposes and the like.

Lastly on this side one comes to a stand showing models and photographs of the various German aerodromes. Amongst these are some very attractive photographs of the town of Dortmund. The following aerodromes are represented on the stand besides Dortmund:—Lubeck-Travemünde, Cologne, Halle-Leipzig, and Hamburg.

Immediately across the gangway is the Rohrbach stand with a big model of the Romar. This model, unlike the actual Romar, which has three B.M.W. engines with a total horse-power of 2,000, has four Jupiter engines arranged tandem fashion, that is to say, it has two nacelles, each with one tractor and one pusher airscrew. The model has also a kind of N.A.C.A. cowling.

The whole side of the model is cut away so that the interior equipment may be studied. The curious double curves of the planing bottom are quite unlike anything in this country. The stand is also illustrated with flying pictures of the Romar, the Rostra and the Roland.

The next exhibit is the B.F.W. M.23 low-wing two-seat monoplane,—very like a Klemm. This machine has a five-cylinder radial air-cooled Siemens engine of 68/82 h.p., but the Genet, Cirrus, or Hermes can also be fitted.

Besides this machine the B.F.W. stand contains charts showing the comparative performances and so on of the firm's other aeroplanes and many photographs of them.

The M.23 has cantilever wings built on the well-known Messerschmitt monospar construction. The wing is covered with three-ply except for the wing tips and the trailing edge. The fuselage is built of wood with three-ply covering. The tail unit is of wood with fabric covering.

The undercarriage is of the divided type with very simple elastic loop springing.

The wings are arranged to fold back. This is done by removing three bolts at each side of the fuselage, turning the trailing edge of the wing upwards and then folding it back against the fuselage.

The biggest of the German exhibits is the Heinkel E.9, which is a three-seat twin-float seaplane with a B.M.W. VI 500 h.p. engine.

This machine is a low-wing monoplane with a welded steel tube fuselage and wooden wings. The fuselage is covered from the nose to behind the aftermost cockpit with light metal. The remainder is covered with fabric.

The steel-tube engine-mounting is detachable. The tail unit is of steel tube with fabric covering. The tail-plane is adjustable in the air, but the fin can only be adjusted from the ground.

The wings have two spars of the box type and are strengthened along the leading edges with plywood. The entire wings are covered with fabric.

A fuel tank is carried between the spars of each wing close to the fuselage, whence the petrol is pumped to a gravity tank in the fuselage, just above the engine.

The floats are rather crude compared with the all-metal types made here. They have a single step and are made of wood. Each is divided into seven watertight compartments.

THE JUNKERS EXHIBIT.—The Junkers Junior Light Monoplane with the Armstrong-Siddeley Genet engine.

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An example of German thoroughness and willingness to learn from experience is shown by the provision on the underside of the floats of handrails, and the building in of a small compartment which can be opened from either the top or underside of the float.

During the seaplane trials organised by the German Government, when a Heinkel machine won first prize, another machhine crashed and turned over in the water. As the emergency rations were in the machine and not in the float, the pilot was killed, and that is why special provision is made to prevent the recurrence of a similar tragedy.

The float undercarriage is made to form part of the wing-bracing structure.

The whole machine strikes one as being particularly suitable for its job, which is the training of pilots.

Next comes the Junkers' stand, where there is a model of an aeroplane hangar built by the Junkers' special method of steel Lamella construction, which allows the big span required for the housing of aircraft.

Inside are a number of models of well-known Junkers' types. There are also a number of Junkers' pumps.

But the chief attraction of this stand is a new light aeroplane, known as the Junior. This machine has the general Junkers' characteristics. It is a cantilever low-wing monoplane. The metal covering of the wings, fuselage and tail-unit is of the familiar corrugated type.

The wing, built in the usual Junkers' fashion, is in three portions, the two outer panels being attached to the centre section on which the fuselage rests.

The narrow chord ailerons extend the full length of the outer panels.

The cockpits are roomy and nicely equipped with a full range of instruments, including a fire extinguisher.

The undercarriage consists of two steel V's hinged to the bottom of the fuselage, and two vertical shock-absorbers to the lower plane.

The machine has extremely clean lines and looks very neat. This, coupled with the fact that no rigging is required, and that there are no easily damaged fabric-covered flying surfaces, and that a machine with a Genet engine has a top speed of 109 m.p.h. makes it very attractive.

The price complete with Armstrong Siddeley Genet engine, C. of A. and registration is £795.

Coming round the corner one arrives at the Dornier stand where, against a background of polished wood hung with pictures, is a model in metal of the Do.x with a removable roof so that the interior may be studied.

As everybody knows, this machine has twelve Siemens-Jupiter engines arranged in pairs, tandem fashion, over the leading-edge driving six tractor and six pusher airscrews.

A small runway in the wing allows a mechanic to reach any of the engine while the machine is in the air. The wings are braced by three outwardly sloping struts on each side to the sponsons which give the boat its lateral stability on the water. Examination of the model emphasises the sensibleness of the design.

There is also a model of the Do.S with four Jupiter engines. And there is a model of a racing 'plane with two engines of 1,000 h.p. The latter consists of a low-wing monoplane with two floats continued upwards at their aft end to form the tail, the fuselage being replaced by two engines in tandem, one driving a tractor and one a pusher airscrew with the pilot placed between them.

THE COLLECTIVE EXHIBIT OF THE FRENCH AIRCRAFT INDUSTRY.

Immediately behind the Italian stand, in the Annexe, is the stand organised by the *Chambre Syndicale des Industries Aéronautiques.*

The first machine one notices is a Lioré et Olivier LeO. H.181. This is a two-seat monoplane cabin flying-boat with the engine mounted high above the wing. The hull is built of wood and has a flat bottom with a single step, and is very robustly built. It is divided into a number of water-tight compartments. The monoplane wing is of the full cantilever type, covered with three-ply, and is water-tight.

Two outboard floats for lateral stability are placed nearly half-way between the hull and the wing-tip. They are made in two halves, of duralumin, and are joined along the line of division by a U-section capping strip.

The tail-unit consists of a fin built up from the stern-post with the tail-plane passing through it at mid-height. This is braced by struts from the bottom of the hull. One noticed that the tips of the wooden tail-planes and fin are made of beaten duralumin sheet.

The engine nacelle is mounted above the centre section on rather a light arrangement of struts. The 120 h.p. Salmson engine is placed forward, and drives a pusher airscrew through an extension-shaft coupled to the engine by a flexible plate coupling.

The tanks are in the wing on either side of the hull.

The cabin, which is totally enclosed, is forward of the wing and seats two side-by-side, and the crew enter by sliding back the starboard window, and also sliding back part of the roof. There is plenty of room inside. Dual control of the normal type is fitted. The tubes used for the control-rods seemed unusually large.

On the other side of the stand is the Potez 36, which is a two-seat, high-wing cabin-monoplane, with a 60 h.p. Salmson engine. The wings fold round the rear spar and round hinge-points on each side of the fuselage at the lower longerons. To this point the V bracing-struts are attached.

The machine has a divided-axle under-carriage with long shock-absorber legs attached to points high up on the fuselage. The cabin, which seats two side-by-side, is entered through a door on the starboard side. Dual control of normal type is fitted. The feature of the French stand is the big display of engines made by Lorraine, Salmson and Renault.

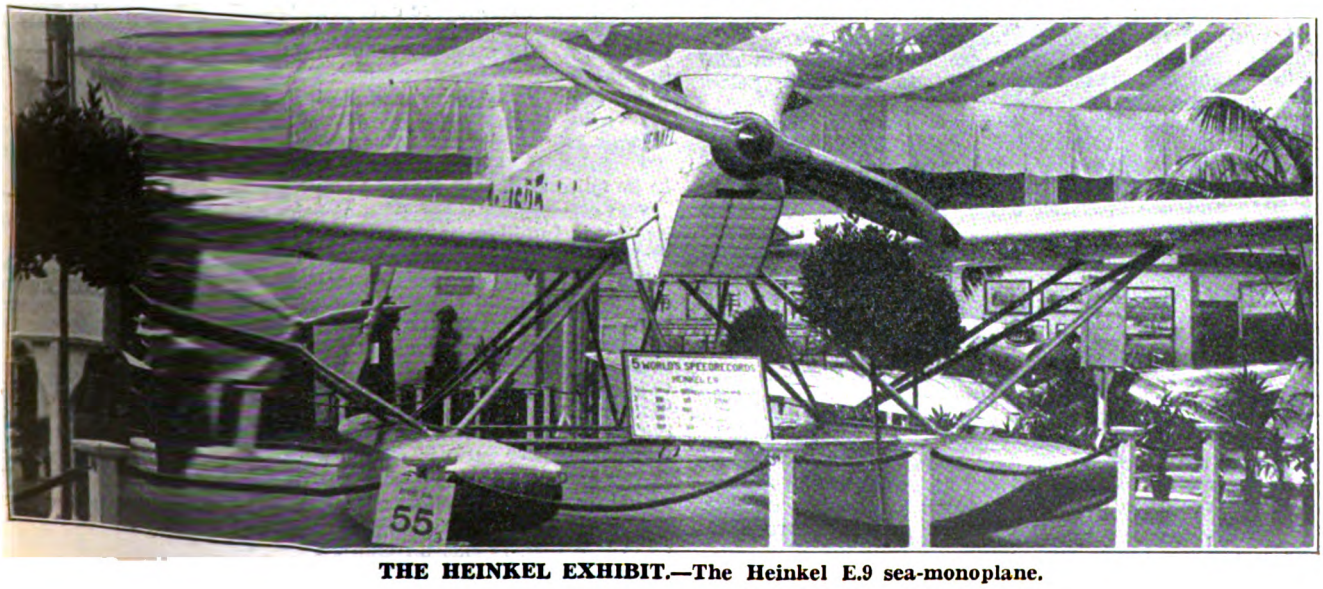
The Lorraine Company are showing two new air-cooled radial engines, one a 5-cylinder of 100 h.p. and the other a 7-cylinder of 240 h.p.

Besides the 450 h.p. 12-cylinder and the 650 h.p. 18-cylinder, the company show a 600 h.p. 12-cylinder water-cooled engine of the broad-arrow, or W, type. This engine is noticeable for its clean design and the neat way the components have been fitted in. Four Zenith carburetters are used.

Next to the Lorraine stand is the Salmson firm, who show a range of their radial air-cooled engines, including a big 500 h.p. 18-cylinder. This is unusual in that the double row of cylinders is placed in pairs and not staggered.

The smallest engine on their stand is the 40 h.p. 9-cylinder, which has given such a good account of itself on the various light aeroplanes, especially the Klemm. The 60 h.p., the 95 h.p., and the 120 h.p. engines, which have 5, 7 and 9 cylinders respectively, have their parts interchangeable.

All the French aero engines at the Show are remarkable for their fine finish. A casual observer of the Salmson stand is struck by the neatly finished exhaust collector rings and the unusual type of valve springs employed.



THE HEINKEL EXHIBIT.—The Heinkel E.9 sea-monoplane.

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These springs are of the type known as the "Arab" cradle spring, when used forty years ago for bicycle saddles. They are not concentrically placed round the valve stems and used in compression in the usual way, but are in torsion, which means that the spring is kept a long way from the hot valve, and thus there is little chance of failure due to over-heating.

The Salmson engines are habitually supported during assembly or usual maintenance work by a shackle clamped to a single valve rocker—rather a startling demonstration of the robustness of the engines.

The heads of the Salmson engines are built up by a special process peculiar to the firm. The closed steel cylinder has the fins of the head, the bosses for the valve guides, the exhaust and inlet ports welded on. The fins are afterwards cleaned up by hand.

Beyond the Salmson stand are a number of aircraft tyres and wheels made by the Palladium Company.

Turning the corner of the stand, one comes to the Renault engine. The makers, besides showing the well-known 12-cylinder water-cooled engines of 500 h.p. and 600 h.p., are also showing a new 9-cylinder air-cooled radial of 250 h.p. Perhaps the most interesting exhibit to people in this country is a 70/95 h.p. 4-cylinder in-line air-cooled engine. This is the French counterpart of the well-known English motors of this type, and no doubt the French light aeroplane movement will profit by having an engine of this kind available.

The price of the Potez 36, fitted with this engine, is £450, which is certainly a very attractive figure for a two-seat cabin-monoplane.

Next to the Renault stand is that of Barbier, Benard and Turenne, who are very well known as the makers of optical equipment for lighthouses. The firm have supplied lighting equipment for aeroplanes all over the Continent, and have also shipped a large amount of material to the United States, where a number of landing grounds are fitted with their products. In the middle of the stand is a revolving beacon with two 8,000 candle-power lamps, each of which is placed between two lenses. These two lights are rotated by an electric motor, and can be seen for over 200 kilometres. This particular lamp has been sold for use in Poland, where a night-flying service is being organised.

There is also a landing floodlight of 20,000 candle-power, mounted on a trolley for use on aerodromes. There is a Neon beacon with a flashing device which can be easily fitted with any combination of Morse signals, enabling pilots to identify the light at once.

Types of small floodlights for the illumination of landing grounds and the like, and using 1,000 or 1,500-watt lamps, are also on the stand, together with wing-tip lights for aeroplanes.

The Rateau stand comes next, and on this are the two types of super-charging compressors made by this firm. One is driven by the exhaust gases, and the other is mechanically operated and can thus be disconnected when not required.

Beyond this is the stand of the *Compagnie Aérienne Française*. This stand is ornamented with maps and the aerial photographs from which they have been made. The Compagnie, besides aerial photography, specialises in taxiwork at a rate of 8 francs per kilometre. They also advertise a cross-Channel service from Calais to Dover for a fare of £1. This includes 10lb. of baggage per person.

Against the wall are stands showing the activities of the *Compagnie Générale Aéropostale* and the *Compagnie Internationale de Navigation Aérienne*. There is also a stand of the *Yacco Compagnie S.A.F.*, who specialise in the production of mineral oils for the lubrication of aero-engines.

Finally, there are the Vinay parachutes. This firm also supplies numerous accessories, such as naphthas, petrol gauges, and the like.

Louis Vinay specialises in the production of parachute equipment and has also patented a caterpillar landing gear.

The parachutes are made in either the seat or back type, have an auxiliary spring "kite" for withdrawing the main parachute and are operated either statically or by means of the usual ring.

These parachutes, like other Continental types, dispense with the harness and employ a deep corset belt with a quick release buckle. This allows the belt to be also used as a safety belt by the addition of two straps which fasten it to the sides of the cockpit, these straps being furnished with quick release buckles.

A leather flying suit, incorporating a pack for the parachute, is also shown. This suit takes the place of harness.

The caterpillar landing gear consists of two sausage or banana-shaped frames round which a rubber tread runs over a number of rollers on ball bearings. These frames replace the normal wheels and are attached to the chassis by a hinge near the rear of the tread mechanism so that the tread can adjust itself to a suitable angle for surmounting obstacles. Westinghouse brakes are also fitted.

THE COLLECTIVE EXHIBIT OF THE ITALIAN AIRCRAFT INDUSTRY.

In the Annexe at the end of the Main Hall are placed the aircraft of the various foreign exhibitors, and in the middle of these is the stand organised by the Italian Air Ministry.

On the end of the stand nearest the main hall are two light aeroplanes, the Ro.5 and the Breda 15. In the centre of the stand is the new 7-cylinder Fuscaldo constant-power engine with the Fiat C.R.20 seaplane in the background.

The Colombo engine is also exhibited, together with scale-models of all the well-known Italian aircraft.

There is shown a plaster model of the Benito Mussolini Medical Institute which is being built for the medical examination of pilots.

The Ro.5 is an interesting two-seat light monoplane with a Fiat A.50 80 h.p. engine built by the Officine Ferroviarie Meridionali, Napoli, for the Italian Government's light aeroplane competition. It is a high-wing monoplane with an extremely wide-track undercarriage.

The fuselage is built of welded steel tubes. The wings are of wood and are braced by "N" struts on each side.

To fold the wing back the front leg is disconnected from the undercarriage structure and clipped to the wing which then folds back on the rear "V," hinging round a point on the bottom longeron. The doors to each cockpit are quite large and permit of very easy access.

Dual control is fitted. This has, as a standard fitting, a device which should be adopted in this country. While in the air the instructor can disconnect the pupil's controls by a Bowden cable, thus avoiding any disaster which might occur through the pupil "freezing onto" the control stick.

The machine shown is of the open type but glazed panels may be fitted round the cockpits and up to the wing, thus converting the machine into a cabin monoplane. There is one fuel tank in each side of the wing.

An unusual feature in a light aeroplane is the provision of flap-gear for decreasing the landing speed. The flaps are the same as the ailerons and extend the whole span of each wing. These can be lowered or raised by a simple screw-gear in the cockpit without affecting their use as ailerons.

The Breda 15 is a two-seater light monoplane with a 85 h.p. Colombo S.53 4-cylinder in-line air-cooled engine. It is a totally enclosed cabin monoplane of the high-wing type, with seats in tandem. As the centre-section is glazed the cabin is very light. Each seat has its own door, the after one being unhandy in that it hinges from the roof.

The undercarriage has a narrow track like the conventional English aeroplane. The wings, which are braced by one pair of parallel steel-tube struts on each side, are folded by uncoupling the front strut, which is supported at half its length by a subsidiary bracing from the wing.

As in the Ro.5, flap gear is incorporated with the ailerons. This is operated by a simple change-over device at the foot of the control column.

The C.R.20 is a most attractive-looking machine and has quite a good performance. The wings are rigidly braced Warren-girder fashion, and the floats are attached by a steel tube undercarriage which is so designed that it dispenses with any cross-tubes. This should considerably decrease the resistance of the floats on the water.

These floats are made of wood and are beautifully finished. The planing bottoms are curved in the same way and appear to have the same lines as the best types of metal floats made over here. This wooden construction allows the floats to be completed with no projections of any kind. The two floats have water-rudders of rather small dimensions.

In spite of the large number of accessories fitted in the cockpit this appears to be very roomy, and the actual covering, which is fastened to the steel tube fuselage, appears to be quite stiff.

The ailerons have the type of balance which Herr Dornier has made familiar, having a small balancing plane mounted above the larger surface.

The Fuscaldo engine has only recently been developed and is an attempt to provide constant power and performance at varying altitudes for light aeroplanes. The crankcase casting is of such a shape that it forms the streamline nose of the aeroplane. The three-bladed airscrew which is fitted is adjustable in pitch and can be operated by the pilot. The engine efficiency is secured by a constant mixture feed obtained by a centrifugal compressor. As a result, the weight-to-power ratio is rather high, namely 3½ lbs. per h.p.

A number of accessories, such as wheels, airscrews, radiators and parachutes, are also shown.

A rather neat engine-starter, or Garelli Air Compressor as it is called, is also on the stand.

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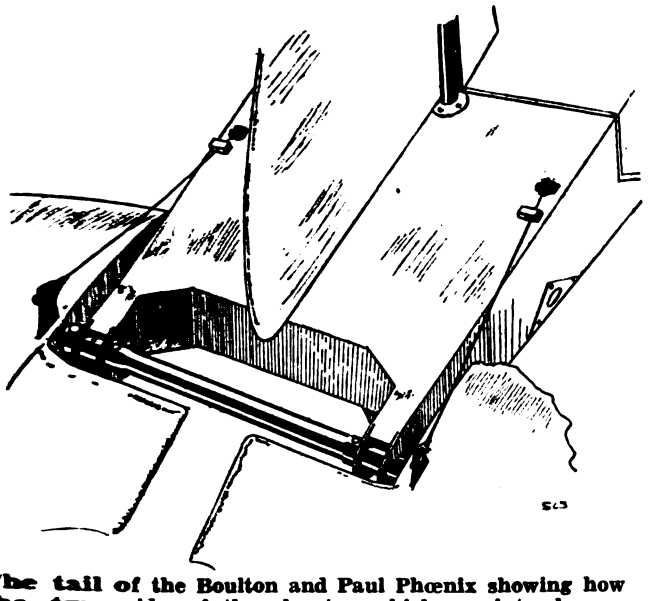


The tail of the Boulton and Paul Phœnix showing how the two sides of the elevator, which are interchangeable with the rudder, are attached.

(*Continued from p. 242.*)

longerons, the top longerons will be dropped to give a domed roof to the fuselage instead of the present flat one and access to the front cockpit will be improved by hingeing the front portion of the centre-section. At the same time the exhibited machine embodies many good points and at the price it is proposed to sell it—£375—it should find a market. [Personally one regards the two-cylinder type of aeroplane as unworthy of the attention of a big aircraft firm. And this particular style of machine is not likely to find many buyers in any case. One recommends a complete re-design of the whole thing.—C. G. G.]

A section of one of the main rings of R.101 is also shown, together with a longitudinal. Both these are test sections and are something like three years old, but their age is not apparent. A Sidestrand spar 30 ft. long is shown, apparently balancing precariously on its end. Actually it is sunk some 18 inches into the concrete base of the stand.

Various boards and cases show specimens of Boulton and Paul metal construction, such as their patented spar, which is made up from a few standard components into a large variety of spars, and various sections of their patented closed-joint tubes. The closed-joint tube is now being produced in the form of a streamline tube, the rolled joint being down one of the sides.

THE BRISTOL AEROPLANE CO. LTD., Filton.
Stand No. 104.

The Bristol Company are showing two complete aeroplanes and the mock-up of the front end of a single-seat fighter of the *genus Bulldog* with the new Bristol engine-cowling.

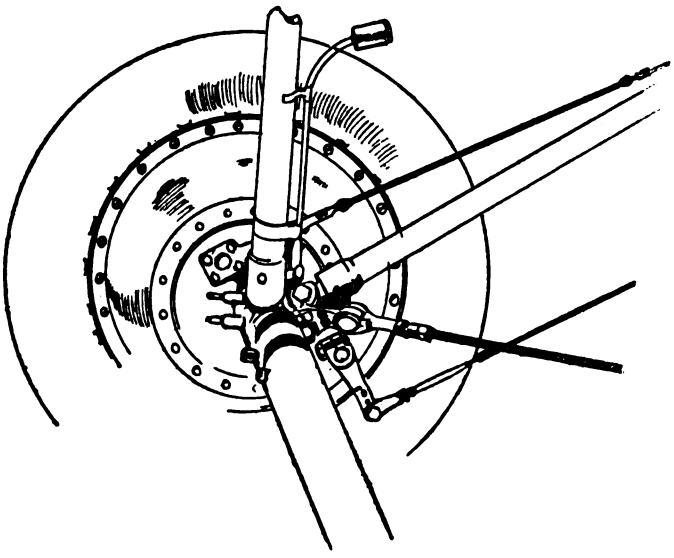
The Bulldog, which is exhibited half covered and half uncovered, is of the type which is now familiar to many people. It is in the same state as that shown at the last Paris Show twelve months ago—in fact one feels safe in saying that the Olympia machine is the identical one exhibited at the Salon.

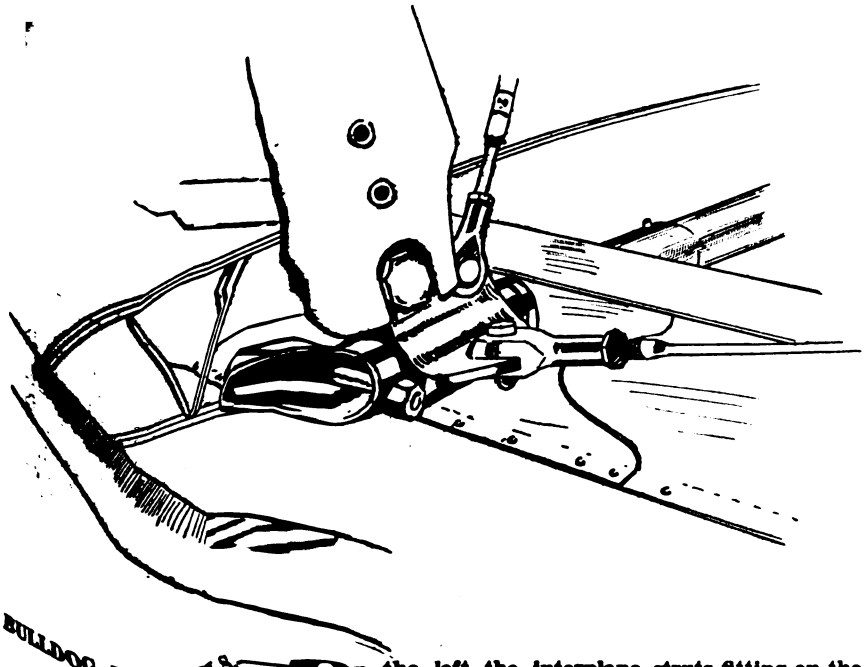
The intervening period during which it has been kept on the ice has not detracted from the impression one gathered originally—that it represents one of the very finest examples of all-metal construction that has been shown to the public at large.

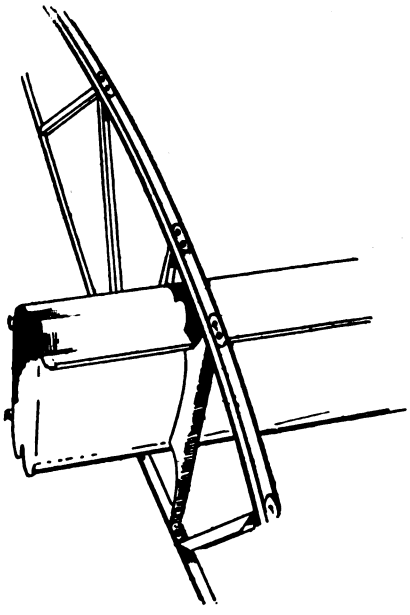
The performance of the Bulldog was shown with considerable effect at the R.A.F. Display on July 13 and as all performance figures were published in the Guide Issue of THE AEROPLANE it is unnecessary to go further into the matter, beyond correcting a regrettable misprint in the Show Guide, which made the Bulldog's speed 148 m.p.h., whereas it is in fact 168 m.p.h.—*without* the supercharger.

The Bristol 110A is an entirely new product and represents Capt. Barnwell's idea of the modern four-seat cabin machine. We are so familiar with the single-engined cabin monoplane as produced in America that the first impression gained when seeing the 110A is that it is not what it is meant to be. The second impression, however, is entirely different.

It is an extremely clean biplane with single-bay wing-bracing, a wide divided undercarriage, an unbraced tail, a







BULLDOG DETAILS.—On the left the interplane struts fitting on the wing spar, on the right the rib attachment to the spar, and above the wheel brake.

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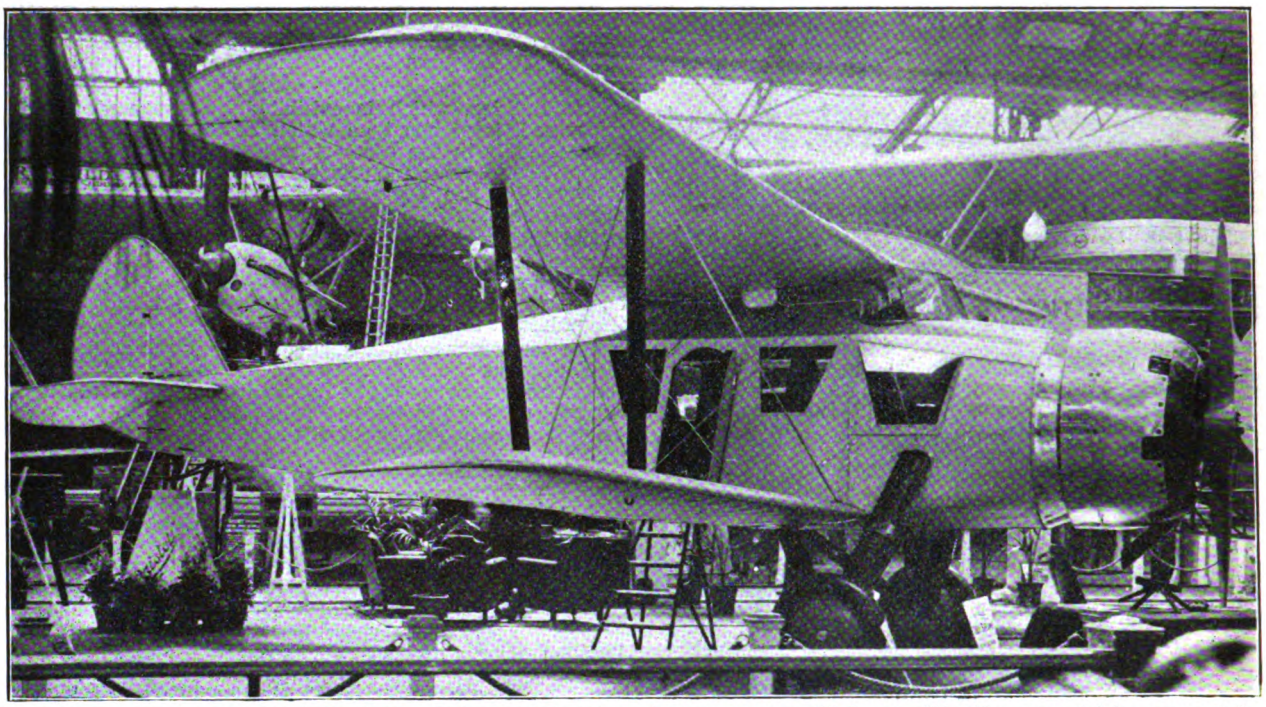

THE BRISTOL CABIN BIPLANE.—The Bristol 110A. four-passenger biplane with the completely encowled Bristol Neptune engine. —(*"Aeroplane" photograph.*)

fuselage that fills the gap between the wings, and a completely-cowled Neptune engine (7 Jupiter cylinders).

When one compares this with the bigger-spanned monoplane with wing-bracing struts, and undercarriage struts divided between the bracing structure and the fuselage, and a partially exposed radial engine, the claims of the monoplane type are not so obvious.

The fuselage structure of the 110A., which is only exposed on one small portion of the fuselage below the windows on the left side, showed it to be of the "Bulldog" type with the exception that it is of the rigid type with no wire bracing.

The pilot's cockpit is very roomy and has accommodation for one seated centrally on an adjustable seat. The front and roof windows over the cockpit are fixed but the sides of the cupola are permanently open. The cabin seats four passengers, the back two on one wide seat across the back of the cabin and the other two on separate seats, the backs of which fold down. These two seats may be folded sideways out of the way when necessary.

Windows along each side of the cabin are fixed, but above each window is a hinged ventilator which connects with the outer air through louvres in the sides of the fairing between the top fuselage longerons and the upper wings.

There is ample head room but the one entrance by a side-door aft on the right side seems insufficient

Although once in the air no sane passenger should want to get out, yet a feeling that a door is handy from any seat without having to fold down seats and climb over other passengers' legs has a comforting effect on some people. And in a crash the betting is even that the machine falls on the door side and jambs it.

This is quite a minor point, but it is apt to elicit from elderly passengers remarks similar to those uttered when they are invited for a ride in an expectant nephew's sports automobile.

The Bristol engine cowling is similar to the now fairly well-known N.A.C.A. type. It is shown over a geared Bristol radial engine and differs from the N.A.C.A. type in that the front of the ring forms the exhaust ring, all exhaust pipes being led straight forward to the exhaust chamber. This cowling arrangement has been the subject of experiment by the Bristol company over a long period and is only shown because of the publicity given to the N.A.C.A. type.

THE CIERVA AUTOGIRO CO. LTD., Bush House, Aldwych, London, W.C. Stand No. 20.

The Cierva Autogiro Company show the C.19 Mk.I. two-seat light autogiro with the 80 h.p. Armstrong Siddeley Genet engine. This type is the first to incorporate a self-starting device for the rotor. This is in the form of a boxed tail unit, the sides of which form the fins and rudders. The tail plane and elevator form the top and bottom of the box and are staggered in relation to one another. These two surfaces may be turned up through a fairly wide angle and are so related that when turned up they form a continuous chute between the sides of the box which deflects the slip-stream upwards onto the rotor.

The machine has wheel brakes and with the wheels fully braked the self-starting device ensures a rotor speed of 130 r.p.m. in 45 seconds. The machine is designed to lift at 160 r.p.m. so that the take-off run is calculated not to be more than 30 yards.

As soon as flying speed is reached the bottom tail plane may be locked back into place as a fixed surface and the upper plane becomes the normal elevator.

Two stabilising planes are fitted, with narrow chord ailerons and the extreme tips of these planes are turned up at a sharp angle. This angle is so arranged that when the machine is descending vertically the upward blast onto the rotor is calculated to limit the rate of descent to 14 ft. per second.

The Genet engine is completely enclosed with cowling of the N.A.C.A. type, and this blunt nose combined with the big tail unit gives the machine a very stumpy appearance.

The rotating vanes are built round a steel tube spar with box ribs and mahogany planking. The four vanes are mounted on a quadrupod of steel tubes. The steel forged hub incorporates radial and thrust ball-bearings and a braking system.

The undercarriage is of the wide divided type. The oleo legs have a travel of 12 inches and Bendix wheels and brakes are fitted as standard.

The machine is finished in gold, picked out with blue, and the vanes are of varnished mahogany.

Besides the complete machine, a rotor vane and a complete rotor hub are shown.

THE DE HAVILLAND AIRCRAFT CO. LTD., Stag Lane Aerodrome, Edgware. Stand No. 16

On the De Havilland stand are shown three Gipsy-Moths a Hawk-Moth and *the* Tiger Moth. On the most prominent corner of the stand is mounted an all-white Coupé Moth on a pedestal within the base of which are shown, behind glass panels, over seventy cups and trophies won by Moths in various parts of the World. Among this collection are five out of the eight King's Cups in existence. [Some bright person, wanting to get for Olympia that publicity which it has lacked, proposed that Sir Charles Wakefield's King's Cup should be stolen. He felt sure that our respected Sir Charles mourning for such a treasured possession would touch the hearts of even the daily papers.—C. G. G.]

This particular Coupé Moth is exceedingly attractive with its all-white enameled finish. Even the wheels are covered with fabric and enameled white. Along each side of the fuselage is the word "Moth" in huge embossed gold letters. Altogether the prettiest exhibit in the Show. [Personally one does not agree. The all-white enamel makes it look even more like a bathroom than is Mr. Jackaman's, and would certainly be called "The Whited Sepulchre." The

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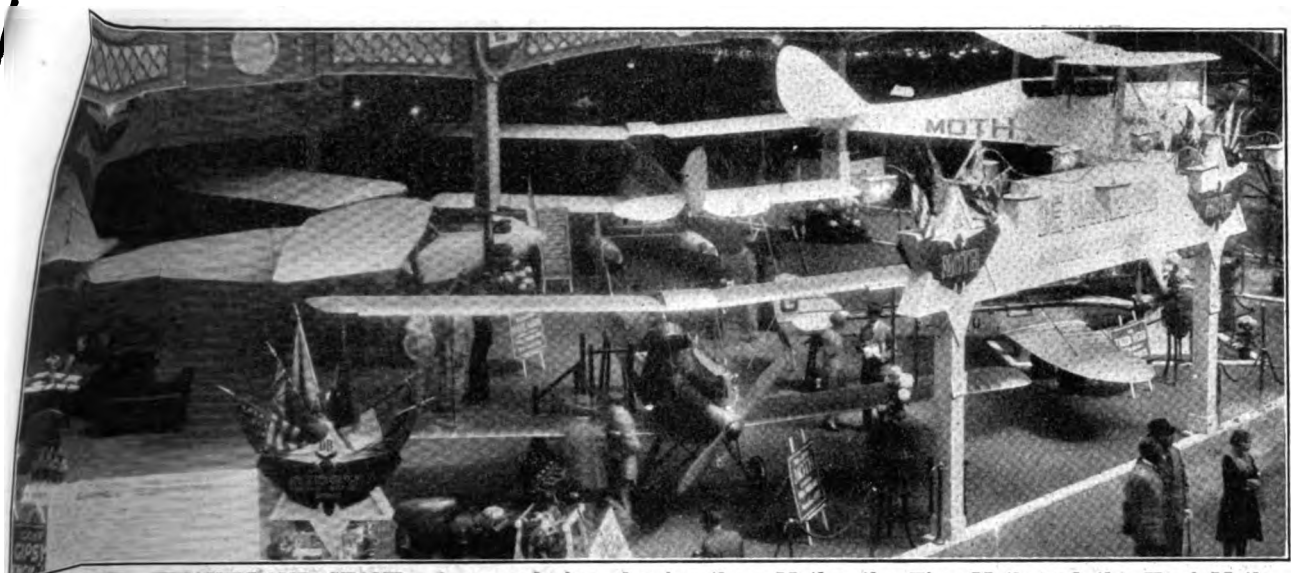
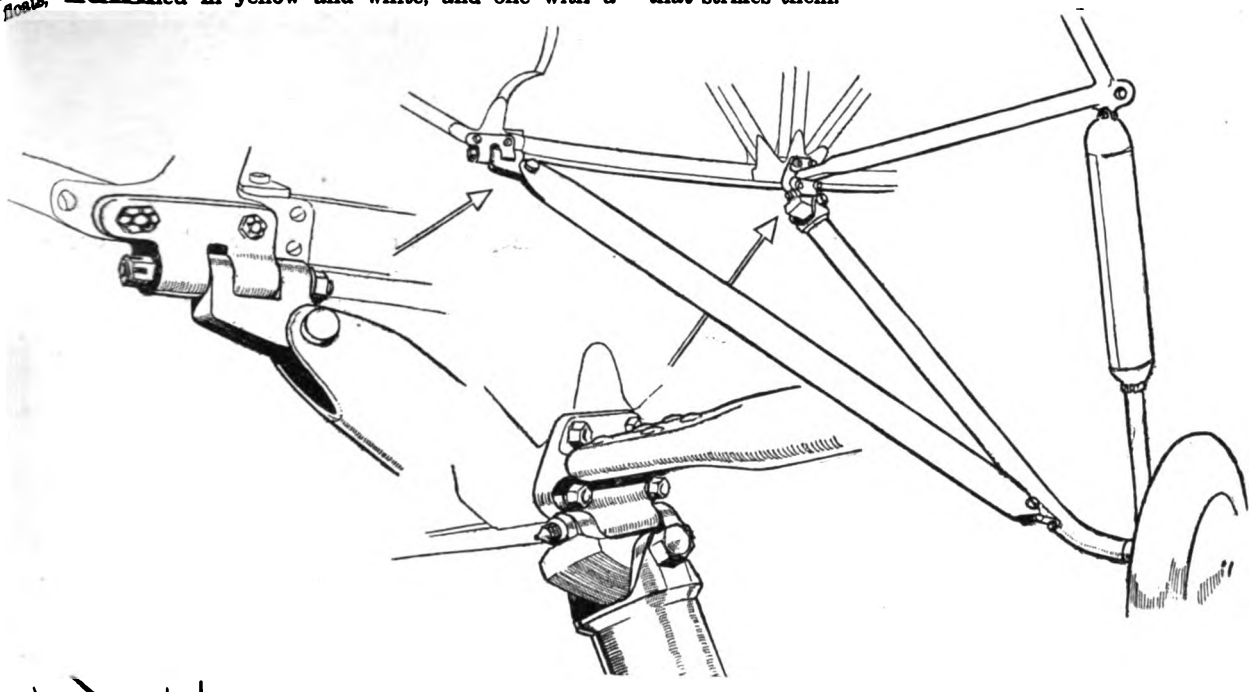
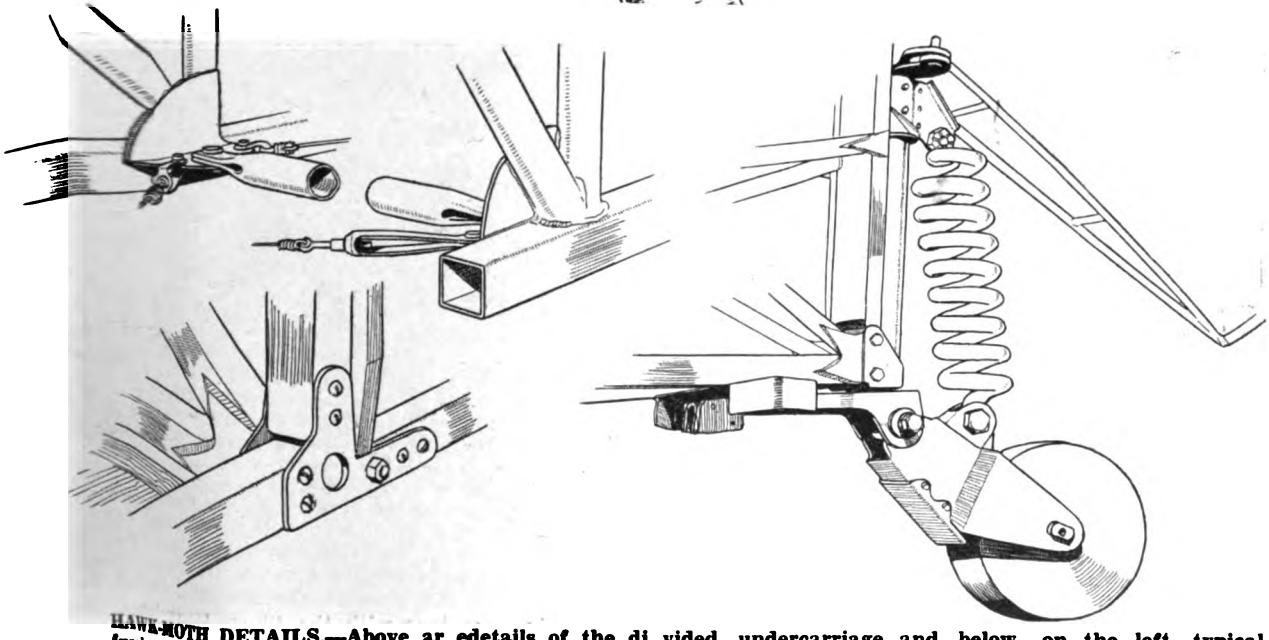


THE DE HAVILLAND STAND.—A general view showing three Moths, the Tiger-Moth and the Hawk-Moth
("Aeroplane" photograph.)

colour-schemes of the other two strike one as preferable. But this is purely a matter of taste.—C. G. G.]

The other two Moths are of the metal fuselage type, one with floats, finished in yellow and white, and one with a land undercarriage, in blue and gold. All these Moths have cadmium-plated exhaust-pipes, centre-section struts and bracing wires, and reflect opulence with every ray of light that strikes them.





HAWK-MOTH DETAILS.—Above ar edetails of the di vided undercarriage and below, on the left, typical fuselage joints showing the use of both square and round tubes, and on the right the steerable tail-wheel.

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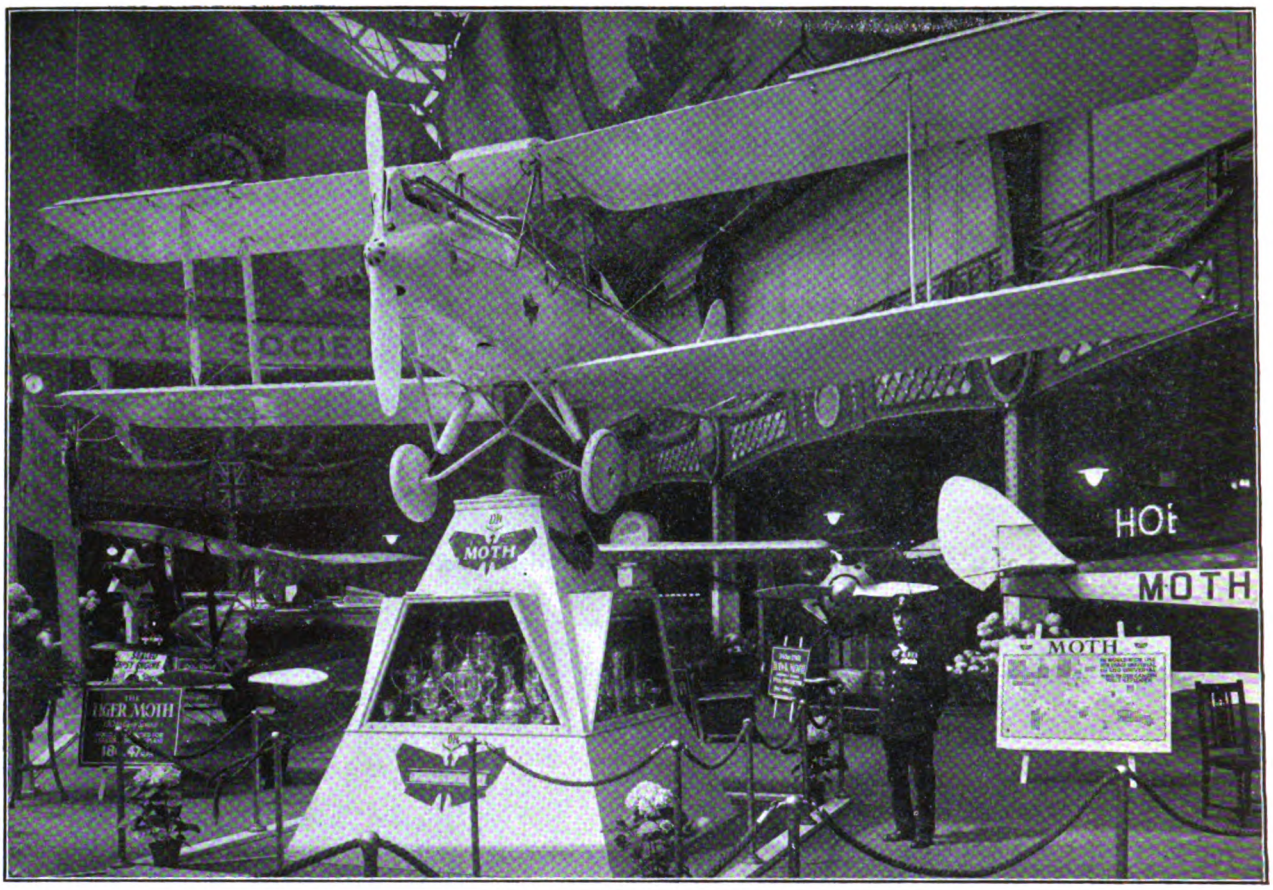


THE SIGN OF OPULENCE.—The All-White Coupé Moth on the pedestal containing over seventy cups and trophies.

The Hawk-Moth is shown with a geared Lynx engine, which is installed very neatly. Very little of the cylinders protrudes from the cowling and an oval section exhaust pipe behind the cylinders lies almost flush with the cowling lines. The cabin is extremely well-finished and is very spacious, the back passengers having more leg room than is generally provided in the more luxurious saloon automobiles. This machine is shown with one of its wings half folded.

Its finish is as excellent as that of the Moths except that there is less plating about it. The colour scheme is cream and black, the cabin portion being covered with leather fabric and the after section with ordinary fabric.

The Tiger Moth, which holds the Light Aeroplane Speed Record at 186 m.p.h., appeared on the stand over Monday night and although it was not announced to appear by the company in their pre-show publicity it was certainly a good afterthought.

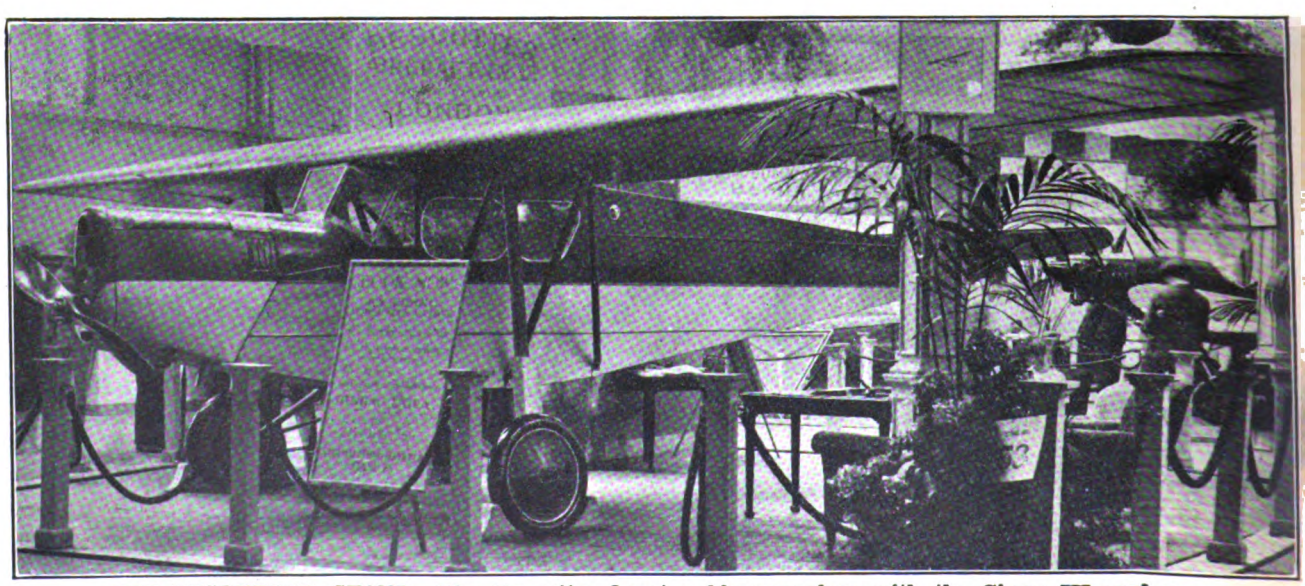
DESOUTTER AIRCRAFT CO. LTD., Croydon Aerodrome. Stand No. 53.

The Desoutter sports three-seater cabin monoplane is the first of its type in this country. It should make a delightfully comfortable machine for the private owner.

It is the English version of the Koolhoven monoplane and has been developed by Mr. Desoutter in his factory at Croydon in conjunction with Mr. G. H. Handasyde.

The machine is well upholstered inside in grey leather and looks attractive. Externally this one is finished in blue and silver, but a variety of colour schemes are available, as may be seen from the range of pictures which are hung on the stand.

Several modifications have been made in this machine since it came to this country. For example the windscreen has been carried right across the fuselage, the tail-plane has been lowered, and the undercarriage has been strengthened



THE DESOUTTER STAND.—The Desoutter 3-seat cabin-monoplane with the Cirrus III engine.
("Aeroplane" photograph.)

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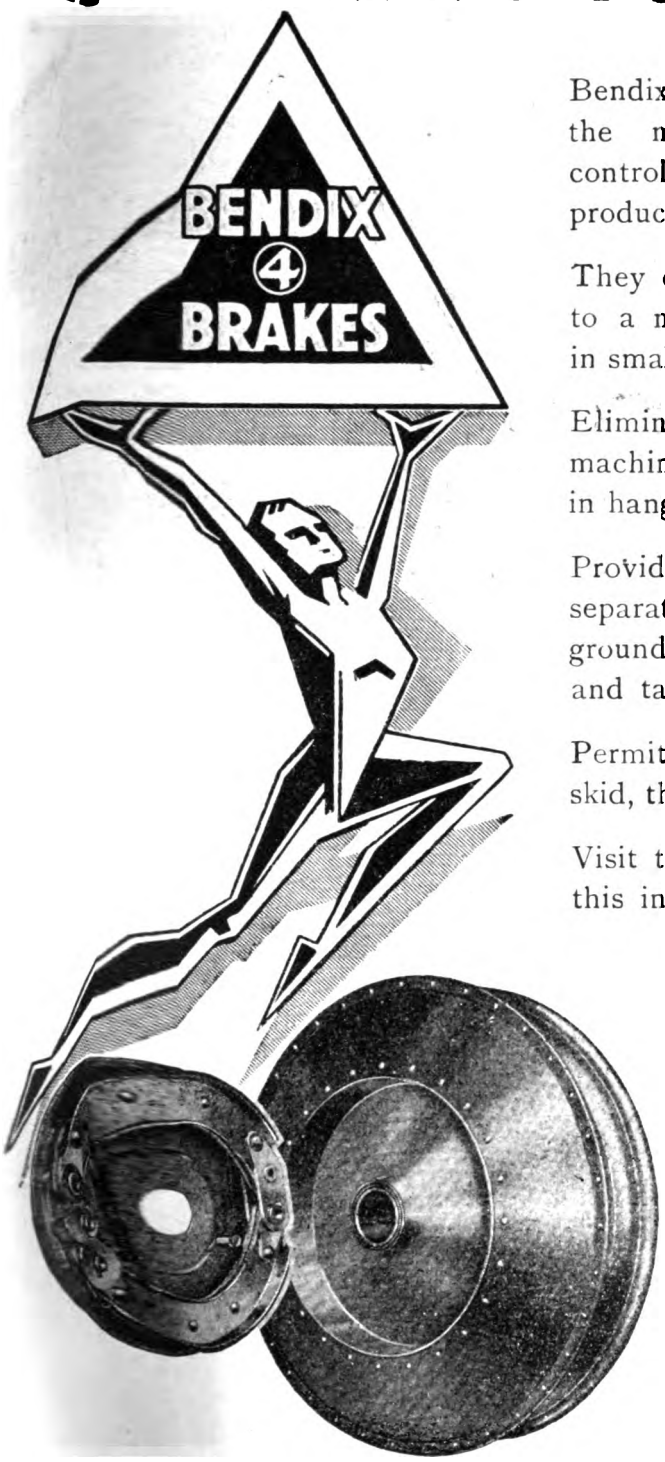

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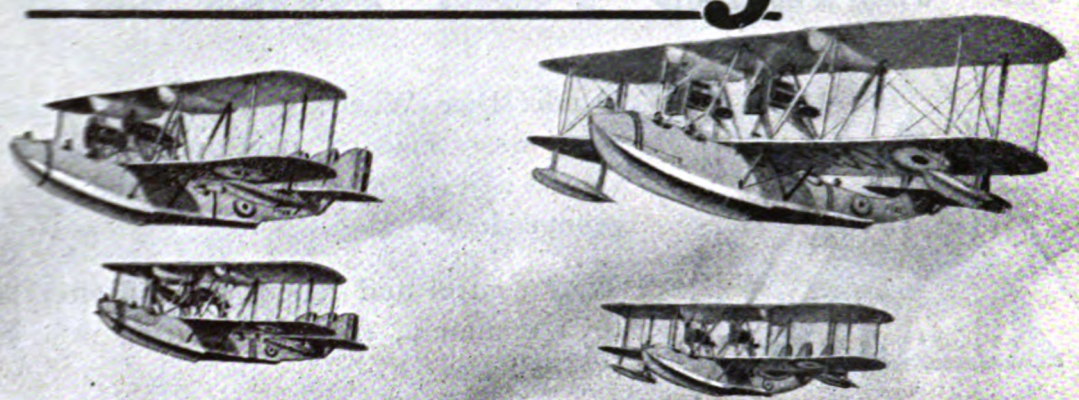

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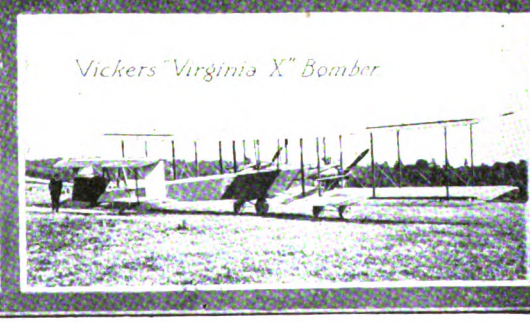
Vickers "Virginia X" Bomber

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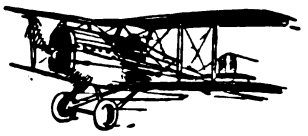

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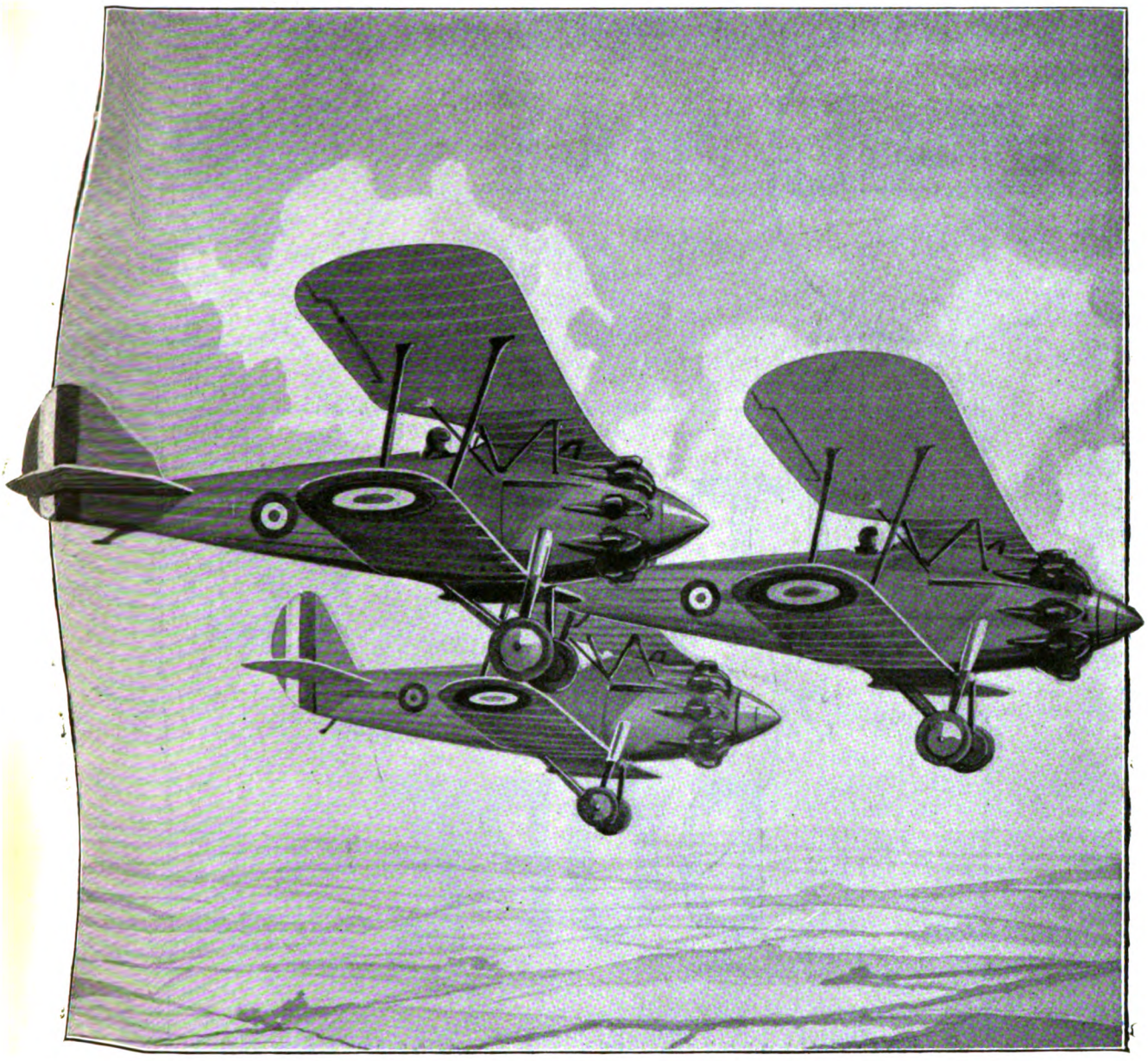

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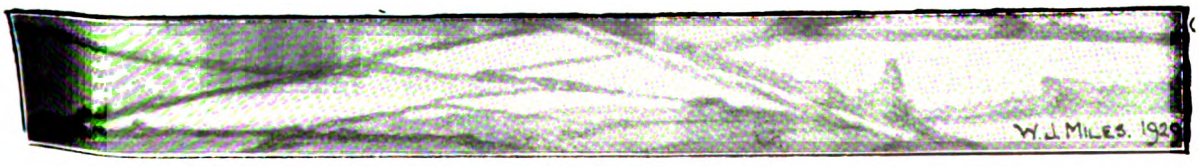

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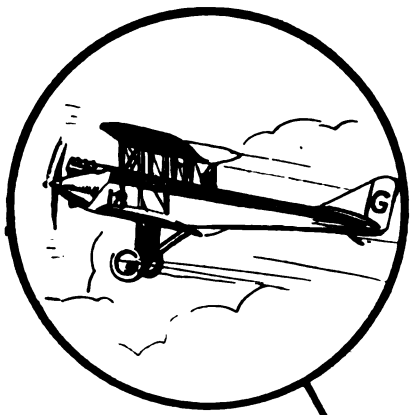

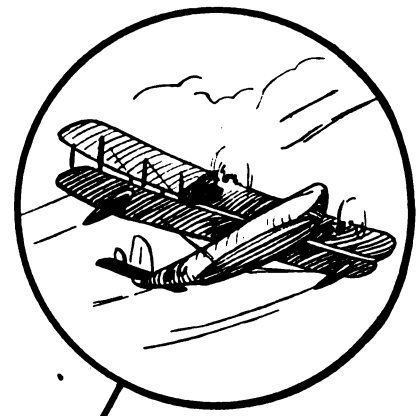

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KING'S CUP RACE, 1929

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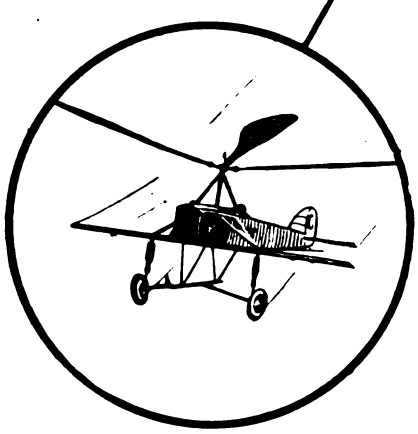

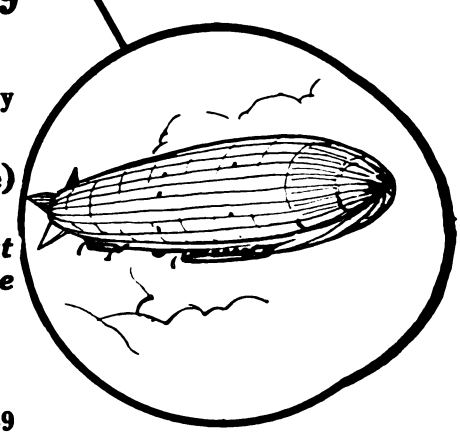

Aero Exhibition, Olympia, Stand No. 49

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KING'S CUP, 1929.

We all heartily congratulate Flying Officer R. L. R. Atcherley (who flew under the name of "Mr. Llewellyn") and Flight Lieut. G. H. Stainforth, as navigator, for their very fine performance on winning the King's Cup Air Race this year on a Gloster two-seater "Grebe," fitted with Armstrong Siddeley "Jaguar III. A" engine of 360 H.P. The machine was entered by Sir Walter Preston, M.P. for Cheltenham, and we sincerely hope that it will prove to be only the first of many successes from his entries.

It was truly a very fine performance and every praise is due to the navigator for steering such a fine course, the average over the 1160 miles for the two days being 150.3 m.p.h., this, in itself, constituting a record for the King's Cup Race, the fastest time previous to this being Capt. Courtney's speed in 1923 of 145 m.p.h.

At one period it appeared as though they would not get round, as whilst taxi-ing in at Blackpool at the end of the first day's race, they had the misfortune to get their tail skid in a rut and to wrench off and damage both the rudder and tail plane. Spares were rushed from Cheltenham through the night and it reflects great credit on those who did the work of repairing the machine, when one considers that they did not get to Blackpool until 3.30 in the morning and then worked on the machine without stopping for any rest, with the result that F/O. Atcherley was able to get away in the morning at the proper starting time.

The finish at Heston was most exciting as, at Birmingham, the last control before Heston was reached, Captain Neville Stack, who was favourite on an "Avian," was 27 minutes ahead of F/O. Atcherley with only 92 miles to go. It seemed almost impossible for the Gloster machine to win, but to the intense delight of those backing the "Grebes," instead of the "Avian-Hermes," the familiar silhouette of a "Grebe" was seen coming in low over the trees and the next moment with a good old roar of her Jaguar the Gloster "Grebe" passed over the winning line first, thereby winning the King's Cup.

Captain Neville Stack flew an extraordinary good race and it was very hard luck that his engine should give out on the last lap and he is to be congratulated on the very fine effort he made by completing the race firing on about 2½ cylinders.

The second Gloster Grebe, piloted by F/O. Fielden, also put up a very fine show and had been flying within a few minutes of the winner until, near Castle Bromwich, one of his flying wires broke, with the result that he had to throttle down to about 100 m.p.h. until he reached Castle Bromwich. Here a spare flying wire, which was carried, was fitted; but this, of course, lost him valuable time. As it was, he came in seventh, whereas he stood a very good chance of coming in second or third.

We think F/O. Fielden is deserving of the highest possible praise for the manner in which he completed the course and this sentiment is heartily endorsed by his passenger, Sqdn. Ldr. The Rt. Hon. F. E. Guest, C.B.E., D.S.O.

We take this opportunity of thanking not only all those at the Works who helped to win, by their team work, but also the Officers Commanding the Squadrons at Renfrew, Castle Bromwich, and Hawkinge; Messrs. Vickers, Bristol, Armstrong Siddeley, Boulton and Paul, A. V. Roe, and Blackburns, for the use of their Hucks and Gas starters, etc., and the personnel of the Light Aeroplane Clubs at the various controls for their valuable assistance. Messrs. The Anglo-American Oil Co. and Wakefield are to be congratulated on their very fine organisation for re-fuelling at the controls.

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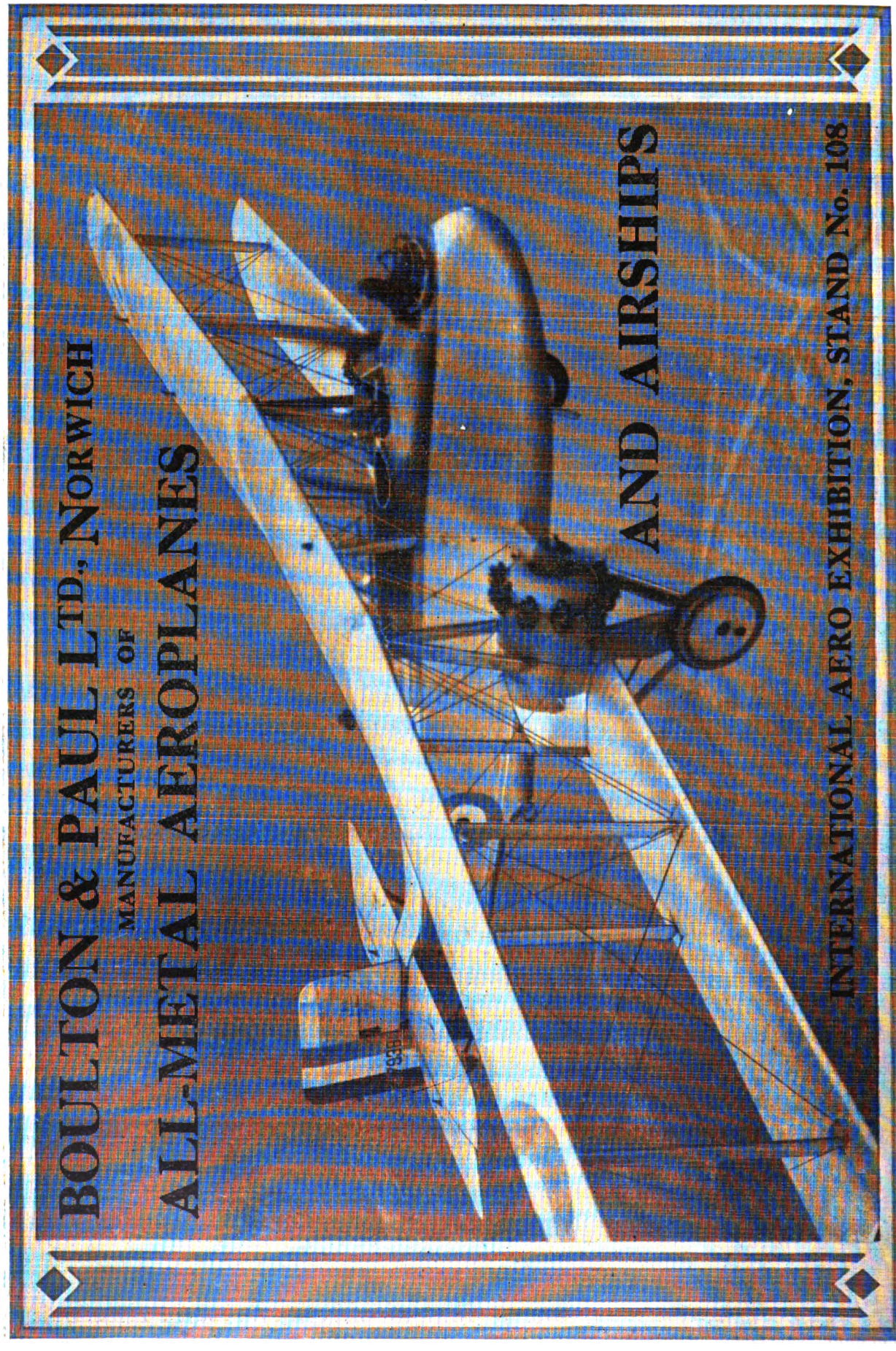

(Photograph by courtesy of "Flight.")

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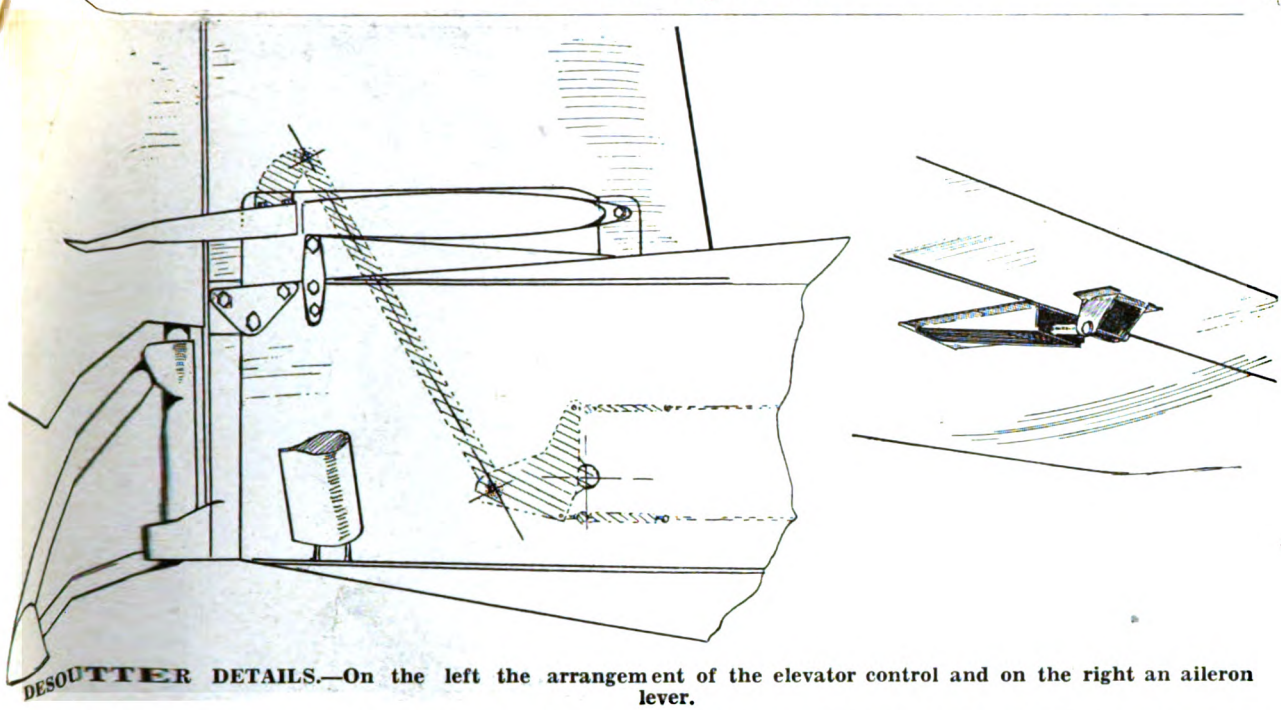


DESOUTTER DETAILS.—On the left the arrangement of the elevator control and on the right an aileron lever.

Splintex glass has been standardised for the cabin windows, which should prove a good selling point.

The whole machine is very well finished, and the detail work is good. The neat aluminium edging to the windows is particularly noticeable, and the engine cowling gives a clean effect to the nose of the machine.

National Flying Services have acquired the selling rights of this aircraft and a large order is now in hand for them. One of their newly uniformed pilots has been stationed on this stand to dilate on the joys of flying in a cabin light-'plane such as this.

FIAT (ENGLAND) LTD., 43-44, Albemarle Street, London, W.1. Stand No. 90.

The Fiat stand is near the middle of the main hall. The exhibits are the Fiats A.S.1 two-seater light plane, and models of the B.R.2 and S.V.A.10 and A.120.

The A.S.1 has the A.50 85 h.p. air-cooled, 7-cylinder, radial Fiat engine. The machine is an attractive-looking little tandem two-seater with a plywood fuselage and normal fabric-covered wings, which are designed to fold. The fuselage is very wide and roomy and the detail finish is better than that in most foreign exhibits.

Dual control is fitted and a Bowden control system allows the pilot to put the passenger's control column out of action at will. The leaf-spring tail-skid looks flimsy and one can hardly recommend a forward curve such as it has unless the idea be to plough drainage furrows on the unfortunate aerodrome or country-club park land.

The undercarriage, of the split-axle type, is quite neat. The ailerons are balanced.

Very complete equipment is standard, and such things as full lighting with a landing searchlight below the centre of the fuselage run off a 12 v. accumulator, headphones, a 30-gallon fuel tank, with reserve tank, and a "Knock-out" centralised pressure fire-extinguisher, are all included.

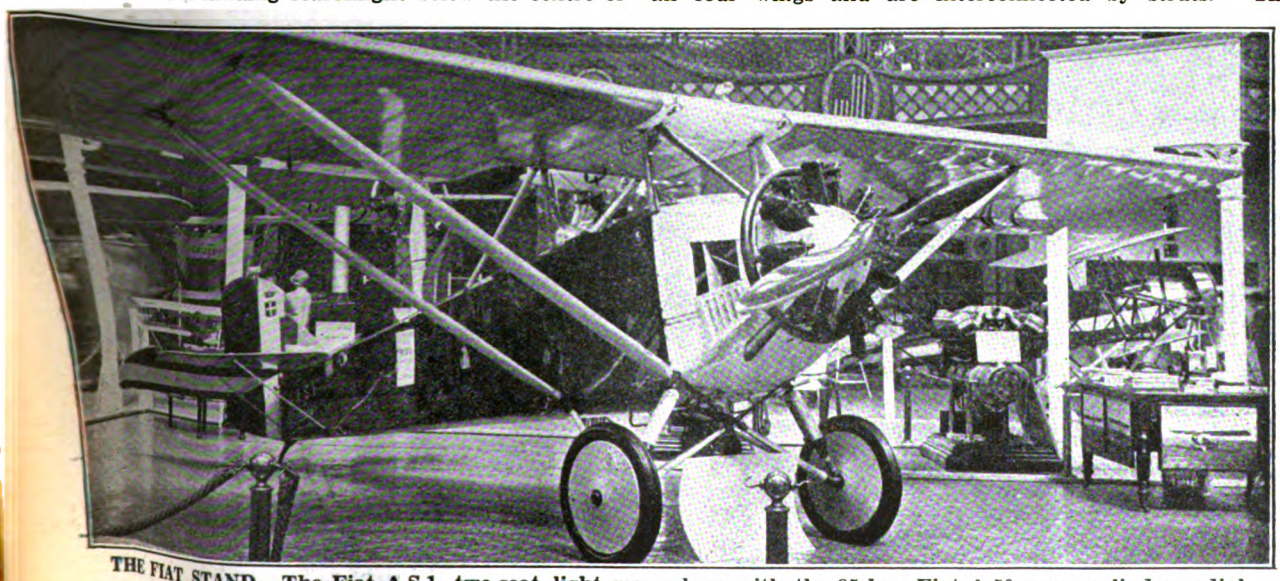
THE FAIREY AVIATION CO. LTD., Hayes, Middlesex. Stand No. 110.

At the end of the main hall and going down the centre aisle from the Addison Road, one comes upon the Fairey Stand which is really an object lesson in the successful application of streamline to omnibuses. This sounds a bit libellous but really when one examines the contents of the Fairey IIIF Seaplane, even omnibus seems inadequate and pantechnicon seems more to the point. Someone has nicknamed it "The Appendix A,"—as it is equipped with every fitting and gadget mentioned in the Air Ministry's Appendix A list of supplementary equipment.

High over the stand is the historic Long Range Monoplane,—the only machine which has flown non-stop to India. The enormous spread of its cantilever wing overshadows everything. This spread with fabric covering is only made possible by the Fairey patented form of pyramid bracing between the spars. They do say that a Turkish visitor wished to buy the monoplane for hard cash there and then.

At the four corners of the stand are representative examples of the Fairey Reed Airscrew, including a four-blader.

Facing Addison Road is the Firefly II with a Rolls-Royce "F" engine. This is a high-speed Interceptor fighter, built entirely of metal with fabric covering. The biplane wings are of unequal span and chord and have a pronounced stagger. These various devices are employed to give the pilot a good view. The wing-bracing is single-bay on each side with "N." type interplane struts. The ailerons are on all four wings and are interconnected by struts. The



THE FIAT STAND.—The Fiat A.S.1. two-seat light monoplane with the 85 h.p. Fiat A-50 seven-cylinder radial engine.—("Aeroplane" photograph.)

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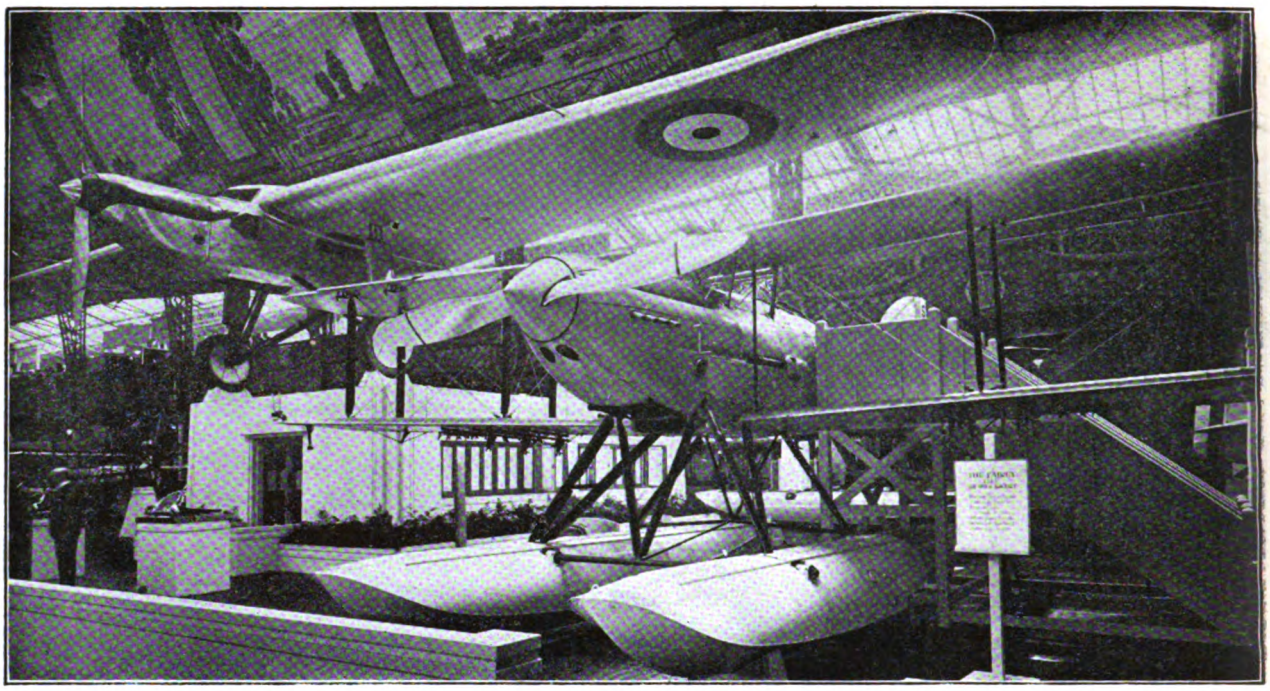


THE FAIREY STAND.—The Fairey Long Range monoplane mounted above the office and a IIIF seaplane, two of the seven machines shown by the Fairey Aviation Co. Ltd.

cooling surfaces are divided between the wing type in the centre-section and a retractable radiator. The fuel tanks are in the wing.

The engine-cowling, as with all the machines on the Fairey Stand, is a striking feature. The cowling appears to have had the engine poured into it and only close examination will show the way the panels are secured with Fairey clips to the main structure.

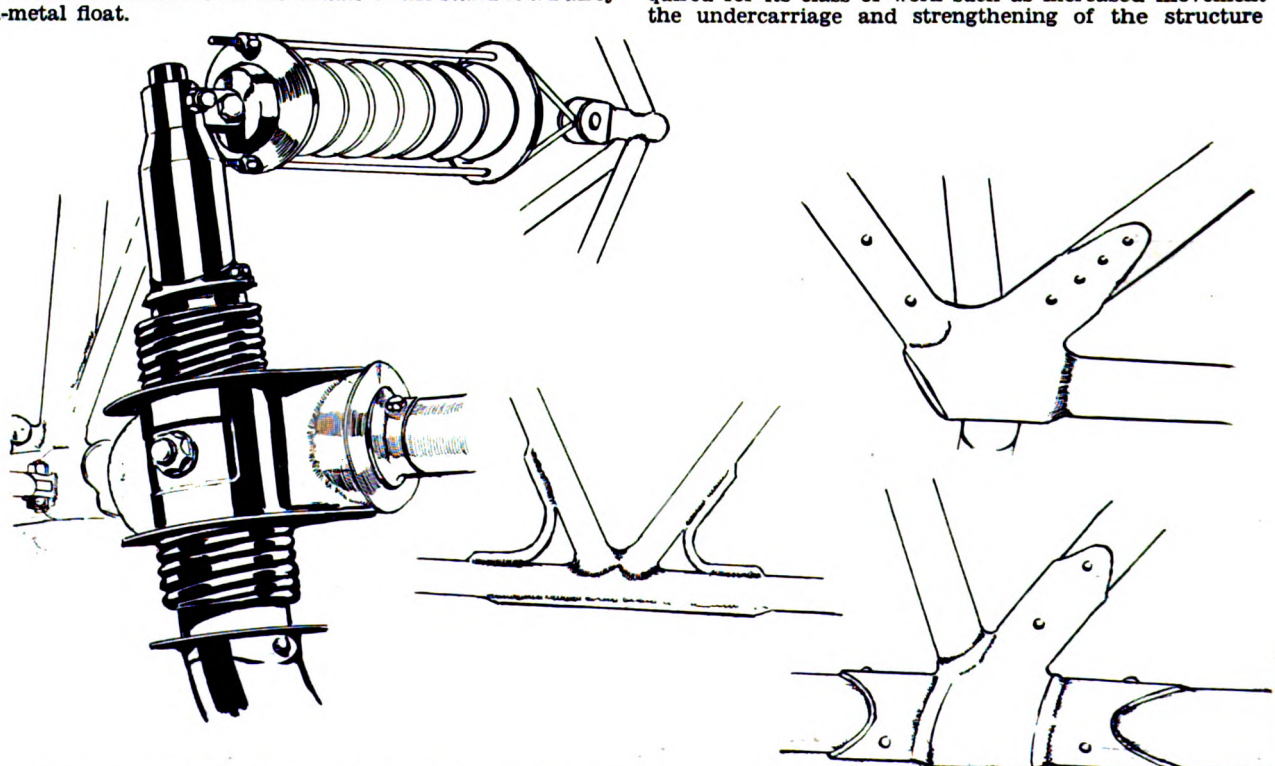
Along the centre aisle is a IIIF with a Napier Lion engine. This is in skeleton form and shows the type of construction employed. Steel tube for the fuselage and duralumin for the wings. The various tubes are mostly rivetted, this especially applies to the struts between the fuselage longerons. The wings have duralumin spars of double-eight section and ribs of the same material, these have sheet metal diaphragms and specially shaped section booms. These diaphragms or webs are stamped from sheet and the booms or flanges are drawn from strip.

Behind this machine on the middle of the stand is a Fairey all-metal float.

Further along the main aisle are two highly-finished examples of the Fairey High Speed Gun Mounting, an extremely neat device which allows the stowage of the drag-producing gun and its mounting inside the fuselage. The device consists of a semi-circular steel tube mounted at either extremity to the sides of the cockpit and able to be swung that is raised or lowered, about these points. The gun may be moved round this and is also on a swivel joint so that it may be swung in any direction.

The next machine is the IIIF as a three-seat seaplane with a Napier Lion engine. This has a flight of steps placed alongside so that one may go up and see how all the gadgets required for sea warfare are tucked away where they will not upset the slipstream. The wings fold back alongside the fuselage and the aftermost of the outer pair of inter plane struts has a piece bitten out so that it may be hitched onto a projection on the tailplane.

Round the corner is the single-seat ship-plane fighter rather like the Firefly II but with special modifications required for its class of work such as increased movement of the undercarriage and strengthening of the structure t



FAIREY IIIF DETAILS.—On the left details of the tail skid and on the right various types of welded joints in the engine-mounting.

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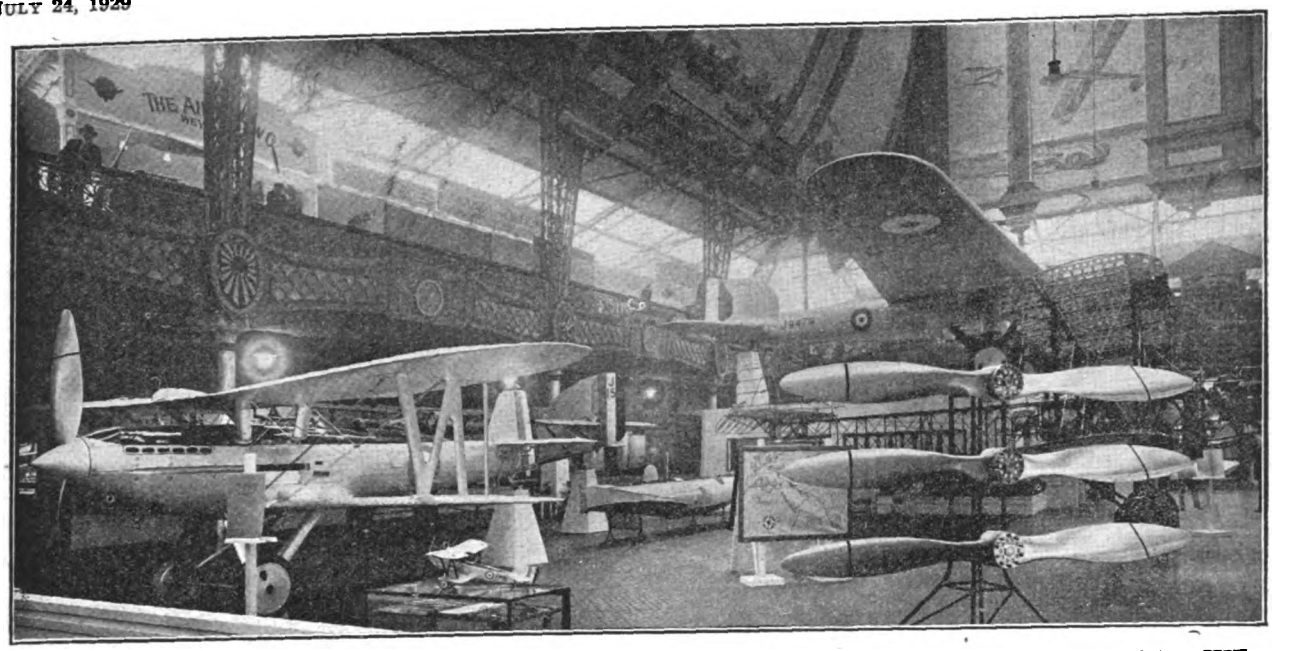


THE FAIREY STAND.—Another view showing the Firefly II, the Long Range monoplane, the skeleton IIIF and some Fairey metal airscrews.

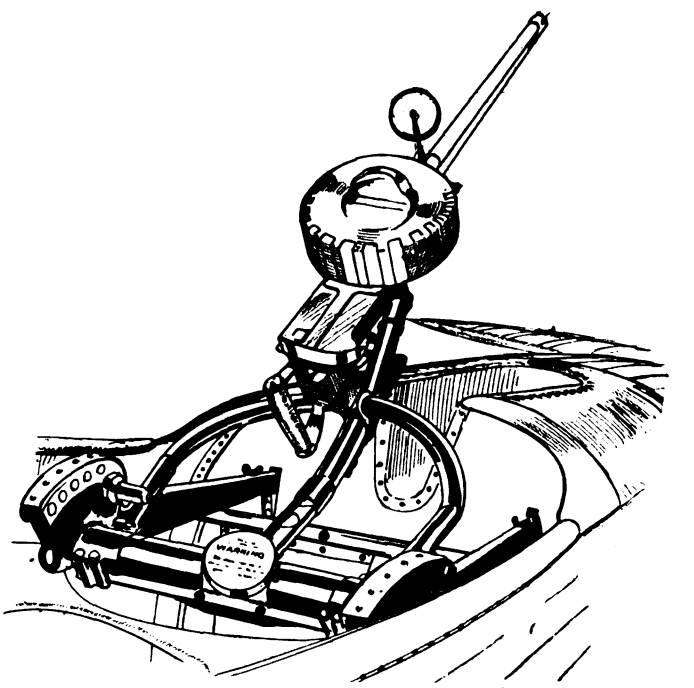
take catapult strains. The fuel is carried in tanks inside the fuselage fitted with jettison valves.

On the far side of the stand is the Fox, which as a type has done much to influence design. This type was originally fitted with the Curtiss D.12 engine but the latest is fitted with the Rolls-Royce F. These day-bombers of outstanding performance out-classed the single-seat fighters in the Air Exercises last year. The Fox, unlike the IIIF, has wings of unequal span and single-bay bracing with "N" type interplane struts.

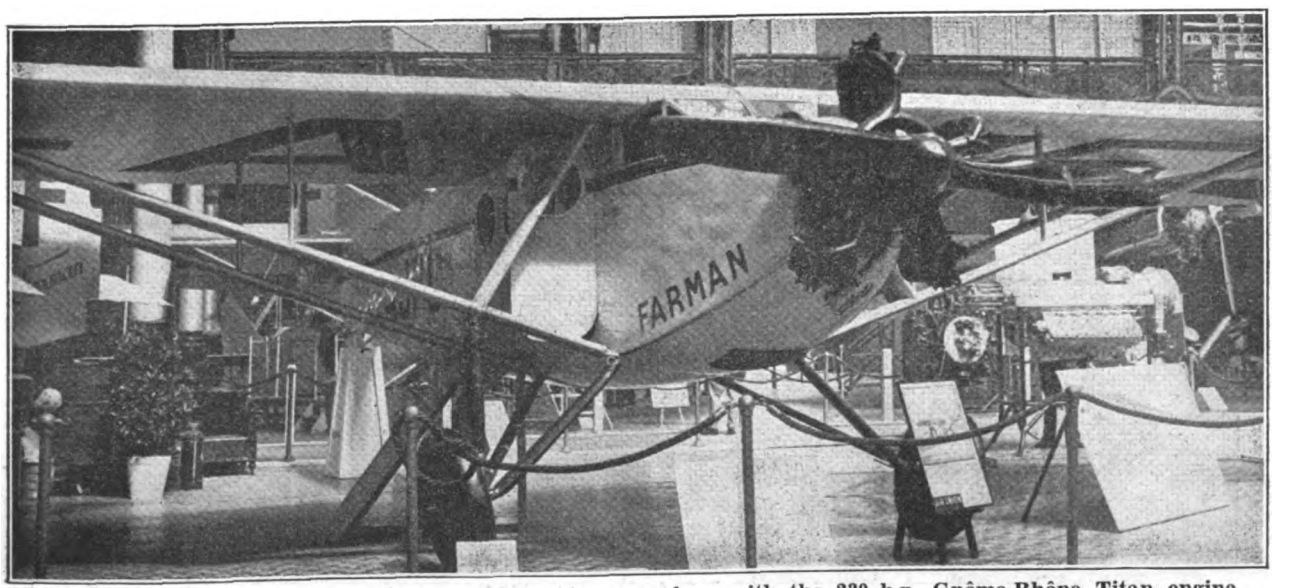
Further along on the same side is the ubiquitous IIIF in yet another guise, this time as a general purpose two-seat machine with an Armstrong Siddeley Jaguar. Apropos of the IIIF it may be remarked that the type may be fitted with fifteen different engines and has as a result 93 different sets of performance figures, which vary as the types of engines are geared or ungeared and so on.

The Fairey Stand is remarkable for the fact that it is in itself a history of the development of the modern high-performance machine. There is the IIIF the direct descendant of the early type III seaplanes, yet so cleaned up and improved that even to-day its performance is remarkable. The experience which made this possible was gained from the early Foxes and the first Firefly whose design was due to the introduction from America in 1924 of the Curtiss designs for fuselages and wings, and the Curtiss D.12 engines.

Now that the new Rolls-Royce F engines are available Faireys have shown what further can be done. The results as exhibited at Olympia are instructive and wholly pleasing to the eye.



The Fairey High Speed gun-mounting.



THE FARMAN STAND.—The Farman F-190 cabin monoplane with the 230 h.p. Gnôme-Rhône Titan engine
(" Aeroplane " photograph.)

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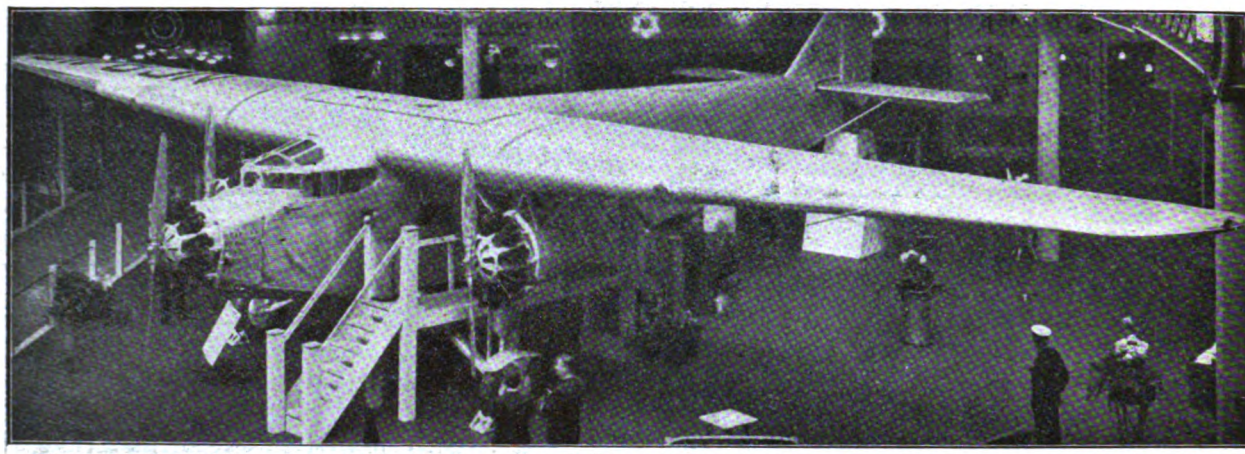


THE FORD STAND.—A general view from the Gallery. "The Aeroplane" stand can be seen, with the eye of faith, above the wing-tip on the right.—("Aeroplane" photograph.)

SOCIETE H. ET M. FARMAN, 149, Rue de Silly, Billancourt (Seine), France. Stand No. 88.

Shown on this stand are two of the aircraft made by the well-known firm of Henri et Maurice Farman.

The first is the F.190 a four-passenger cabin monoplane with the Gnome-Rhone Titan 230 h.p. engine.

This machine has made a name in several recent long-distance record flights. The four passengers are in a rather small cabin and the leg-room allowed does not appear generous. The pilot is alone in an enclosed cabin in the front and has a fairly good view.

The internal finish is plain compared with some of the machines in the show, though of good quality, but the external finish is rather below the standard of most other machines, the doping being very poor. The small round windows for the cabin do not seem adequate for a compartment of this size.

The cabin is heated from the exhaust, which should make it comfortable for the Winter but the ventilation for Summer work hardly looks sufficient.

The Farman F.200, the other aircraft shown, is an open-cockpit two-or-three seater, with the 120 h.p. Salmson engine. This machine has a large cockpit with the pilot in front and the passenger directly behind him on the left-hand side, beside the passenger's seat is a small seat for an occasional extra passenger. The main passenger's seat is fitted with dual control.

The wind screen is unusual as it extends right across the machine and its wedge-shaped panels are taken right up to the wing, thus forming a sort of cabin without sides. A complete coupé top can be supplied if desired.

A stand with pictures shows a selection of other Farman types.

THE FORD MOTOR CO. LTD., Trafford Park, Manchester. Stand No. 33.

Just in front of THE AEROPLANE stand and a quarter right on the far side of the New Hall from the Hammersmith Road Entrance to Olympia is the Ford stand on which is one of the famous Tri-motor All-Metal Monoplanes (Model 5AT), which have caused so much stir in the World.

This machine is completely covered, fuselage, wings and tail unit, with corrugated Alclad sheet which has been highly polished, and makes the exhibit very striking.

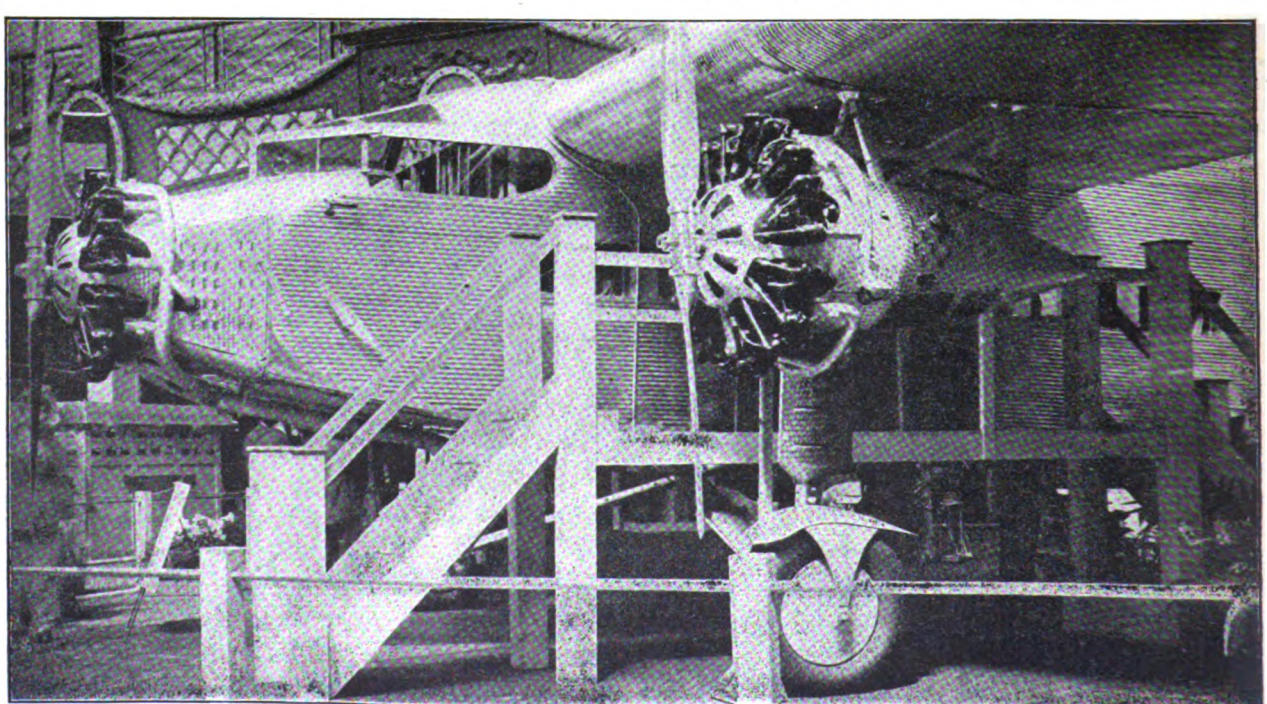
Looking round the exterior of the machine one is struck by its business-like finish. Obviously all the surfaces are going to stand up to operating conditions. An attractive feature is the wide track undercarriage with hydraulic brakes and tracking tail-wheel. The clips used to fasten the cowling to the wing engine nacelles are not as neat as their English counterparts. On the other hand the cowling in front of the engine crankcase has adjustable louvres for various temperature conditions, which is a very sensible idea.

The machine is entered from a door in the fuselage half way towards the tail on the starboard side, though, as the cupola covering the pilot's cockpit lifts up an emergency exit could be obtained this way.

Entering the machine and turning left one finds a lavatory, like those in trains and in aircraft generally, not quite as large as one could wish.

Beyond is the interior of the fuselage to the tail unit. In this space is stowed the tail-trolley for handling on the ground, the picketing gear (i.e., mooring stake and ropes), spare kit and engine-starting cranks.

From this after portion of the machine may be gained



THE FORD AIR LINER.—A close-up of the nose of the Ford monoplane showing the engine mountings and pilot's cockpit.—("Aeroplane" photograph.)

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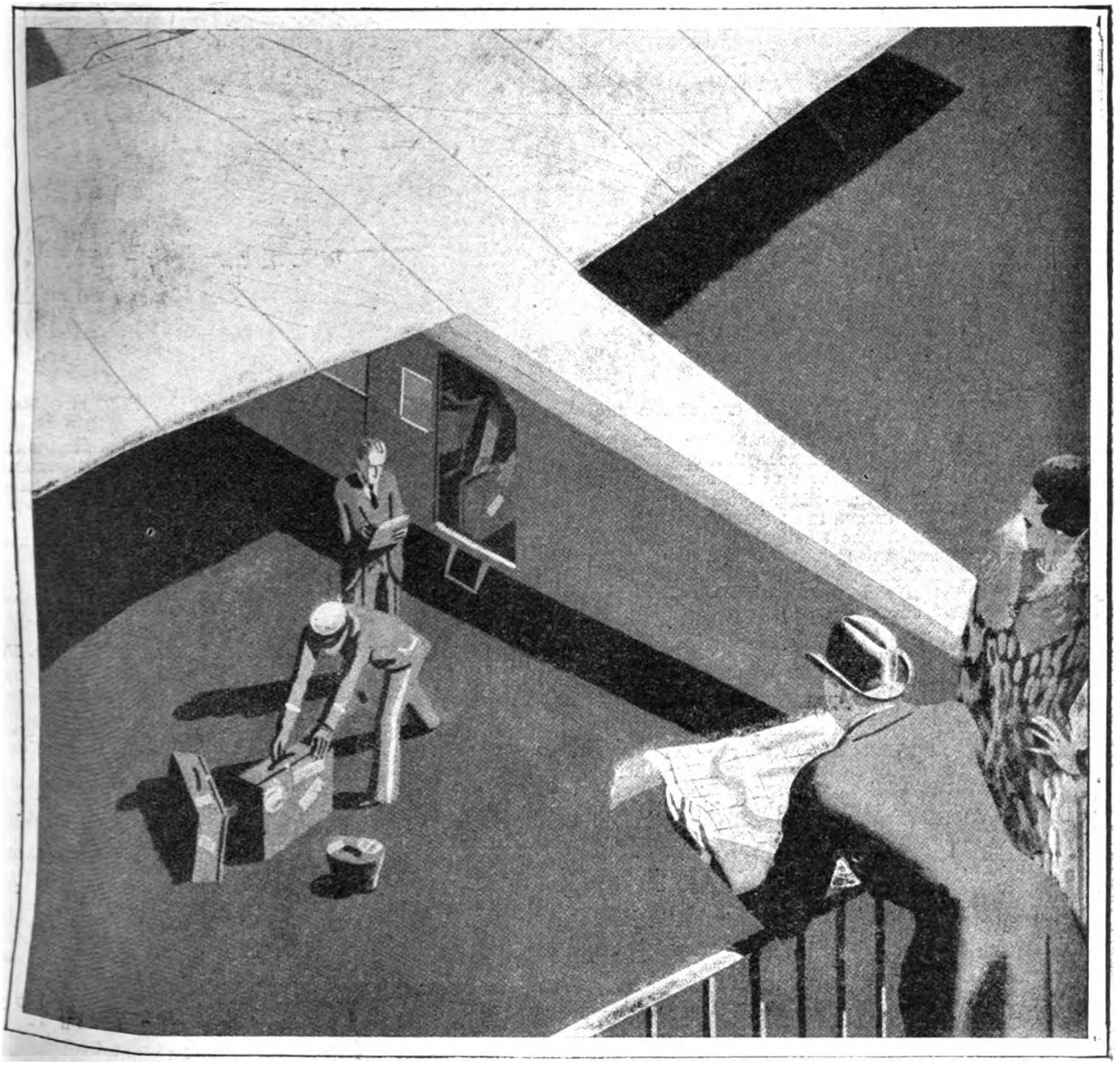

THROUGH EVERY WEATHER OF THE WORLD!

The many air lines using Fokkers are now covering 15,000 miles a day.

The Avro 10 is the English version of the Fokker F7-3M and it is the finest possible plane for difficult work in extreme climates. It is equipped with three 200 h.p. Armstrong-Siddeley engines, carries 8 passengers, and is entirely British built to the Air Ministry's standard of air worthiness and safety.

Some of these machines run to a time-table through tropical storms; others fly regularly in temperatures far below zero and in Western Canada a fleet of these world known planes operates in summer and winter without hangar protection.

They are used by the Dutch, Swiss, Italian and Canadian air lines, and now Australian National Airways Ltd., have chosen them for their new Brisbane to Sydney Service.

AVRO-10

Cruising speed 100 m.p.h. Range from 400 miles upwards.
Payload up to 1800 lbs.

Specification and full particulars both of the above plane and of the smaller Avro 5 (seating pilot and 4 passengers) will be supplied on application. Those interested should also write for special catalogue of the famous "Avian" light aeroplane.

A. V. ROE & CO. LTD., 166 PICCADILLY, LONDON, W.1. *Works:* MANCHESTER, AND HAMBLE, SOUTHAMPTON.

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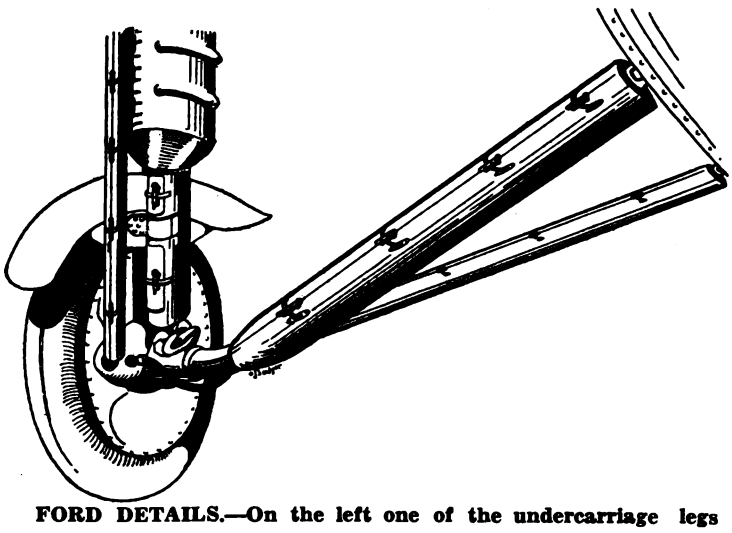

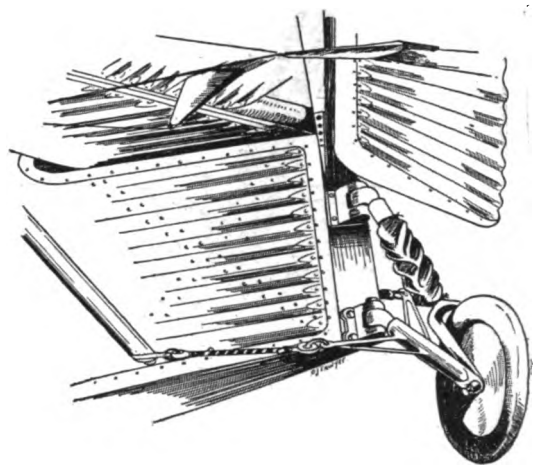

FORD DETAILS.—On the left one of the undercarriage legs and on the right the steerable tail-wheel.

a general idea of the type of construction used. Transverse frames built up from square-section channels are connected with intercostal members of the same class.

These channels have three sides of the same dimensions, flanges being slightly turned in at their outer edges, leaving the fourth side open. The corrugated skin is attached to these main members, and spaced in between the main bulkheads are subsidiary frames. One should point out that the bottom longerons of the fuselage have heavy angle-metal at the two bottom edges.

Going forward from the door one enters the main cabin and is immediately struck by the interior finish and seating accommodation. The cabin feels roomy and has plenty of headroom. It is panelled with some lightweight material and is finished in a shade of very pale green. The chairs are upholstered in leather of a pale shade.

The cabin is electrically lit. There are seven seats down the port side and six down the starboard. As there is also a fold-down seat aft of the door the cabin will seat fourteen. These seats are really comfortable with high backs and are adjustable so that they may be tilted back into the most comfortable position for the individual occupant. The windows extend the length of the cabin on each side. Each passenger can open and close the window by his chair and adjust its blind.

The floor is nicely carpeted with some sort of rubber and is pleasant to walk on. There are gratings in the floor of the centre aisle through which heated air may be introduced for warming the cabin in cold weather.

Under the centre section of the wing and in the roof of the cabin are panels which may be opened giving access to the petrol lines. In this centre section are stowed the three petrol tanks.

The structure of the wing is very similar to that of the fuselage—the spars have flanges of U-section duralumin and these are further strengthened by a closing-plate. The webs, in the centre section at any rate, are channel sections arranged to form a Warren girder. As far as one can see no protective covering is used either in the fuselage or in the wings.

In the bulkhead behind the pilot's cockpit is an instrument panel for the use of the passengers.

Going through the bulkhead into the pilot's cockpit one finds the usual dual control of the wheel and column type. The engine controls are neatly placed midway between the two pilots.

Projecting from the floor and between the two seats is a long ball-headed lever not unlike the gear lever in a modern car—this operates the hydraulic wheel-brakes. Moved directly fore and aft it operates the two brakes together, pushed to one side or the other it operates the individual wheels, so giving easy steering on the ground.

The view from either seat is good. The windscreens in front and on either side have panels which can be opened, and the roof also opens.

There is no doubt that a high-wing monoplane has advantages for commercial use besides the good performance that aeroplanes of this class generally have. It gives the passengers a better view and it costs less for maintenance, as there is no rigging to be done.

This particular machine has a cruising speed of 115 miles an hour, which is rather higher than that of the type of machine we use over here. On the other hand it is only fair to point out that our Armstrong Whitworth Argosies carry twenty passengers for the same horse-power.

[Mr. Manning, the firm's test pilot, who is with the machine, says that it is very easy to fly, and that it can be looped when flying level, without any preliminary dive. Mr. Van Zandt, late U.S. Army Air Service, who has joined the Ford Co., since one met him in the States some five years ago, is most convincing on the subject of the machine's good qualities, and hopes to demonstrate this particular machine at Croydon after the Show, before taking it on a tour of Europe. Mr. Bill Stout is to be congratulated on this fine development of his original tin balloon which appeared at Dayton in 1924.—C. G. G.]

GLENNY AND HENDERSON, Byfleet. Stand No. 19.

On this stand is shown a Glenny and Henderson Gadfly single-seat monoplane with the 40 h.p. A.B.C. Scorpion engine.

The complete machine is shown fitted with the new Pearson Rotary Aileron control, and suspended above the machine is a complete duplicate wing with the standard trailing-edge type ailerons. The Gadfly has previously been fully described in THE AEROPLANE, but the rotary ailerons are quite new, and these appear to be one of the most interesting innovations in the Show.

Each aileron can best be described by being likened to an oyster. Each "oyster" is mounted on a skewed pivot on a shaft located midway between the front and rear spars. Each aileron is connected to the control column, which is so arranged with a differential device that when operating the control for a turn the inside aileron assumes a negative angle of roughly 40 degrees, whereas the outside aileron remains practically stationary.

The "oysters" are so shaped that when in normal flying position the fore-and-aft section is a normal lifting one. When either aileron is turned on its pivot to its maximum position, through an angle of roughly 45 degrees, in addition to assuming the aforementioned negative angle of 40 degrees the normal transverse section becomes a fore-and-aft inverted lift section. The negative angle puts drag on the inside wing, forcing the machine into a normal bank and turn, and the inverted lift section counters any tendency to stall. In gentle turns the use of rudder is unnecessary—in fact, such turns may be made "feet off."

The operation of the ailerons is very simple. At the base of the control column is a triangular plate. Bolts located at the two bottom angles of this plate slide in slots cut in two levers, which are hinged at their bottom ends fairly close together. To the upper ends of these levers are hinged push rods which run to short levers on two pulleys, one on either side near the wing tips. A continuous cable runs round each pulley, and another pulley located on the inclined aileron pivot outside the wing-tip. Side movement of the control column, owing to the pivoting points of the central slotted levers, gives a differential movement to the ailerons.

The wing is in one piece, and is held in position in a recess in the underside of the fuselage by four quick-release pins. The pilot's seat, control column and complete aileron control are permanently attached to the wing spars. The control column is connected to the elevators through a short tube running forward to a cross-shaft which has levers at its extremities. Direct cables outside the fuselage connect to levers on the elevator spar.

To disconnect the wing it is only necessary to undo the four quick-release pins connecting the wing to the fuselage and a pin connecting the short elevator control tube to the control column.

The actual machine shown is the first one built, and

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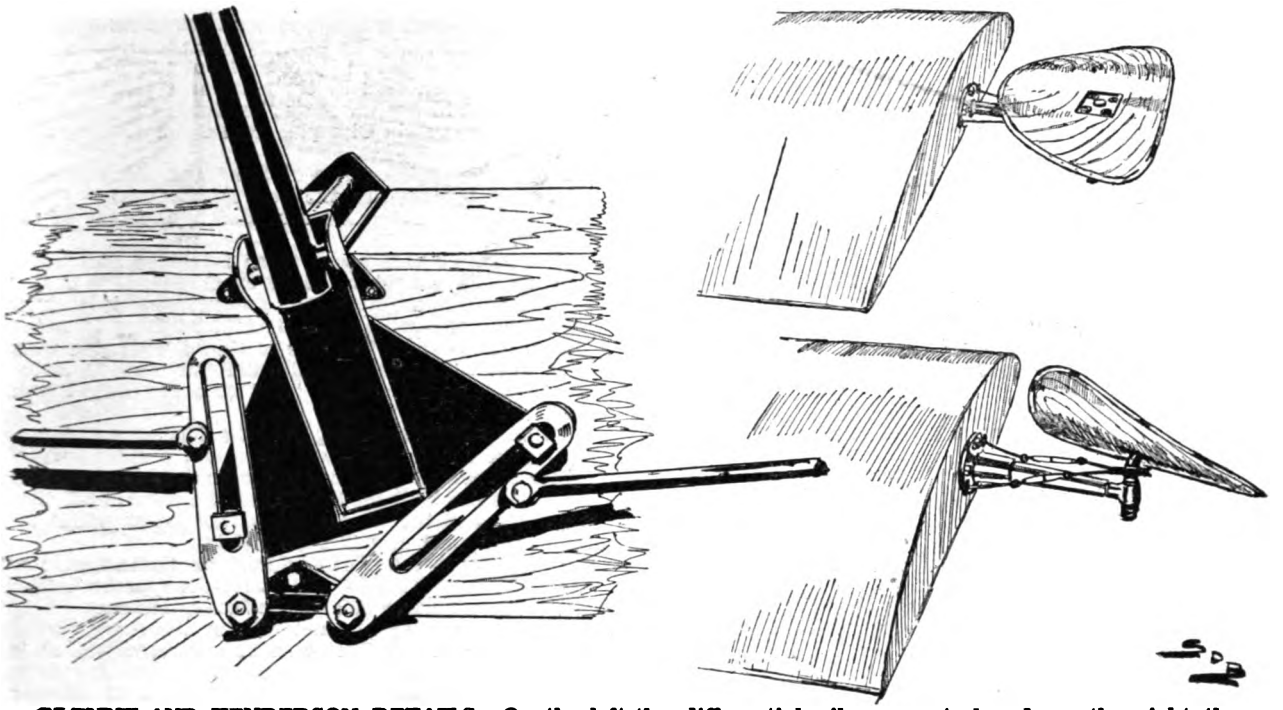


GLENNY AND HENDERSON DETAILS.—On the left the differential aileron control and on the right the Pearson rotary ailerons at their two extreme positions.

except for a clean-up and a coat of paint it has received no other attention after flying for six months in tests by various pilots. A duplicate demonstration machine, but fitted with a 40 h.p. Salmson engine instead of an A.B.C. Scorpion, is available at Heston.

THE GLOSTER AIRCRAFT CO. LTD., Cheltenham.
Stand No. 4.

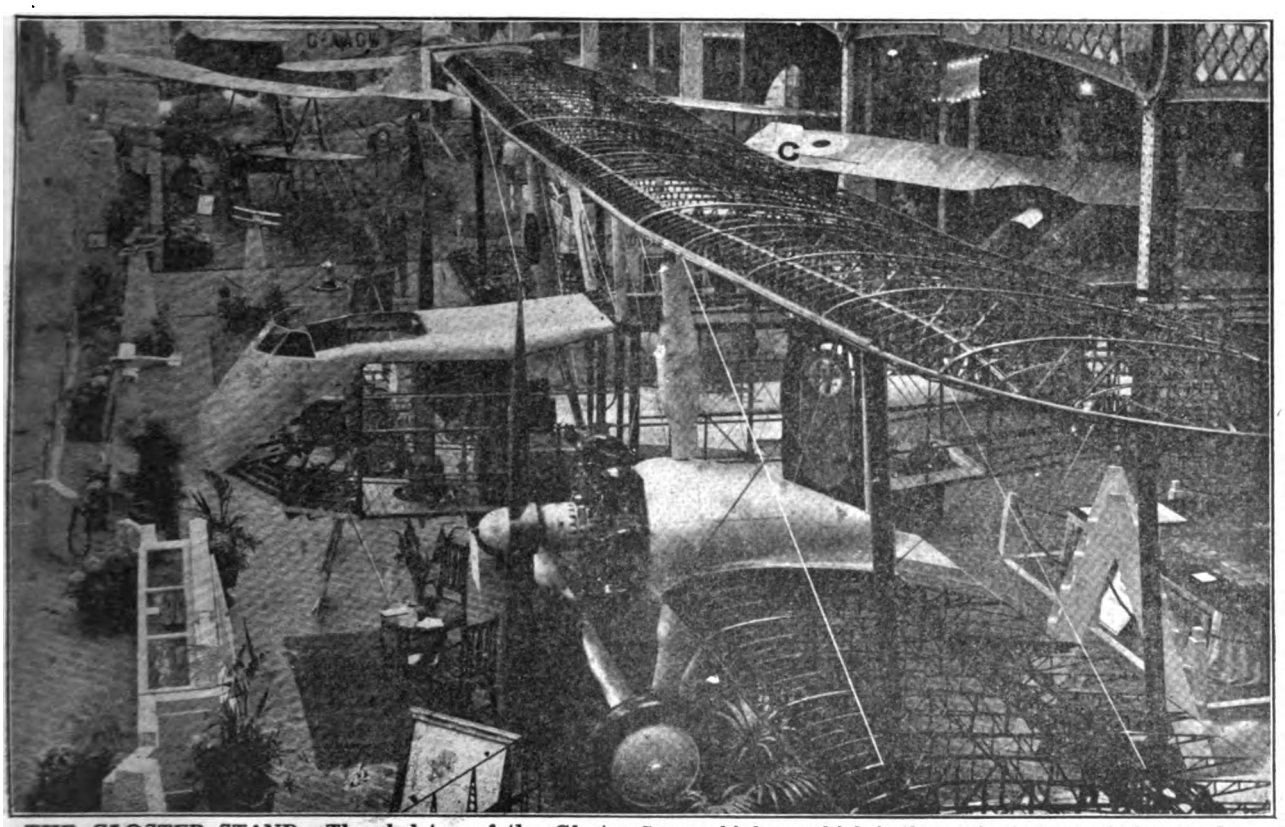
The Gloster Company are showing four machines. These are the Survey biplane, the Gnatsnapper single-seat Shipplane Fighter, an unnamed single-seat Interceptor Fighter and the Gloster IV racing seaplane. A further machine, the Gloster Gannet light biplane of 1923, is merely shown as a decoration over the company's office.

The Survey biplane is in complete skeleton form and is an absorbingly interesting example of Gloster metal construction.

In view of the task for which the machine has been specially designed ease of repair and maintenance have been specially studied. The fuselage is in three detachable sections. The two front portions are of square tubes assembled with flat plates. The rear section is of round tubes assembled with plate fittings pressed to shape.

The wings are built round two built-up lattice spars, each consisting of two corrugated booms inter-connected with vertical and crossed members. The vertical members, with permanently-attached bridge-pieces, form the attachment for the ribs, the latter being in three sections,—the nose portion, centre portion and trailing portion. With the exception of the main booms and the wing tips the whole wing is made up of a number of small easily-replaceable standard jig-built sections.

This form of construction, apart from providing great



THE GLOSTER STAND.—The skeleton of the Gloster Survey biplane which is the main feature of the stand.
("Aeroplane" photograph.)

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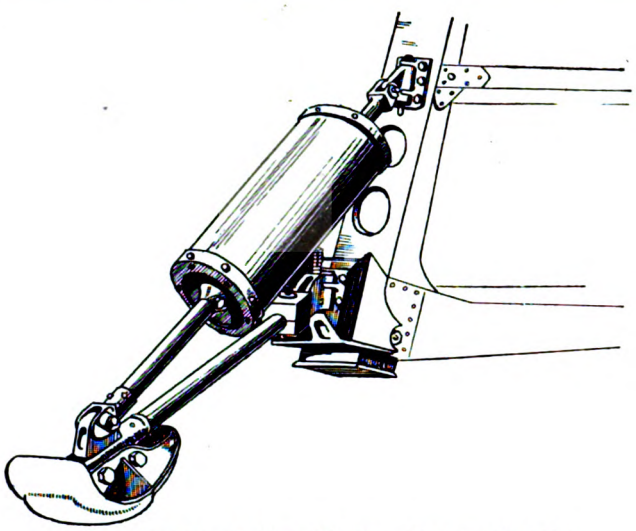

The tail-skid of the Gloster Survey biplane.

rigidity, allows for the ease of replacement of any portion of the spars or ribs under service conditions.

The wings are of the single-bay type and ailerons are on the bottom planes only. Although not shown on the machine the method of wing covering is interesting. The rib flanges have a groove rolled in the section and at spaces of about 3 ins. the groove is pressed up to form an eyelet. The fabric is placed in position with a layer of tape and a stainless steel wire is threaded through the eyelets.

The engines are two geared Bristol Jupiters mounted direct on the bottom wings, the main fuel tanks being in the top wings.

The undercarriage is of the divided type and is of the simplest and most straight-forward design.

The accommodation for the normal photographic crew is vast. In the extreme nose is the pilot's cockpit, for two side-by-side, with windows in the lower half of the nose and the floor.

Behind this cockpit is a compartment with two camera positions and wireless equipment.

Behind this again is a huge cabin with no internal cross-bracing which might serve as a dark-room or a freight compartment, but in the machine shown merely houses a Bristol gas-starter.

Behind this cabin is a further camera position.

This machine forms the central object on the stand.

The companion machine to this was built for the Aircraft Operating Co. Ltd. and is already flying. Altogether it is quite one of the most interesting aircraft in the Show, and is a credit to its constructors in every way.

To its left is the Gloster IV racing biplane, in its attractive blue and bronze colour scheme. It lacks the Venetian sky and sunlight to show it off to the best advantage. Since its days by the Lido the upper wings have been raised to the level of the top of the middle cylinder-block, thus giving the pilot a clear view under it,—formerly these wings projected from the side cylinder-blocks of the Lion. This machine has been looped and rolled by a member of the R.A.F. Schneider Team. It is now shown by courtesy of the Air Ministry,—after having been used by the team as a practice machine. It was in fact in the water on the Monday before the Show opened and it was in Olympia, from Calshot, early on Tuesday morning.

On the two back corners of the stand below the gallery and in semi-gloom are the two latest Gloster single-seat fighters, both of which are exhibited by courtesy of the Air Ministry.

Little may be said about these machines and not much more may be gained by close examination. Both have Bristol Mercury engines. The Gnatsnapper is a single-bay biplane and the unnamed Interceptor-fighter is a two-bay biplane. The latter machine is shown with the Gloster—Hele-Shaw—Beacham variable-pitch airscrew. Both look very truculent and speedy. And both are very beautifully made.

Another interesting feature of the Gloster stand is a progressive exhibit by the Steel Wing Co., a subsidiary of the Gloster Company. This comprises a set of steel wings ranging from those built for the B.E.2d, the Avro 504K, the Avro Aldershot, and the Gamecock, to the latest wings for the Westland Wapiti and the D.H. Moth.

In addition to the Gloster duralumin floats shown on the Gloster IV a pair of floats built for the Gloster Goring are shown, one on either side of the Survey biplane.

Other exhibits include the Gloster-Straussler fuel pump, a large model of the Gloster works and aerodrome at Brockworth, a Gloster exhaust ring suitable for the Jaguar engine and numerous paintings and photographs of Gloster aircraft.

Altogether this is a very fine exhibit, thoroughly expressive of the best type of British aircraft construction and progress.

HANDLEY PAGE LTD., Cricklewood. Stand No. 21

The Handley Page stand is in an unfortunate position in that it is half under the gallery of the New Hall and half in the open. The structure of the gallery gives the impression that it was built of scrap from a disused railway station, with its great naked supporting and cross girders. The railway-station effect is heightened by the principal Handley Page exhibit which comprises the front section of the fuselage of the new 40-seater air-liner now being built for Imperial Airways. This resembles a Pullman car and the staging alongside to allow the curious to gaze on the sumptuous furnishings within might just as well be a railway platform.

The cabin-section of the fuselage of the H.P.42 is beautifully fitted inside and is remarkable for its spaciousness. The pilot's cockpit is in the extreme nose and seats two side by side.

The controls are interesting in that the main control is by a "Y"-shaped control column with a wheel at the extremity of each stalk opposite each seat. The whole column with the exception of the upper halves of each stalk is enclosed in a central box. The result is an uncommon cleanliness which comes as rather a shock after gazing at the cockpits of sundry military aircraft.

Behind the cockpit is a small wireless compartment and aft of this is the front passenger cabin.

THE HANDLEY PAGE STAND.—In the foreground the cabin portion of the 40-passenger H.P.42 air-liner, and behind the fuselage of a Hinaidi twin-engined bomber. —(*"Aeroplane" photograph.*)

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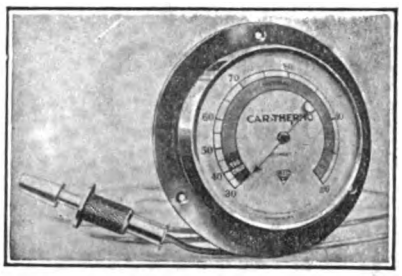

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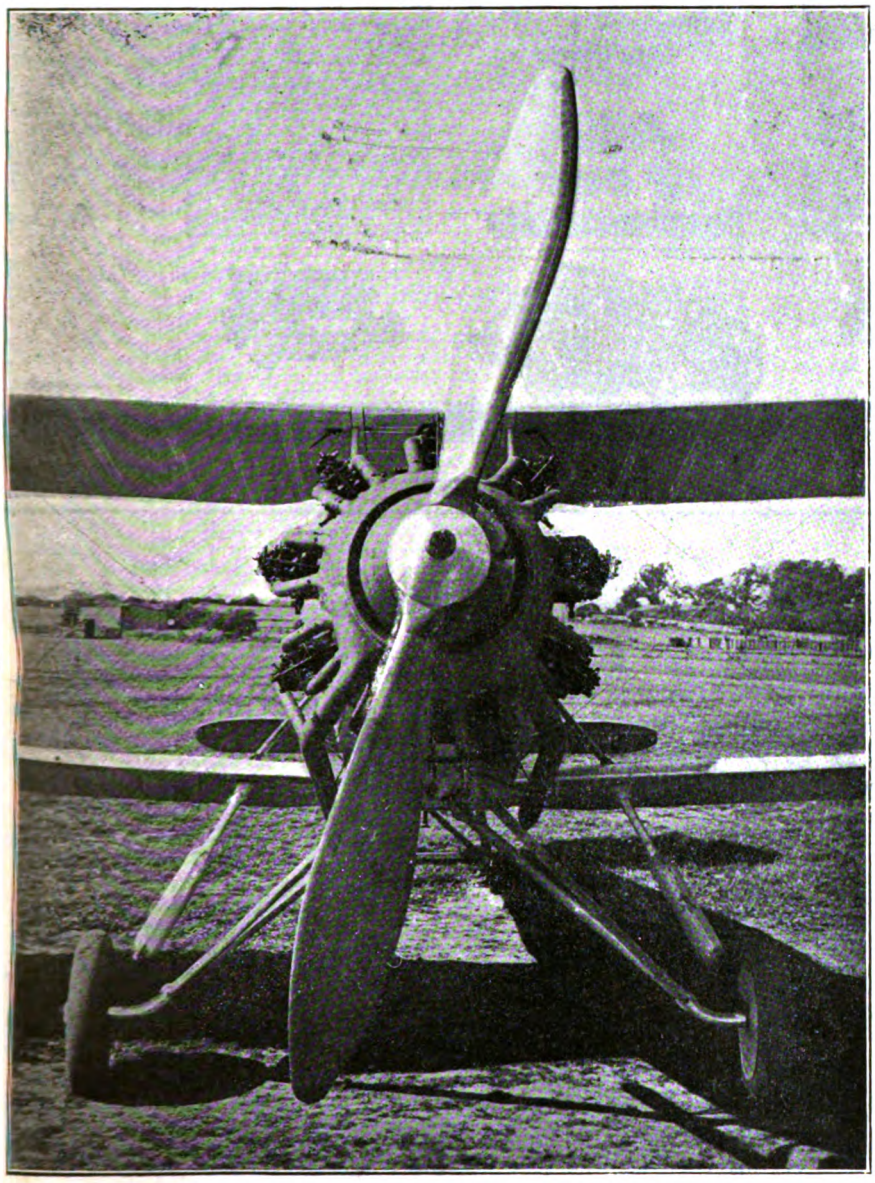

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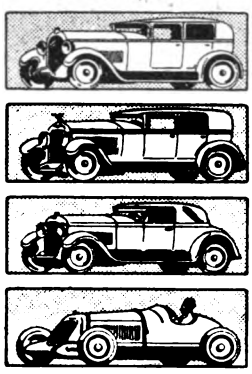

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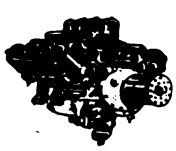

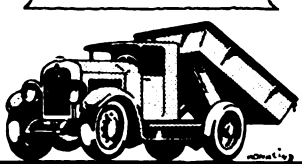

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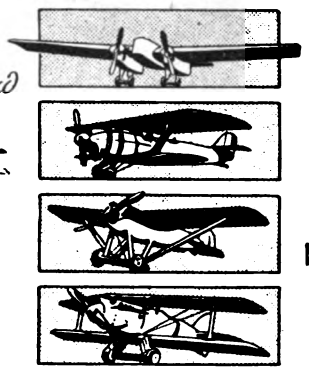

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The model to demonstrate the action of the Handley Page automatic slot.

The passenger accommodation is divided into two, each cabin seating twenty passengers arranged in pairs on either side of a central gangway.

All seats face forward except those at the front ends of each cabin which face aft. All seats are remarkable for their depth and for the leg-room provided between each set of chairs. The chairs are of three-ply construction, are very light and are upholstered in a striking chintz, or whatever it is called.

The space between the two cabins is taken up by—on the right, looking forward—a cocktail bar complete with counter, bottle-racks, etc., and—on the left—by two lavatories, one for Damen and one for Herren, and a baggage compartment, which has an outside door and has no connection with the interior. A wide central gangway connects the two cabins.

Each seat is supplied with individual hot and cold air control, and an electric bell-push. Also above each seat is an emergency rip panel.

A model of this 40-seater machine is also shown to give an idea of its final form. It will be a very large clean biplane with rigid bracing and four Bristol Jupiter engines, two in the top and two in the bottom planes, all driving tractor airscrews.

Alongside this cabin mock-up is a complete fuselage of an Hinaidi twin-engined night bomber of the standard service type. This exhibit was a last-minute substitution for the Hare day-bomber, which had to be withdrawn at the last moment.

The Hinaidi is too well known for further comment, and a model of the Hare shows what might have been seen in its place had service trials not interfered with the original plans.

A section of an all-metal Hinaidi wing complete with slots and the rear section of the fuselage in welded tubes are also shown.

The action of the Handley Page automatic slot is shown by a small model mounted in front of an electric fan, and this never fails to draw a crowd when set working.

Various specimens of metal construction, together with a Möwe or "Seagull" inflatable life-boat for which Handley Page Ltd. are selling agents in this country, and a selection of photographs of various types of machines which have been slotted complete the exhibit.

THE H. G. HAWKER ENGINEERING CO. LTD., Kingston-on-Thames. Stand No. 22.

The Hawker Company are showing three machines, the Hart two-seat Day Bomber, the Hornet single-seat Interceptor Fighter, and the Tom Tit two-seat training biplane.

The Hart and Hornet are two of the most eyeable military aircraft in the Show, and although one is unfortunately prevented from giving much information one is safe in saying that they must be about the fastest machines of their types in existence.

The Hart is a two-seat biplane with single-bay heavily-staggered wings. The construction is all-metal except the covering, and this construction is shown by a skeleton fuselage of the first production Hart and a wing-spar, both of which are of the Hawker patented type.

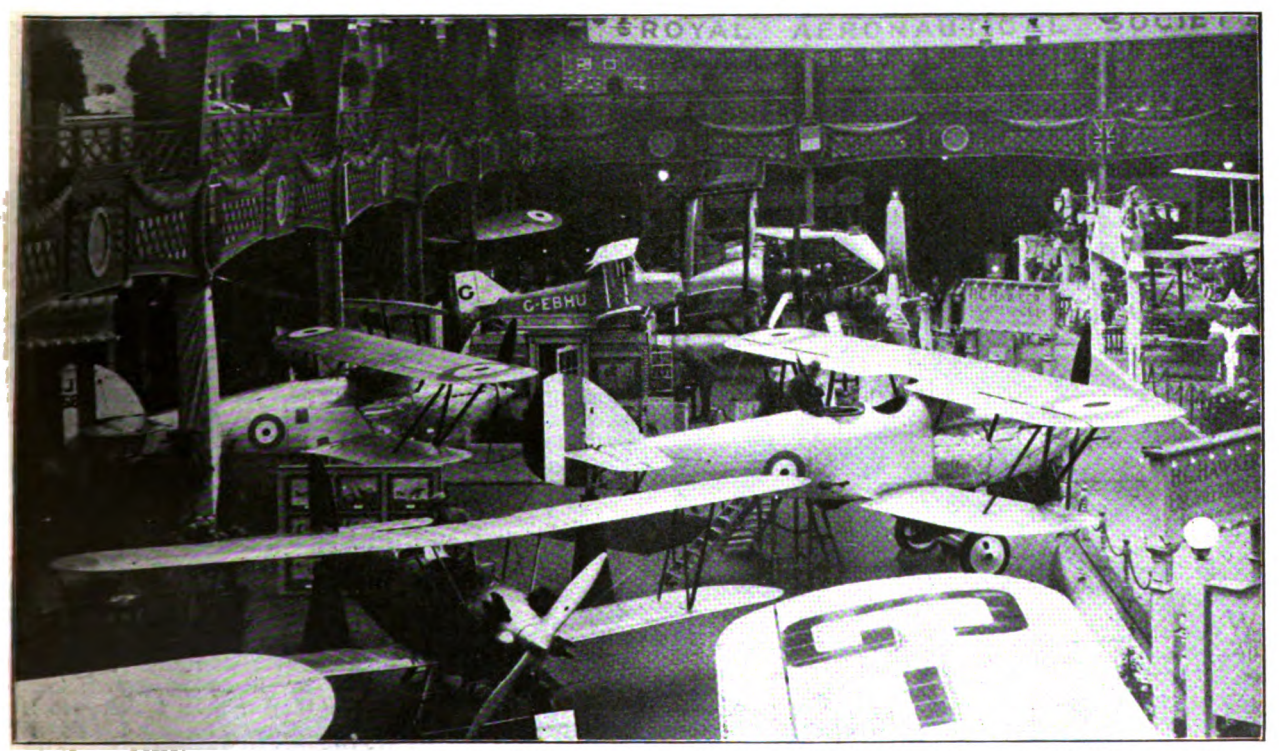
It is important to point out that the fuselage skeleton shown *is* the first production skeleton, because the finish is so superb that certain people are apt to conclude that it has been specially finished for exhibition.

This fuselage is in four sections and is of mixed steel and duralumin, the longerons and the more highly stressed cross-members being of steel. It is made of round tubes flattened at the joints, the whole being assembled with flat plates, and steel ferrules and hollow rivets, as described by Mr. Sigrist in THE AEROPLANE some time ago.

By using ferrules it is possible to make field repairs with bolts and nuts in place of hollow rivets.

The spars are built up of two many-sided rolled booms and a longitudinally corrugated web, the whole rivetted together. The object of the booms having a number of flat sides is that wiring plates and other fittings may always be assembled onto a flat bearing-surface, it being so arranged that the sides and top of the booms always present a flat surface.

These booms are now produced in several different sizes,



THE HAWKER STAND.—In the foreground is the Tom Tit and behind in formation are the Hart and the Hornet.—(*"Aeroplane" photograph.*)

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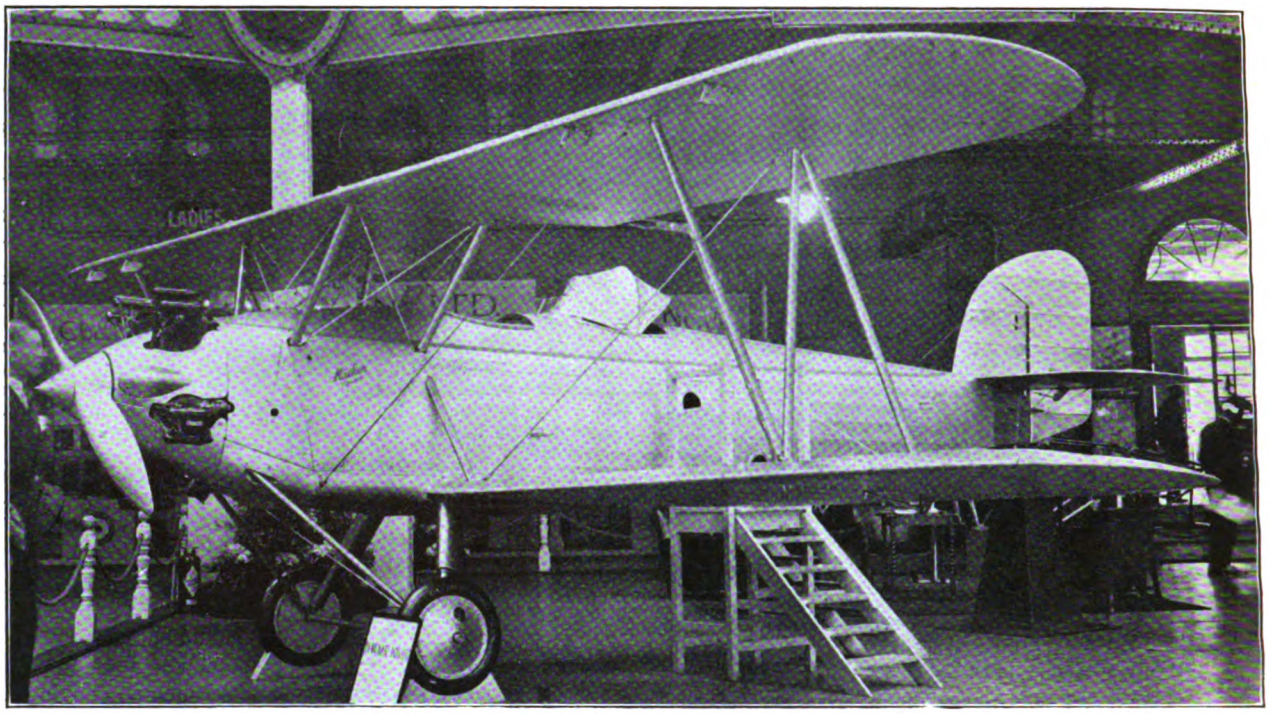


THE HAWKER TOM TIT.—A two-seat training biplane showing the hood raised over the back cockpit for fog and night flying training.—(*"Aeroplane" photograph.*)

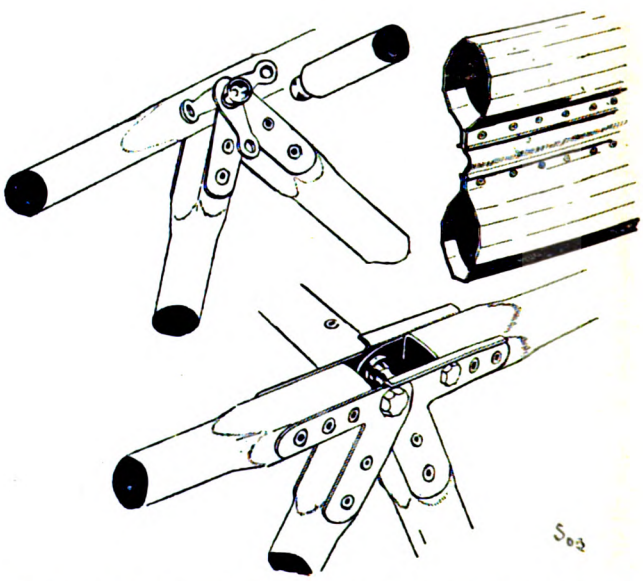
and with webs of different depths they may be used for almost any reasonably sized spar. For tail-plane spars two of the smaller size are rivetted together without a web.

The Hornet is of the same construction as the Hart. Both machines have the Rolls-Royce "F" type engine very completely and neatly cowled. The finish on the machines is of the highest class. There is interest in noting that the Hornet has come straight from Martlesham Heath after 50 hours' test flying and has only had a routine wash down.

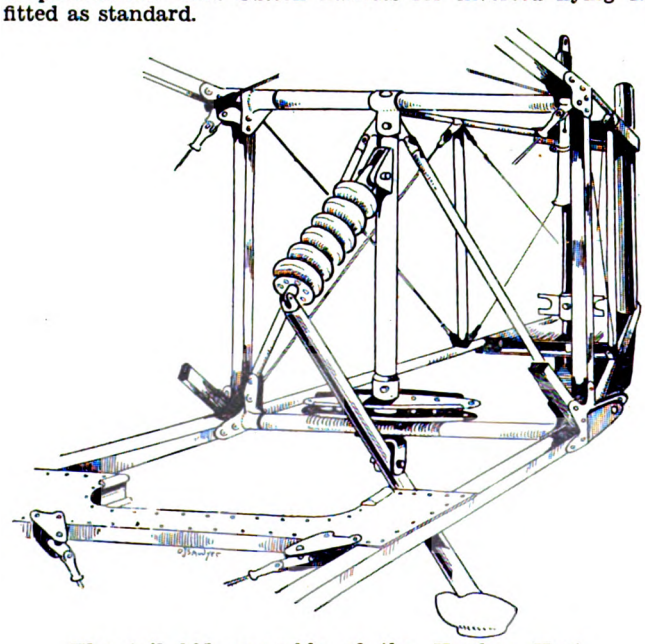
The Tom Tit is a two-seat super-training biplane with the Armstrong Siddeley Mongoose engine. It is finished in a most attractive colour scheme with blue and aluminium Cellon dope of a new type which gives a peculiar metalised appearance.

The Tom Tit is of metal construction throughout. The tandem cockpits are very completely equipped. The front cockpit is occupied by the instructor and the rear cockpit by the pupil. The latter cockpit is fitted with a blue leather hood which can be raised by the instructor to simulate fog or night-flying conditions, and the back dashboard is indirectly illuminated and fitted with a turn indicator. All controls, including the tail incidence gear, are duplicated, and both seats are adjustable for height.

The cockpits have been designed, in collaboration with the R.A.F. Medical Service. Incidentally they allow for the use of parachutes. And Sutton harness for inverted flying is fitted as standard.



Hawker Hart fuselage joints and a section of the patent Hawker wing-spar.



The tail-skid assembly of the Hawker Hart.

The interior of the cockpits is done in blue leather and the two neat Reid and Sigrist unit dashboards are also covered with blue leather.

Slots and an oleo-Vee cross-axle undercarriage are standard fitments, and the whole machine gives the impression of super-finish that puts it in the class of the very superior sporting light aeroplane. In the finish shown at Olympia it is far too superfine for the R.A.F. Authorities to let the ordinary fool-pupil loose in it.

A metal float for the Hawker Hoopoe single-seat fighter completes the exhibit.

S. T. LEA, 141, New Bond Street, London, W.1.

Stand No. 6

Mr. S. T. Lea is showing the Klemm light aeroplane for which he is agent in this country. The machine exhibited has a Salmson engine of 40 h.p. and is very attractive.

Its unusual points at once attract attention. It is covered entirely with plywood and it is a low-wing monoplane. So it looks very different from the ordinary types. It is at present made in Germany and may be fitted with either the engine shown or else the 20 h.p. 2-cylinder Mercedes.

One of these machines has become a common sight at o

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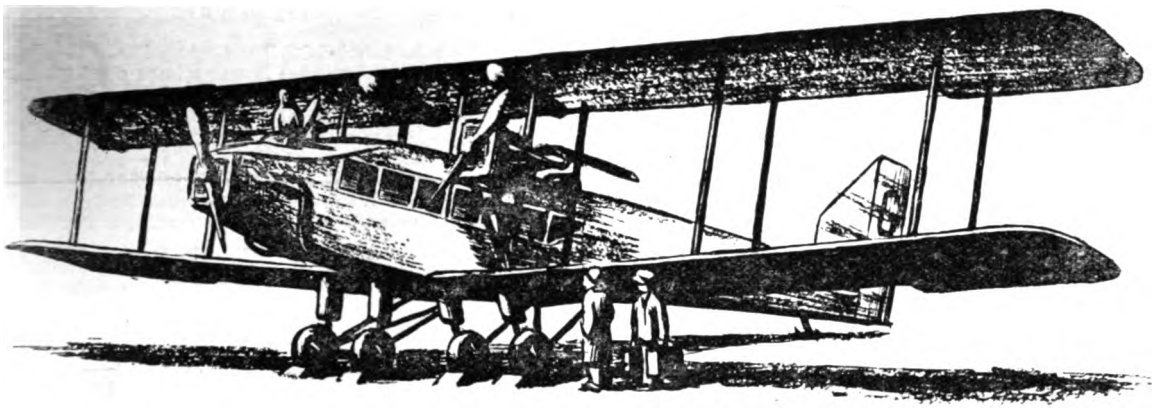

A 14-seater triple-engined S.A.B.E.N.A. Handley Page.

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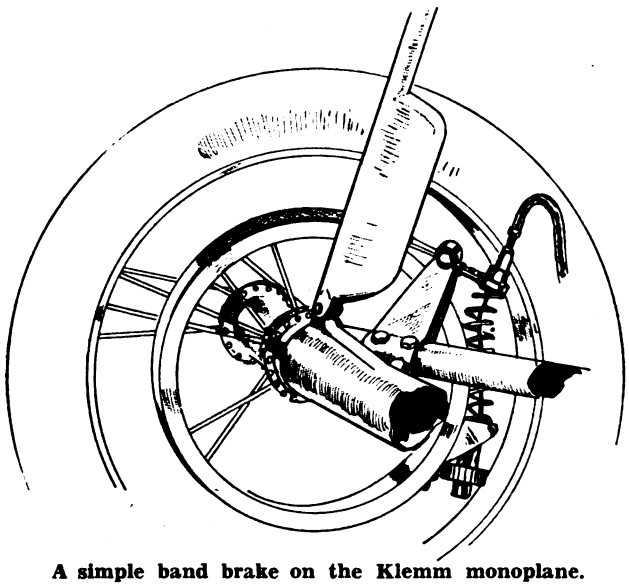


A simple band brake on the Klemm monoplane.

air meetings as Mr. Lea has had a representative at most of them and slow-flying exhibitions on it have been much admired.

GEORGE PARNALL AND CO., Yate, Bristol, Stand No. 92.

Going down the centre aisle towards the Annexe one finds on the right the stand of George Parnall and Co., where one of the latest two-seat light aeroplanes is being shown, together with the Peto, which has received so much publicity through being designed for conveyance in a submarine.

Designs for a flying-boat to do just this were submitted by Mr. Pemberton Billing to the Admiralty early in 1915, with the intention of bombing Berlin from the Baltic, and was turned down because the project seemed to be inhuman.

Apropos of this a visitor came to THE AEROPLANE stand who was deaf and dumb. He succeeded in making a member of the staff understood that he wished to be taken to see this aeroplane. When he arrived in front of the machine his guide was rather disconcerted by being fiercely questioned as to "who has stolen my idea?"

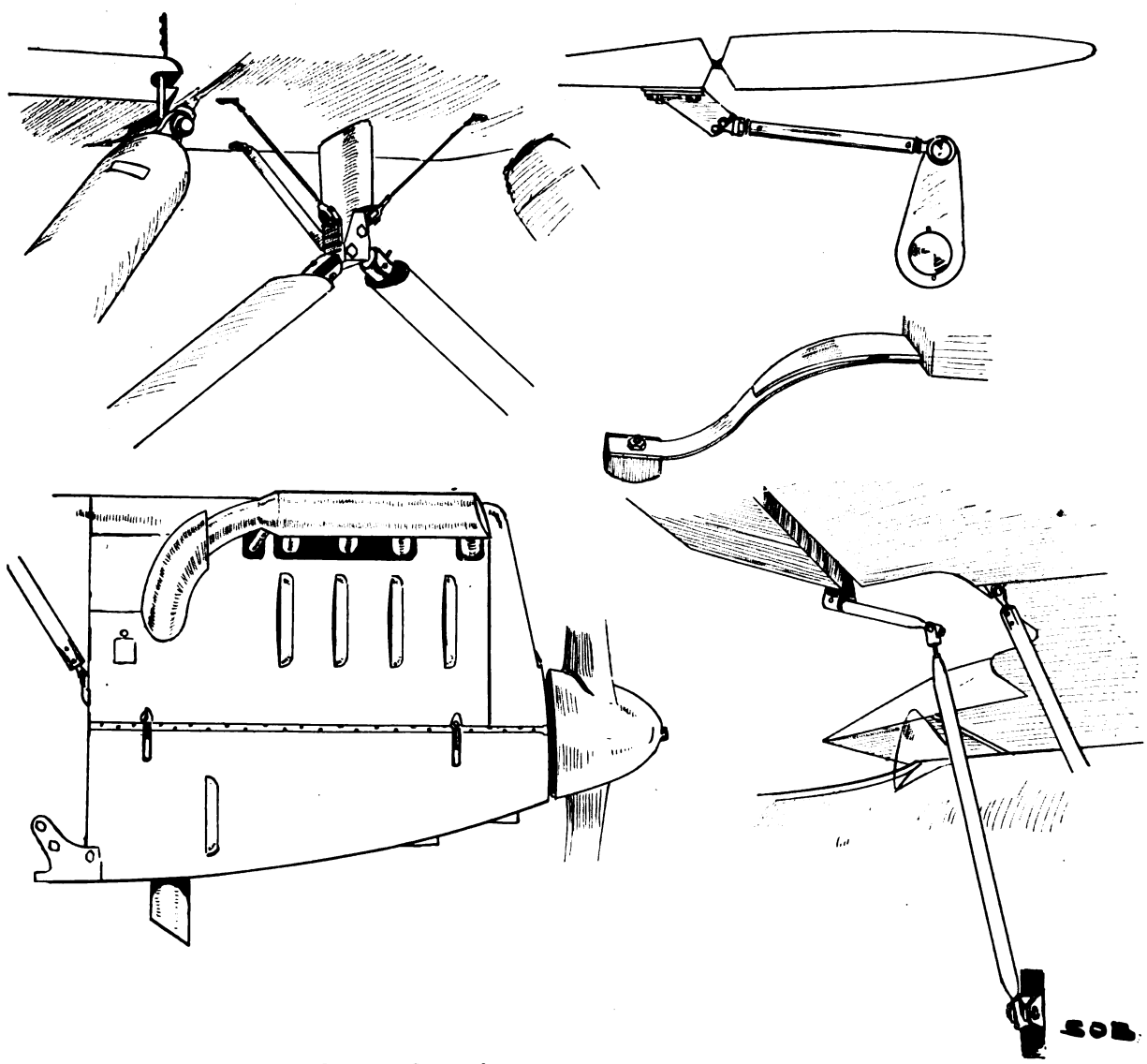
The position was complicated by the fact that all conversation had to be carried on by a species of shorthand on scraps of paper. The visitor appeared to have suggested to the Admiralty the scheme of conveying an aeroplane in a submarine as far back as 1913 and to have reiterated continually this theory. The guide was unable to satisfy the queries of the visitor, and after being thanked for his kindness left the stranger gazing at the embodiment of his early idea.

The visitor was not Mr. Pemberton Billing—who is certainly not dumb, though he is sometimes deaf to argument.

The Peto is of composite wood and metal construction and has a 135 h.p. Armstrong Siddeley Mongoose engine. The rigidly-braced biplane wings fold back and the float gear is quickly removable.

This small machine, which carries pilot and observer, contains a chart case, observation instruments and a short-wave wireless set, besides the usual equipment for the pilot. The machine has a range of about 200 miles.

The Parnall Elf is an attempt to produce a sports model light aeroplane,—that is to say, a machine with a perform-



PARNALL ELF DETAILS.—Above, undercarriage, elevator control and tail-skid details and below the Hermes engine cowling and the aileron control.

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MONOPLANE *Scorpion* II Engine

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All wood construction. No rigging. Wing completely detachable by means of 4 draw pins in under 2 mins. Safety section wing. Can be flown by any A pilot.

Performance.—92 m.p.h. top speed.
Lands at 45 m.p.h.
Climbs 500 feet per minute.

These are not design figures. Running costs and upkeep less than 1d. per mile. Normal range 350 miles.

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STAND No. 19 INTERNATIONAL AERO EXHIBITION

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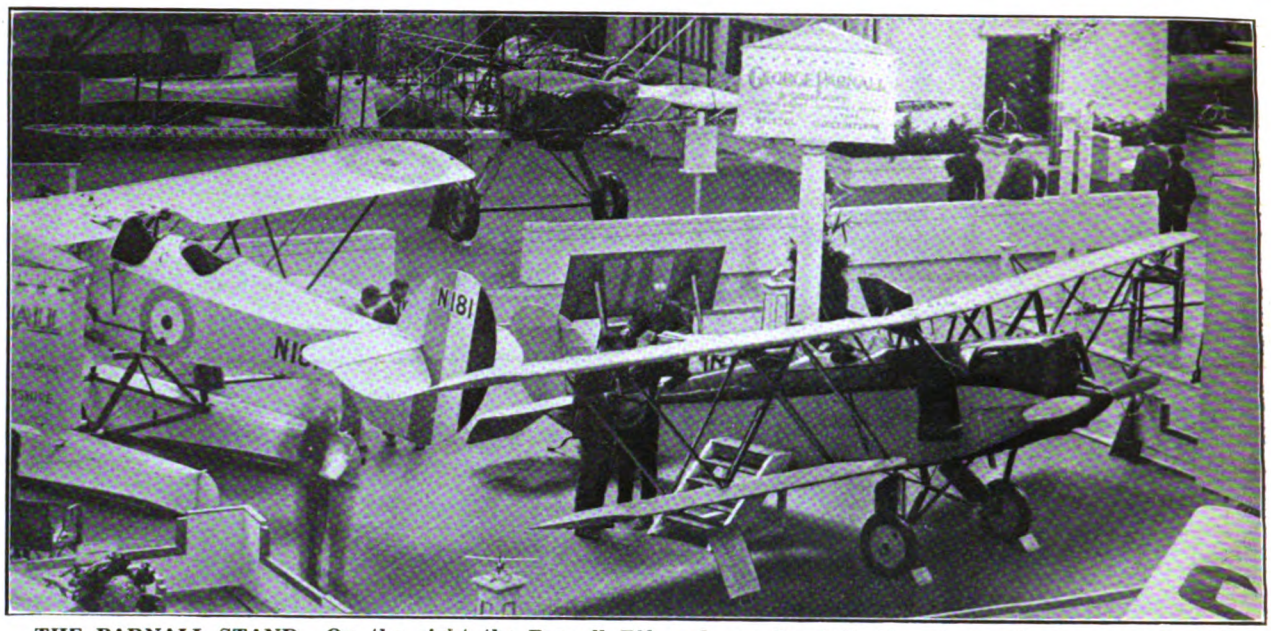


THE PARNALL STAND.—On the right the Parnall Elf and on the left the stern of the Parnall Peto seaplane. —(*"Aeroplane" photograph.*)

ance comparable with the other standard makes as a M.G. sports model compares with a standard Morris.

To simplify maintenance, the wing-bracing is of the Warren girder type. Another point to which special attention has been paid is the provision of a really good view for pilot and passenger. As a result the wings are staggered and slightly swept back.

The lines of the fuselage are rather attractive, and the Hermes engine is completely encowled.

The fuselage is of the three-ply box type reinforced with spruce members and both cockpits are aft of the upper centre section. This, in conjunction with the stagger, gives the good view to which reference has already been made. A Smith's unit-type instrument board is fitted for the pilot and immediately behind his seat is a large compartment for luggage.

Forward of the front seat there is also an auxiliary locker for tools, kit, and so on.

The dual control is constructed in one unit and secured to the fuselage as a complete panel. The tail unit is of the normal type and the tail-plane incidence has to be adjusted on the ground. All control wires are within the fuselage.

The ailerons extend the whole length of the upper wing; the hinged trailing edges of the lower planes are only for folding.

The undercarriage is of the divided axle type. The axles are hinged to a short vertical strut braced on the centre-line of the fuselage.

The tail skid is of the laminated spring type and has a replaceable cast-iron shoe.

The engine is mounted on a welded steel-tube structure which can be removed as a unit by undoing four bolts. The fuel system is rather novel for a machine of this type. There is a three-gallon gravity tank in the centre section which is fed by a force-pump from the 20-gallon main tank carried in the fuselage. There is interest in noting that the cruising speed is calculated to be 103 miles an hour.

S. E. SAUNDERS, LTD. East Cowes, I.O.W.
Stand No. 105.

If the visitor to Olympia goes into the main hall by the Addison Road entrance, then the thing which will probably catch his eye is a study in blue. This is the *Cutty Sark*, the first twin-engined cabin-monoplane flying-boat to be produced in this country.

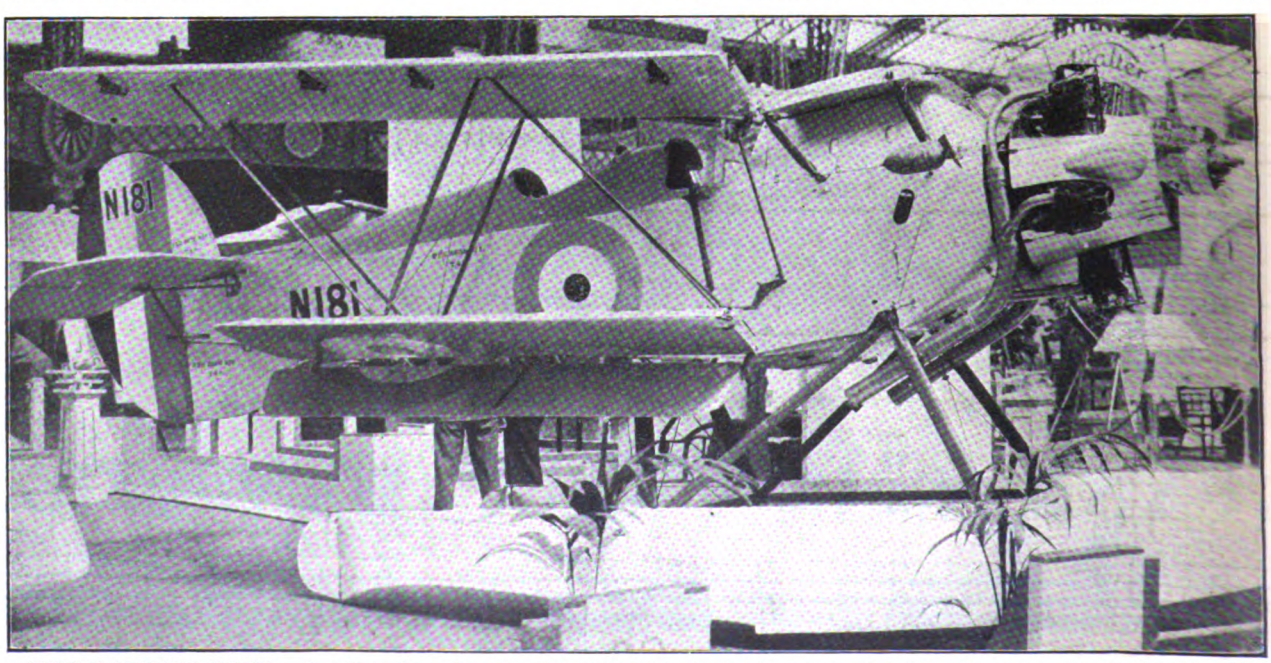
The boat, shown by S. E. Saunders, Ltd., has two Hermes engines carried on trestles above the wing. But a single engine of 200 h.p., or even 300 h.p., may be installed.

The *Cutty Sark* has a single-step hull of the all-metal type, with a cantilever three-ply covered wing. It is the blue-painted hull and wing floats which catch the attention as one comes in.

Examination of the hull shows that all the sheeting used is flat plate, which considerably facilitates manufacture and repairs.

Just forward of the step are two flaps which lie close along the hull. These are drogues to assist control while taxying on the water.

The wing floats, which are placed not quite half-way to



THE PARNALL PETO.—A side view showing the machine with its wings folded. —(*"Aeroplane" photograph.*)

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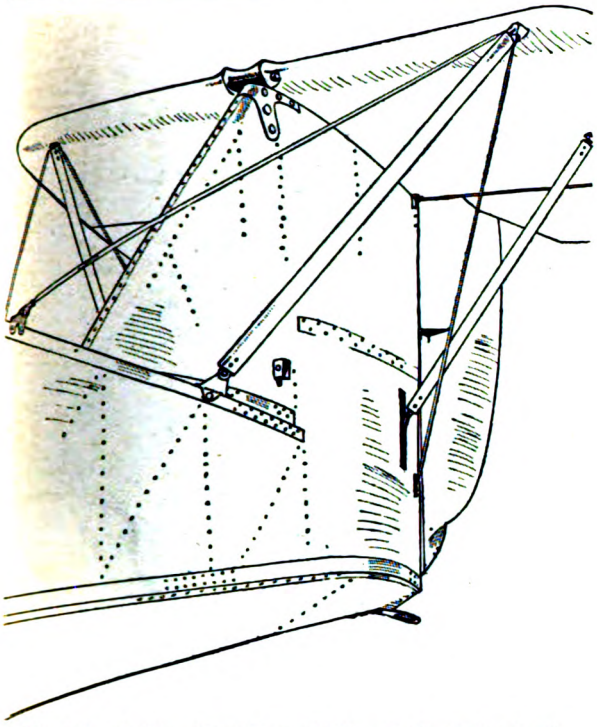


The tail of the Saunders Cutty Sark flying-boat.

the wing tips, are of similar construction to the hull, and have no step. Each is supported by four struts, together with two inwardly sloping diagonal struts.

Provision is made on the hull for fitting beaching gear. This consists of a hollow axle built into the hull through which a detachable axle can be passed. The latter has aluminium wheels which are brought into use by a cam action operated by hand-levers.

In the bow is a compartment for the stowage of anchor and other marine gear. It has a water-tight hinged hatch.

The cabin, which is aft of this and forward of the wing, is completely enclosed with a front screen of non-splintering glass and sliding glass side-panels. The roof panels are of Cellon.

Entry to the cabin is on the starboard side by sliding backwards the side-panel and a portion of the roof.

There are four seats inside, arranged in two pairs. The passageway is lower than the floor on which the seats stand, and thus gives sufficient headroom. The interior of the cabin is attractively finished in some form of leather fabric.

In a bulkhead behind the back seats is a sliding panel through which to reach the hatch in the centre section between the engines and the rear of the hull.

Three bunks may be fitted in this space if the boat is wanted for long cruises.

Dual control is fitted, the pilot sitting on the port side.

The parallel-motion rudder-bar has adjustable foot-rests.

Just in front of the pilot's seat, and under his legs, are the two levers for operating the drogues. These may be opened simultaneously to act as brakes, or may be used independently for steering. The flaps are spring-loaded, so that contact with flotsam will cause them to lie back against the hull, thus avoiding damage.

The throttle control is centrally fixed on the dashboard. Just below the window on the left of the pilot is a special bollard, so that the pilot may slip his own moorings.

For a similar reason a triangular space in the roof may be hinged backwards, which allows the pilot to stand and pick up his moorings.

Owing to the fact that the main petrol-tanks are in the wing, and thus remote, and that no petrol pipe enters the hull, it is quite safe to smoke in the cabin.

The two Hermes engines are contained in nicely streamlined nacelles, each of which carries a gravity fuel-tank, to which the petrol is pumped from the main wing-tanks.

The Heywood starting system is used. This consists of a compressed-air reservoir, which is automatically kept at its maximum pressure by a compressor driven by one of the engines, the compressed air being used for starting the engines.

A full reservoir contains enough air to start the engines six times, if all goes well in the engines.

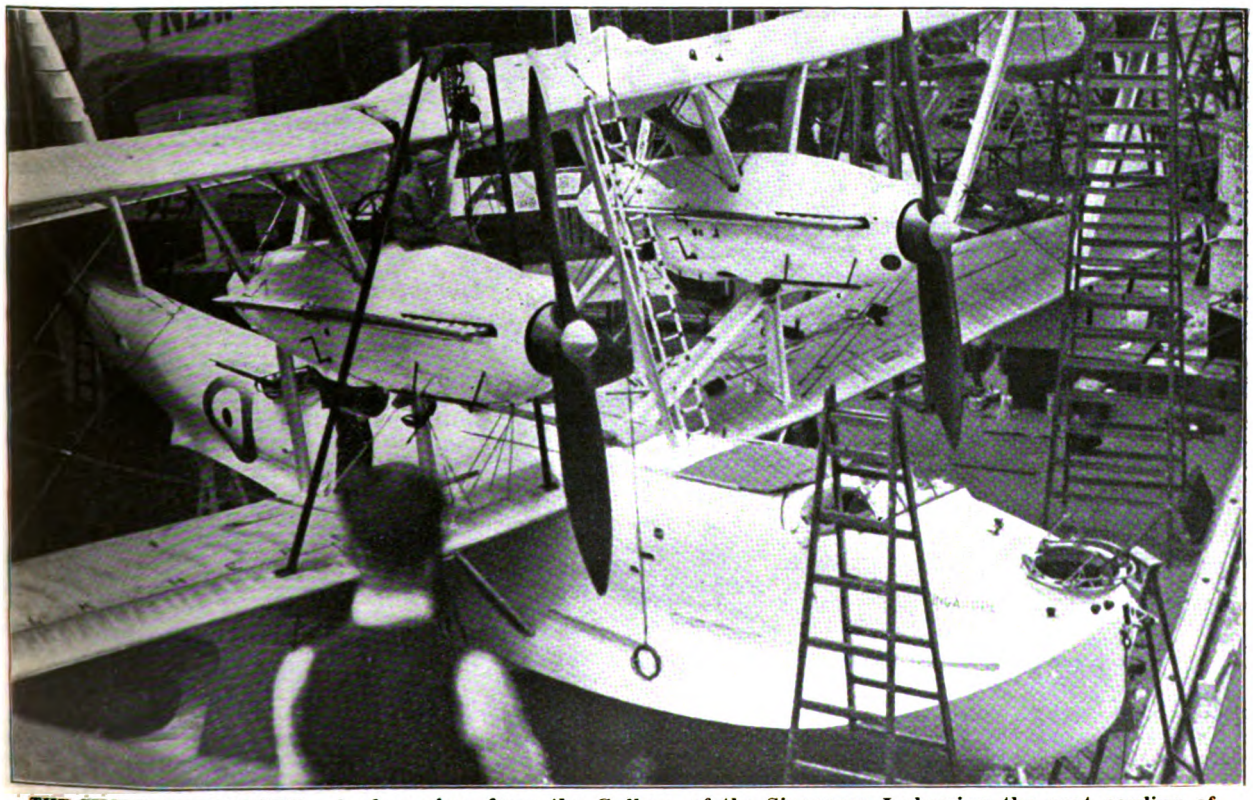
The wing is of the familiar Fokker type, is entirely water-tight, and is capable of floating the whole machine, or taking the place of a wrecked outboard float.

The fin is built up of duralumin from the stern of the hull, and has a removable panel to give access to the controls.

The tail-plane, elevators, and rudder are of welded steel tube, with fabric covering. The tail-plane is adjustable from the pilot's cockpit, and the rudder and elevators are balanced.

The price of the *Cutty Sark* is £3,500, and the amphibian gear which can be fitted is an extra of £250.

A good deal of interest has been shown by private individuals in this exhibit, and orders for it should not be difficult to get. Also, if light aeroplanes be accepted, as they are, for use as training machines in the R.A.F., there should be no doubt about the usefulness of the *Cutty Sark* in the training of pilots of twin-engined flying boats.



THE SHORT SINGAPORE.—A close view, from the Gallery, of the Singapore I showing the neat cowling of the Rolls-Royce "H" engines. —(*"Aeroplane" photograph.*)

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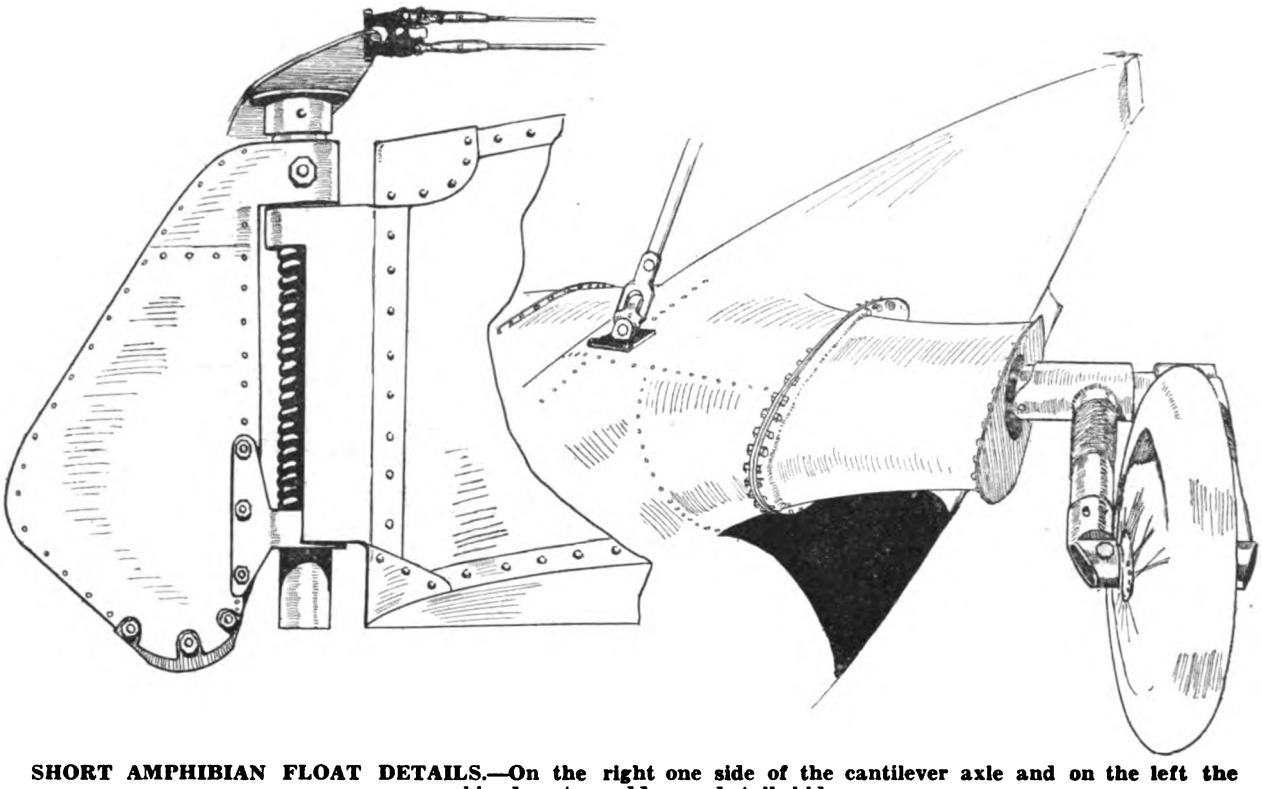

SHORT AMPHIBIAN FLOAT DETAILS.—On the right one side of the cantilever axle and on the left the combined water-rudder and tail-skid.

SHORT BROS. (ROCHESTER AND BEDFORD) LTD., Rochester. Stand No. 107.

The Short Stand is quite close to the entrance from Addison Road, being in the left-hand corner of the main hall as one comes in. Placed as a rail round the stand are a number of the Short firm's own type of all-metal spars, the largest of these being for the new Short three-engined monoplane. These spars are 47ft. by 14in. by 8in., and look very fine in their anodically-treated finish.

Of course, the most striking feature of Short's exhibit is the Singapore Flying-boat, in which an extraordinary amount of interest is shown by the General Public, who wait in queues for the chance of entering by the rear cockpits and passing out to the front. One old lady had come up from the country specially to see Sir Alan Cobham's machine, and insisted on being allowed to see where he sat "all the way round Africa."

As is well known, the original Singapore put up a very fine show during the Baltic cruise with other types of flying boat, and was later lent to Sir Alan Cobham by the Air Ministry for the Sir Charles Wakefield Survey of Africa. This flight was a great triumph for the flying-boat, and illustrated the advantages of the all-metal construction.

As a result of the success of the Calcutta type, the makers felt that the performance of the Singapore might be even further improved, and so a kind of face-lifting operation took place. The lines of the planing bottom were modified to those of the Calcutta, and at the same time Rolls-Royce H10 engines were fitted, instead of Condors.

To accommodate these engines, new streamlined nacelles were built, and the radiators were slung over the nacelles under the centre-plane. The result has been to increase the permissible overload to 27,000lb. (over 12 tons), the time of take-off has been reduced to 16sec., and the top speed at sea-level has been increased to 128 m.p.h.

The range is 950 miles at cruising speed.

The wing structure is unusual for a craft of this size, in that single-bay bracing is employed, with outwardly sloping interplane struts—as the top wing is of considerably larger span than the lower wing.

Ailerons and slots are fitted along the top plane only. A monoplane tail and single fin and rudder, together with the main wing structure, give the whole craft the appearance of a high-performance fighter rather than of a large flying-boat.

The hull is built like all Short machines, with transverse bulkheads and a stressed skin put on in rings, employing only local stiffening. In front is a cockpit with a gun-ring for taking bomb-sights and picking up moorings. Aft there comes the side-by-side cockpit with dual control for the pilot, and his relief. And aft of the wings are two staggered cockpits for two more gunners. The interior is roomy and contains wireless equipment, and navigating chart table, and also the fuel gauges and controls for the engineer.

The spars are of the usual Short type, with ribs built of duralumin tube. The whole is covered with fabric.

Close to the Singapore and in the centre of the stand are two Short all-metal chairs of the type developed for use in the Calcuttas. These chairs are fitted with pneumatic upholstery, and are very comfortable. They have the additional advantage that the air-cushions are arranged to form a life-saving jacket. The entire upholstery can be grabbed from the chair and put on immediately, as there is one cushion on the wearer's back and one on their chest. These cushions are held by a strap passed between the legs. This device will hold anybody in the water quite erect and comfortably.

The next thing on the stand is interesting in a very different way. This is an amphibian gear for light aeroplanes fitted to a Gipsy Moth. Many people have expressed the opinion that for really interesting private flying a machine ought to be able to land on either water or ground at choice. Also, for the purpose of long tours in unknown territory and for long flights which include stretches of sea, the risk of forced landing would be greatly reduced by the adoption of amphibian gear. The Short gear consists of a central float carrying an axle with a fork at either end, which incorporates shock-absorber gear and carries the wheels. A screw mechanism rotates the cross axle, and so the forks and the wheels can be lifted up until they are quite clear of the water. The lateral stability of the machine is secured by small wing-tip floats.

The Short Mussel Mk. II., a two-seat low-wing monoplane, is also shown on the stand as a twin-float seaplane though an alternative wheel undercarriage is shown alongside the machine.

It is built like the Singapore, with metal fuselage and metal wing-skeletons covered with fabric. These are braced to the fuselage with a pair of short struts on either side. The robustness of the construction of this machine makes it particularly useful for club work where instruction on seaplanes is required. The original Mussel was moored out for many thousands of hours on the Medway without damaging the structure.

A pair of floats for a machine of about 5,000lb. overall weight are the only reminder of the fact that Shorts have made quantities of floats for clients all over the World, and for a large number of firms in this country. All D.H. Moth seaplanes are fitted with Short floats, and a good many score pairs have been supplied for this purpose alone.

There is also a model of the three-engined commercial monoplane now being built by the firm. This machine is noteworthy as a change-over from the use of the flying-boat for heavy commercial work to a very large twin-float seaplane. Such a change makes it possible to build the fuselage more lightly than the corresponding hull of a boat.

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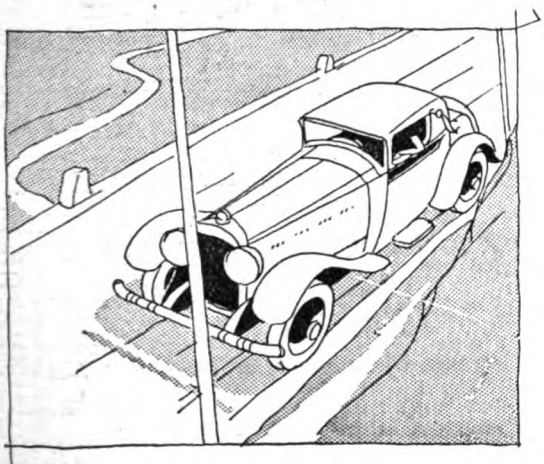
FIT TRIPLEX ....AND PUT SAFETY FIRST



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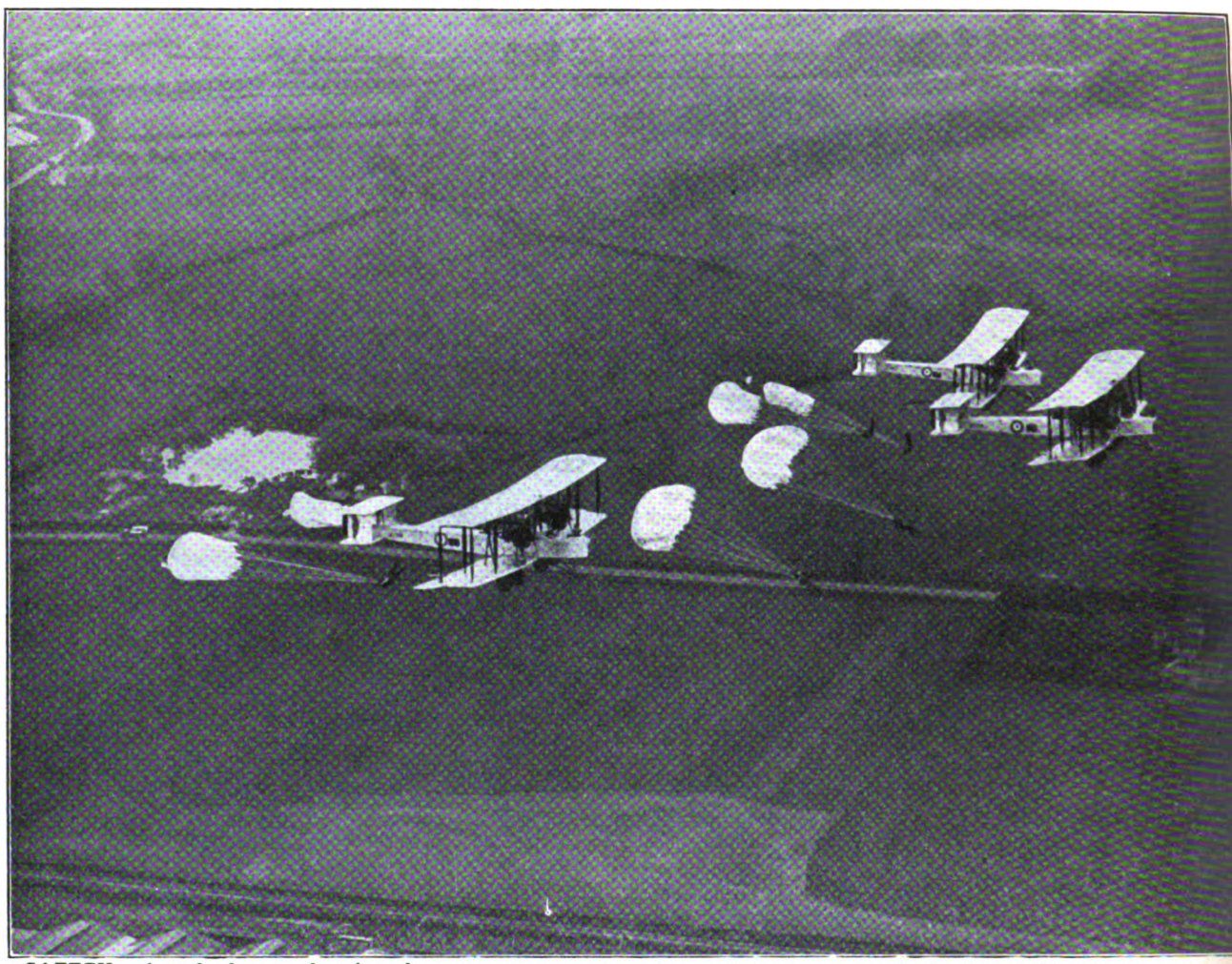

SAFETY.—Actual photograph taken from an accompanying plane of six members of the Royal Air Force jumping simultaneously with IRVIN Air Chutes from Vickers Virginia bombers.

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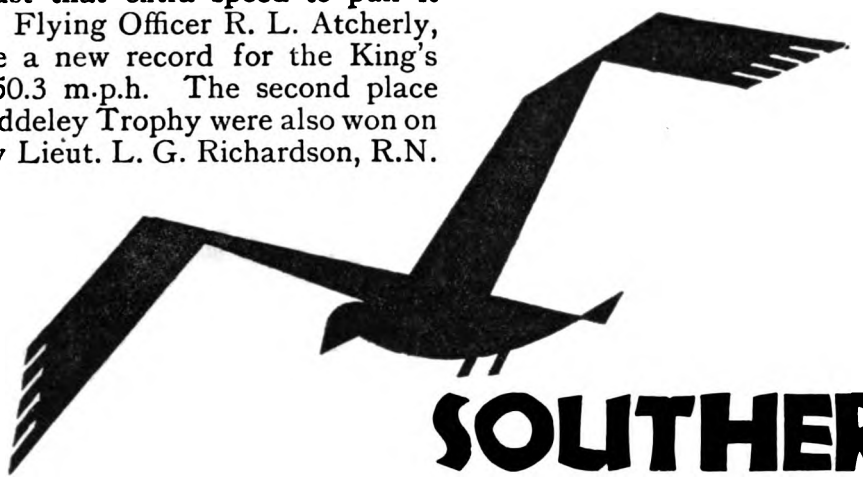

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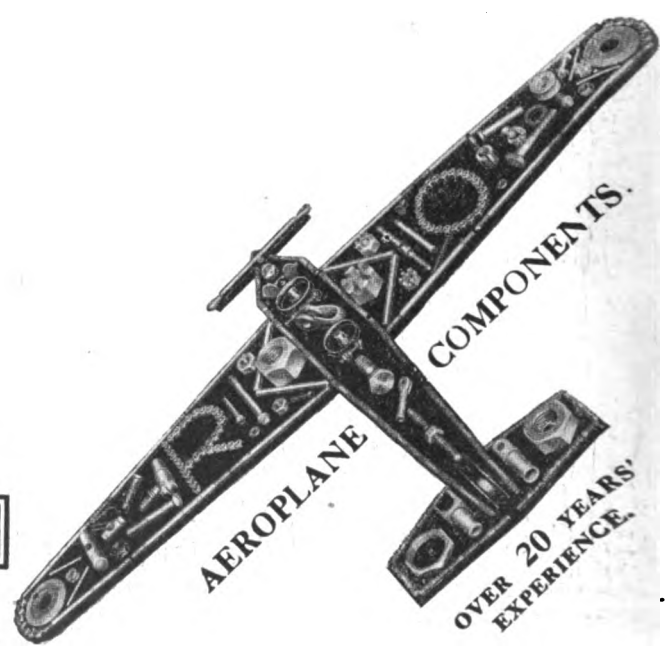

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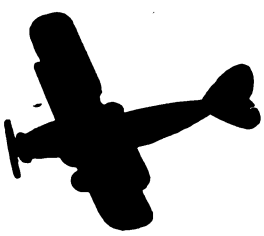

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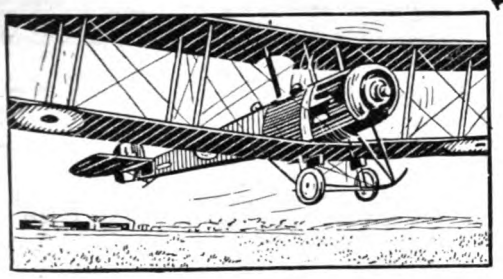
SUPREME THROUGH THE YEARS

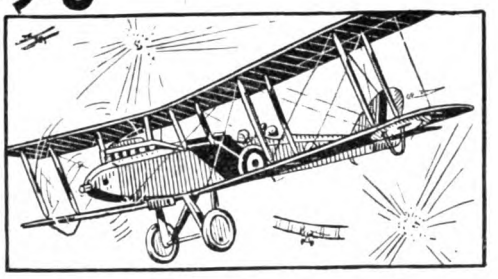
1913



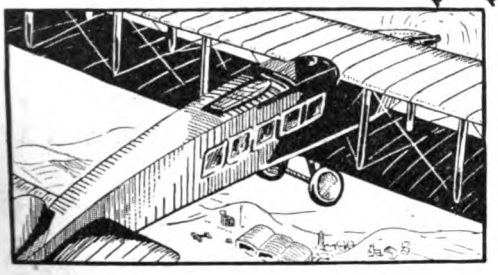
This was the year when Palmer produced the first Landing wheels and Tyres specially designed for Aeroplane use. Palmer was the only tyre manufacturer who made any intelligent effort to grapple with the problem of supplying Aircraft constructors with suitable Landing Equipment.

1914-1918

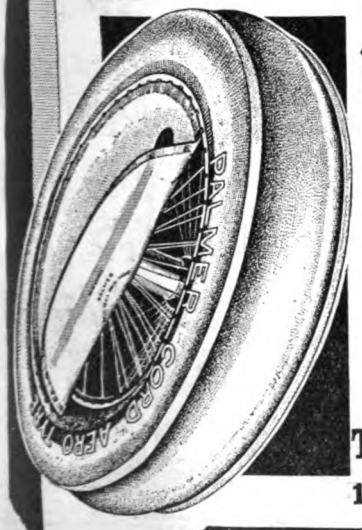
These were the War years when the entire British demand for Aeroplane Landing Wheels and Tyres was met by Palmer. Every British machine which left England was equipped with Palmer Landing Wheels and Tyres.



1919-1929

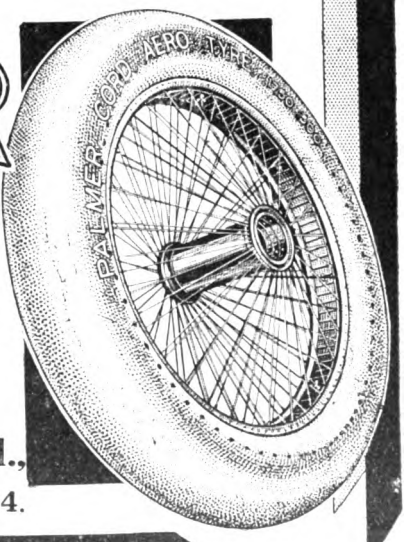


In the years since the war continuous research and new technical advances have kept Palmer Landing Wheels and Tyres first in efficiency and popularity. They have been chosen for all the notable flights undertaken on British machines, they are fitted as standard equipment on the great majority of British machines and they are used in every country in the World where Aeroplanes are employed.



PALMER

And now comes the Palmer Aircraft Brake which satisfactorily solves in an exceedingly simple manner, the problem of an efficient braking device for aircraft. All who are interested in safer flying should get particulars of this—the latest Palmer innovation.



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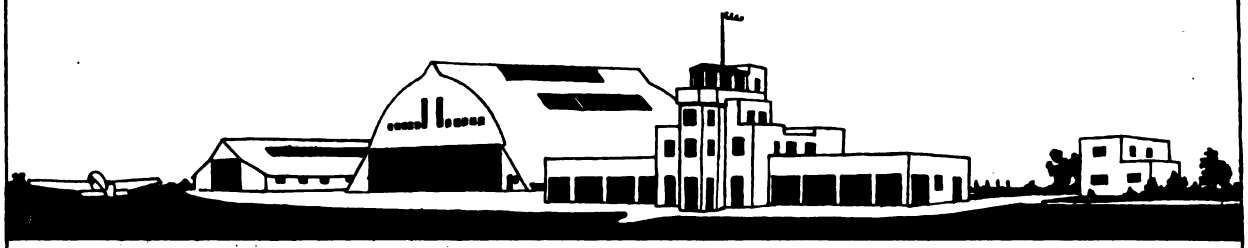

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OLYMPIA STAND No 119 JULY 16TH-27TH

HESTON AIR PARK

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SIMMONDS AIRCRAFT LTD., Woolston, Southampton. Stand No. 54.

The Simmonds Aircraft Company are showing two Spartan biplanes, one a three-seater with the Cirrus-Hermes engine and the other a two-seater with the Cirrus III engine. The former is finished in silver with a blue deck and the latter in orange and black, the colours of National Flying Services Ltd.

Both these machines, naturally, incorporate the patented inter-changeable wings, tail surfaces and undercarriage units.

An ingenious working model demonstrates the first-mentioned feature. This model consists of a small Spartan fuselage complete with centre-section, tail, undercarriage and one wing which is mounted on a rail which runs from one bottom wing root to the other over the centre-section. This wing successively stops at each wing position as it goes from one side to the other.

The Cirrus engine on the two-seat Spartan is totally enclosed and the airscrew is one of the new detachable-bladed Metal Propeller Co.'s light aeroplane airscrews, the boss being covered by a spinner.

The cylinders of the Hermes engine in the three-seater are uncowled, but the cowling round the engine from the fireproof bulkhead, as on the two-seater, is of aluminium and finishes in a spinner.

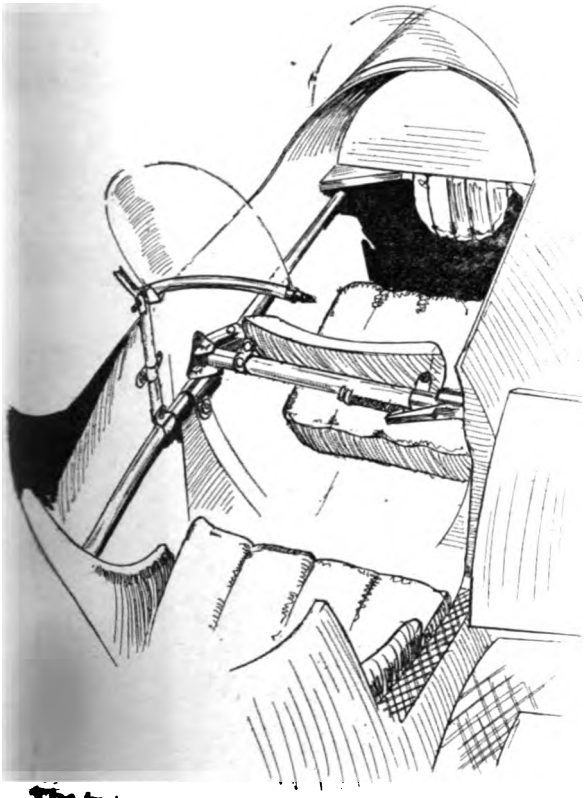
The three-seat model has the pilot's cockpit in the same relative position as in the two-seat machine, but the front cockpit is much larger and has accommodation for two passengers, who may be seated either both facing forward or facing each other.

When the three seats are not needed the front seat may be removed, and the cowling above it may be closed over. And if necessary dual controls may be fitted.

The finish on the machines, in Hall's paint, is excellent.

Unfortunately the Simmonds stand is in a rather out-of-the-way position. It is one of the only two British stands, the other being the Desoutter, in the Annexe,—which is otherwise given over to the Foreign exhibits. Originally the Simmonds Company planned to show three machines, but the reason for withdrawing one is too obvious.

A full specification of the Spartan was given in THE AEROPLANE Show Guide, so it is not necessary to repeat it here.

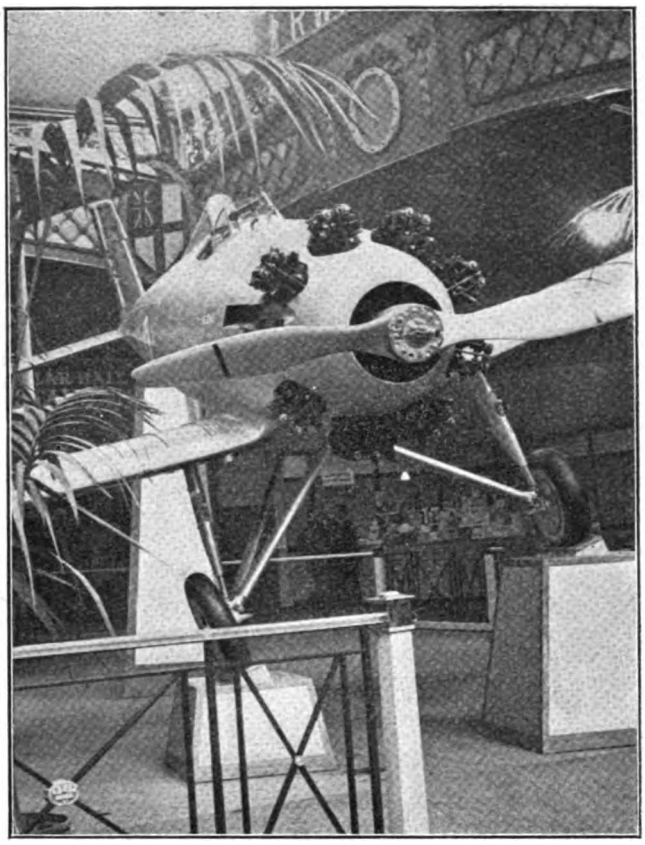


The front cockpit of the three-seat Spartan showing the hinged windscreen.

THE SUPERMARINE AVIATION WORKS LTD., Southampton.

VICKERS (AVIATION) LTD., Weybridge. Stand. No. 85.

The visitor to the main hall immediately has his eye caught by the big wings of the Vickers Victoria and the Southampton Supermarine, which show clearly above the other exhibits. Making one's way to that part of the world, one finds that there are four aircraft on this combined stand, the Vickers F 20/27, which is a single-seat intercepter fighter, the Vickers Victoria, which recently made history at the evacuation of Kabul, the Supermarine S5, and the Supermarine Southampton. This last is actually one of the four flying boats which made the great flight to and round the Far East.



The Vickers Interceptor Fighter with the Bristol Mercury engine.

The F 20/27 is remarkably interesting as a new type for the Air Force. It is a low-wing intercepter fighter and has all its aerofoil surface covered with duralumin sheeting. External examination shows this machine to be fitted with wheel brakes and to have an undercarriage of the divided axle type.

The wing-covering is attached by the Vickers Wibault patent process, and consists of panels of duralumin attached to the ribs by upturned edges, these edges and the sandwiched rib being afterwards covered with a U-section capping strip. The fuselage is metal-covered as far aft as the cockpit, and thence fabric-covering is used. The engine is a Bristol Mercury II.A.

The Victoria is completely stripped on the starboard side, so that the methods of construction may be examined, and very instructive such an examination proves to be.

As is well known, the Victoria is a twin-engined biplane with Napier Lion XI. engines, in nacelles between two pairs of interplanes struts at the extremity of the centre-section. Beyond this the outer wing-panels have two bays of bracing. Ailerons are fitted on all four wings.

The spars are of the wandering-web type developed by Vickers. This is extremely simple, and consists of two flanges of channel section, with a web which zig-zags from side to side, and is rivetted to the flanges of the channels. The ribs normally are of tubular construction, though ribs doing special duties are of special section. The slots which are attached to the upper plane are built by the Wibault method.

The interplane struts appear to be made of thick-gauge duralumin sheet folded to shape and fastened down the trailing edge. The biplane tail is also of complete metal construction with fabric covering.

The forward portion of the fuselage is a plywood structure built over formers of "O" section. The after-part of the structure is duralumin. After examining the Ford machine one was struck by the fact that a tail-*skid* and not a tail-*wheel* is fitted to the Victoria.

There is a pair of wheels under each engine nacelle. Alongside the fuselage are steps, so that one may look inside the

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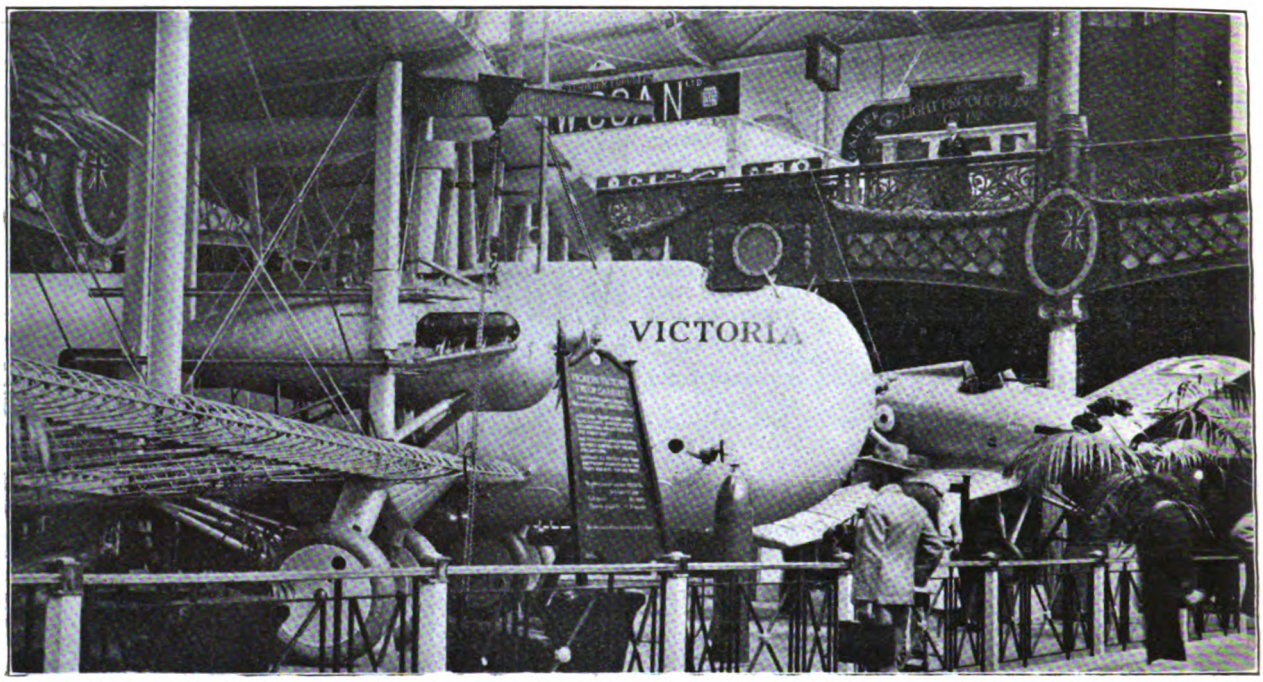


THE VICKERS STAND.—The nose of the Vickers Victoria with the Interceptor Fighter in the background.
("Aeroplane" photograph.)

cabin and see the canvas seats for the twenty-two infantrymen. Dummy bombs are shown in position on the bomb racks.

The Supermarine S5, which won the Schneider Trophy in 1927, is mounted high, so that it appears to be diving at great speed. This machine does not therefore divulge many of its constructional features. The fuselage is built of a number of metal frames connected by a metal skin, which is reinforced with longitudinal stringers. The forward portion of the machine is strengthened to act as the engine-bearer. The tail unit is of the monoplane type, with the fin built into the fuselage. The biconvex wooden wings are covered with special wing radiators.

Bracing is by streamline wire to the top of the fuselage and to the floats. The twin floats, which are carried by four outwardly sloping struts from the fuselage, have no cross-axle and are braced by wire. These floats are of very deep section and are built of transverse frames attached to a single longitudinal member. The whole is covered with duralumin sheet. The starboard float carries the main petrol tank, and the auxiliary gravity tank is in the fairing of the starboard cylinder block.

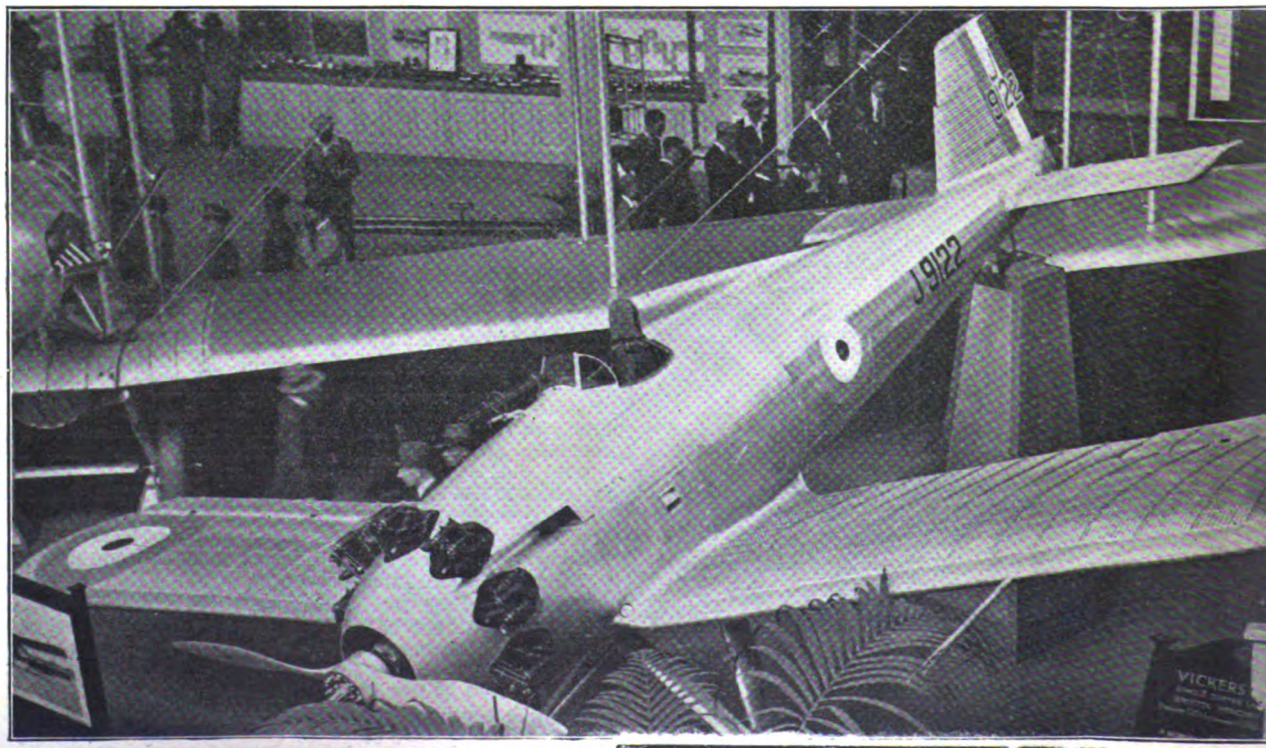
Next to the S5 is the Southampton, looking very spick and span. The all-metal hull looks in very good condition after its long trip. [It might have been more convincing if the barnacles had been left on it.—C. G. G.] The metal hull is built with transverse frames and intercostals. The whole is covered with sheet duralumin.

There is a cockpit in the bows for a gunner and bomber and a bomb-sight is attached to the nose of the hull. Aft of this are two pilots' cockpits arranged in tandem; these are over to the port side, so there is a clear passage-way along the inside of the hull for the crew.

The interior of the hull below the wing is equipped for wireless, and, during long cruises, for the living accommodation for the crew. There are adjustable portholes fitted in the hull for ventilation.

Aft of the wings are two more cockpits—staggered to improve the field of fire.

The tailplane is a braced monoplane with three equal sized fins and rudders. The centre-section has rigid bracing in the form of a W, in between the legs of which the engines are mounted. The engines may be removed, lock, stock, and barrel, for purposes of maintenance or repair.



THE VICKERS STAND.—The Vickers Low-Wing Interceptor Fighter with the Bristol Mercury engine.
("Aeroplane" photograph.)

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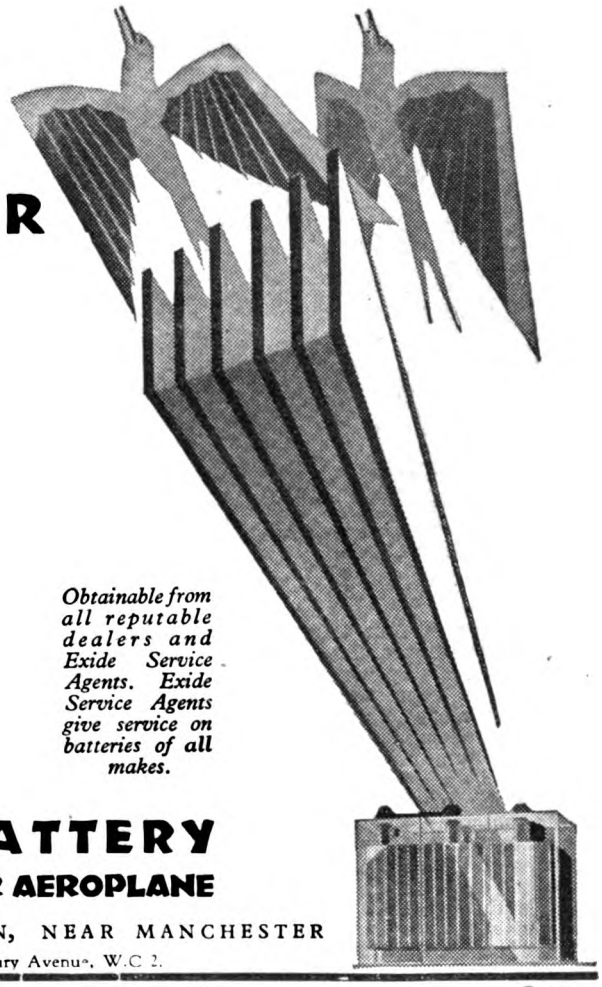

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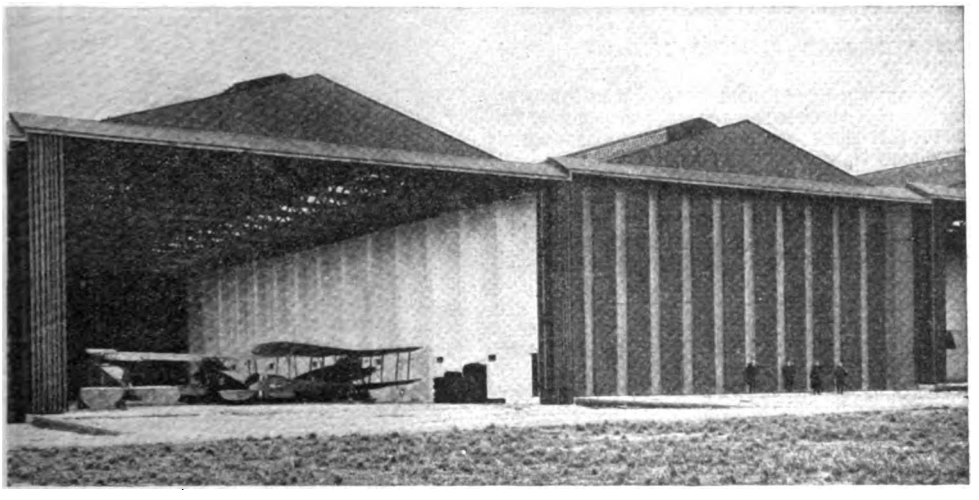

The Test

Esavian Fittings have been supplied to the Government for Doors to cover over Ten miles of openings. These openings vary in height up to 3 feet and in length to 100 feet. Esavian Doors were fitted to the Hangar at Heston Aerodrome, 19 feet in height and 100 feet in length, and are also being supplied to Hanworth Park.

Esavian Doors, 32ft. high and 70 ft. long, fitted at Henlow Aerodrome.

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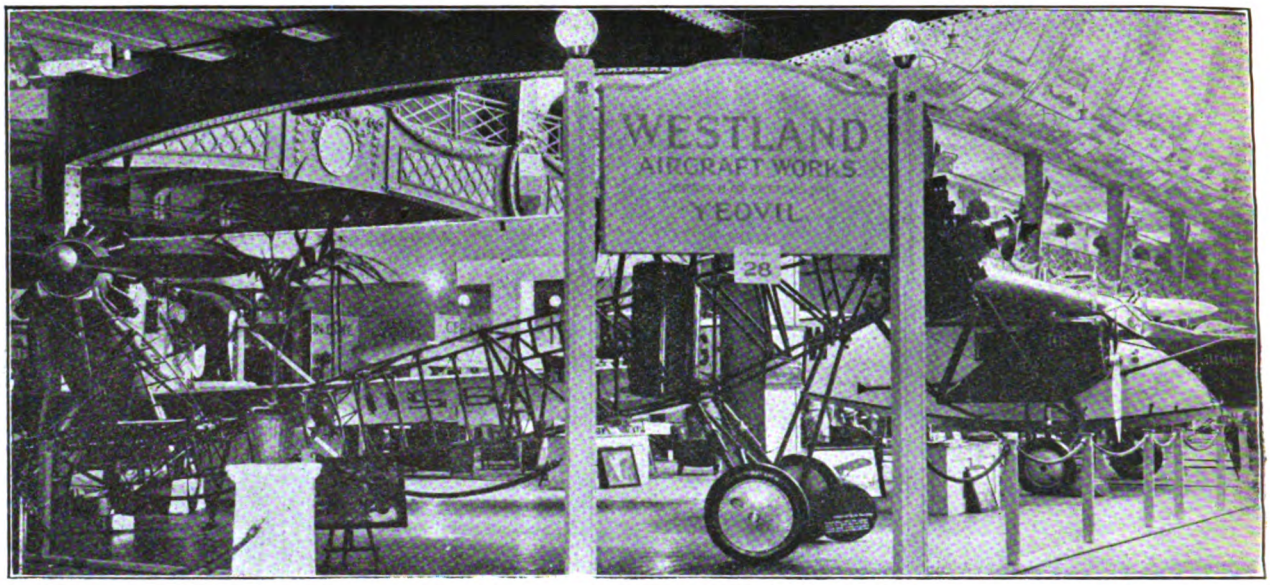


General View of the Westland Stand, with the Westland IV in the background.—(*"Aeroplane" photograph.*)

Ailerons are on all four wings. The main fuel tanks are slung beneath the upper plane.

The English Steel Corporation, who are associated with Vickers, show a large aero-engine crankshaft and some duralumin stampings, crankcases, and the like. This firm specialises in the supply of forgings for crankshafts, and has supplied those used in many of the recent notable flights.

There are enormous numbers of subsidiary exhibits scattered over the stand, such as specimen test pieces and sections of a wing radiator, together with typical drawn duralumin sections and welded fittings. There are Vickers guns of all types and sizes mounted on demonstration structures, gun-sights and bomb-sights, bombs and bomb-carriers, bomb-releases and ammunition for the machine-guns. There are also the various types of training apparatus, such as the instructional fuselages fitted with machine-guns and a camera gun fitted on a demonstration mounting.

The variety of detail makes one realise that not only do Vickers, Ltd., supply the aircraft, but that they have an enormous organisation producing and designing the weapons without which those craft would be useless in time of war. To round off these activities, Vickers produce the requisite training apparatus to ensure that these weapons are properly used.

There are also exhibits illustrating the A.G.S. parts, produced at Weybridge, besides the various fuel-line fittings, oleo shock-absorbers, Potts oil-coolers, hydraulic brakes, and the like. In fact, this stand makes one believe that Vickers are the Selfridges of the Aviation World.

THE WESTLAND AIRCRAFT WORKS LTD., Yeovil.
Stand No. 28.

The Westland Company are showing the Westland IV limousine, a Wapiti of the latest service type, with the Jupiter engine, a Wapiti skeleton fuselage with the Jaguar engine and the Widgeon light aeroplane.

The Westland IV is the first of the production type, and the particular model shown has been sold to Imperial Airways. It differs from the first of the type in that it has three Cirrus-Hermes engines in place of Cirrus IIIs. It is now of all-metal construction and has an oleo undercarriage in place of the ordinary rubber suspension type.

The cabin seats four, two facing forward and two aft. The front right-hand seat-back folds forward to give access to the pilot's cockpit. Between the front and back seats are small folding tables. The cabin is very comfortably furnished, is fitted with openable windows and hot and cold air control. The seats have pneumatic seat and back cushions which are interconnected and form lifebelts when removed from the seats.

Behind the cabin is a lavatory and small vestibule to the door, above which is the emergency ripping panel. Behind this is a large luggage compartment.

The pilot's cockpit has a separate door, an adjustable seat and full wireless equipment. The top of the pilot's cupola folds back. And a minor detail of interest is the fitting of a back-view mirror over the windscreen which enables the pilot to see that everything is clear of the tail when taking off.

The Hermes engines are completely enclosed and the side-engine exhaust-pipes are now taken aft parallel to the wing-chord in an effort to eliminate noise as much as possible.

The undercarriage now consists of two standard Westland oleo-legs attached under the engine-mount behind and parallel to which runs a forked torque tube. The bent axles are hinged to the bottom fuselage longerons and the radius rods now run to the fuselage instead of to the rear wing-bracing strut fitting on the engine mounting. Bendix-Perrot wheel brakes are now fitted as standard.

The standard Wapiti calls for very little attention, as it is shown in the covered state and is of the type which has been fully described and illustrated before.

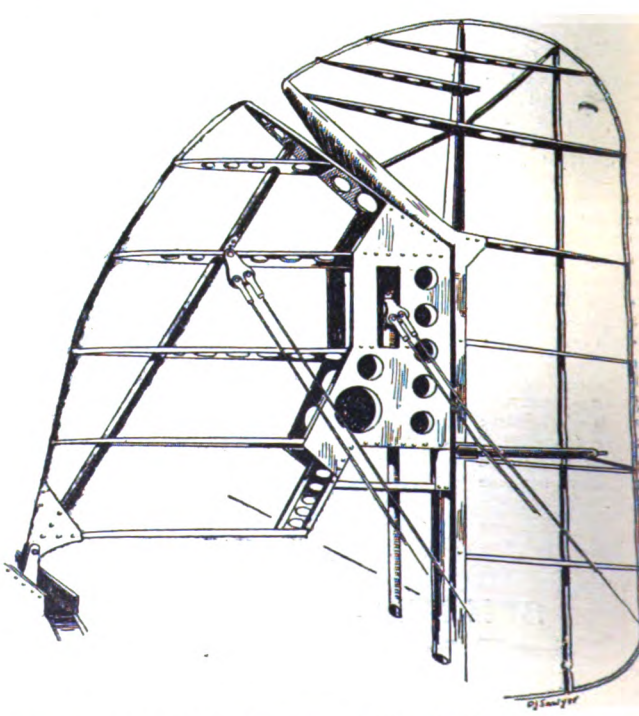
The skeleton Wapiti fuselage has the Jaguar engine and the new split undercarriage. It is a very bare skeleton and none of the interior fitments are shown, except the main fuel tank. The fuselage is of square tubes assembled with flat plates and is wire-braced in the side-panels only.

The bottom bays are unbraced, and the top and transverse bays are braced with diagonal tubes across the corners.

The undercarriage is similar to the standard cross axle type, except that the axle is now in halves which are bent up and hinged to a Vee cabane under the fuselage.

Specimens of Wapiti wing construction are shown separately.

The Widgeon light monoplane is a perfectly standard type finished in a green and cream colour scheme. This has the metal fuselage, the new cross-axle undercarriage and other details which have been fully described and illustrated in previous issues of THE AEROPLANE.



The fin and rudder framing of the Westland Wapiti

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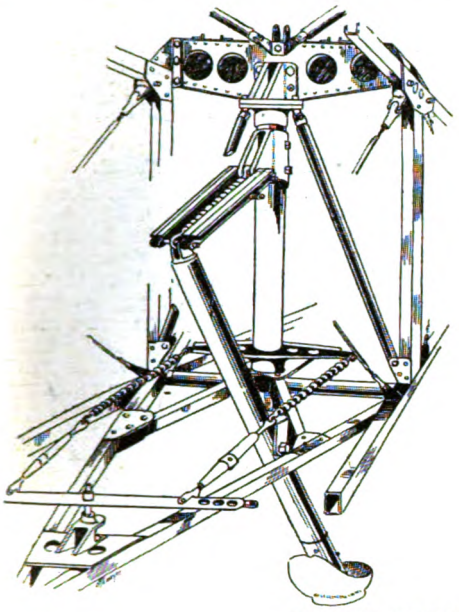
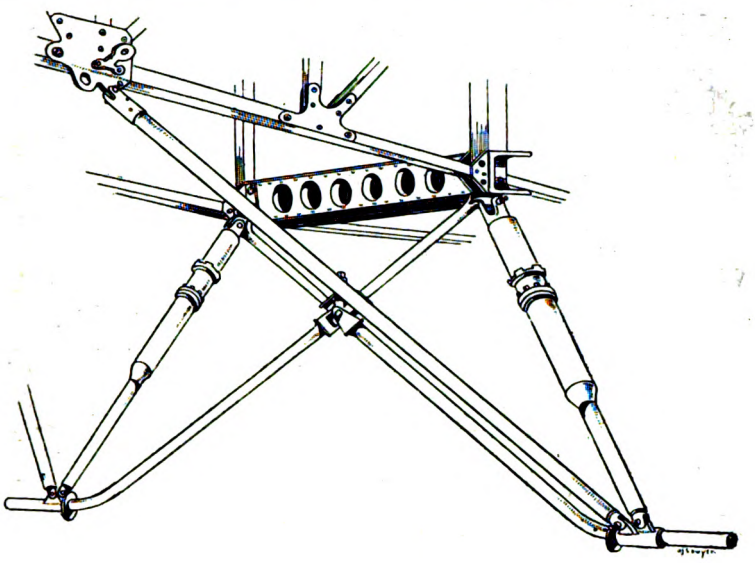
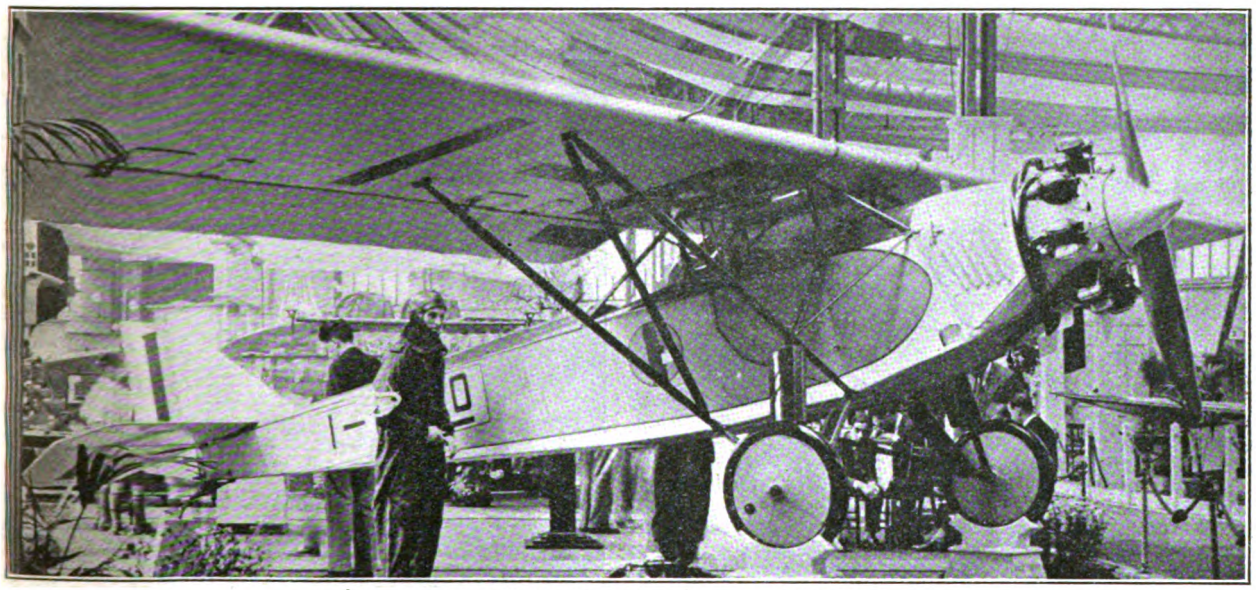




WAPITI DETAILS.—The tail-skid and the divided undercarriage.

It is rather a pity that the Wapiti was not shown with the complete desert equipment which this long-suffering animal is called upon to carry by the R.A.F. It could then be appreciated by the unknowing. Although it is possible to publish an inventory of this equipment such a list would not be half as convincing as say a half-stripped fuselage with all impedimenta *in situ*.

[NEXT WEEK.—Accessories, Components and Materials.]



AN ITALIAN VISITOR.—The Romeo (Fiat A50).

THE REDRUP TAKES THE AIR.—The Redrup Lever Engine in a Spartan biplane is here seen getting off the ground at Hamble on July 17. This is the first time an engine of the static "barrel" type has flown in this country, though claims are made that rotating-barrel engines have flown in America and on the Continent of Europe.

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NATIONAL FLYING SERVICES.

On July 17 the Statutory Meeting of National Flying Services Ltd. was held at Northumberland Rooms, Grand Buildings, Northumberland Avenue, W.C. Sq. Ldr. the Rt. Hon. F. E. Guest, D.S.O., Chairman of the company, presided.

In the course of his speech he said that a great deal of development work had been done at Hanworth and that the company had decided on the first week in September for the official opening of the Club by which time the whole of the aerodrome will have been cleared and levelled and all the buildings, which will consist of five hangars with the necessary workshops, stores and offices, both for Hanworth and for the whole of the company's organisation, will be erected and in full working order.

In the provinces, of the ten centres which the company has undertaken to equip as their first stage of development, they are on the point of signing agreements with three and hope to start on the erection of buildings in the next two or three weeks.

With two others the company expects to reach a final agreement within a few weeks and with four more they are awaiting the conclusion of negotiations for the acquisition of the chosen aerodrome sites.

Negotiations for the establishment of eight other centres are in progress and tentative discussions are taking place with a further large number.

N.F.S. hope that the initial ten centres will be equipped and operating this autumn and that at least three and probably five will be opened in September in addition to the main centre at Hanworth.

As regards technical equipment the company has adopted four types of aircraft. These are the Desoutter cabin monoplane, the Blackburn Bluebird, the Simmonds Spartan, and the A.B.C. Robin. Of these aircraft the company has acquired the sole World distributing rights of two makes, and for the other two, together with certain other types, the company has been appointed selling agents. In addition the company is placing an order for a new 3-engined six-passenger cabin monoplane.

The company has been approved by the Air Ministry as one of the two outside organisations which are authorised to approve aerodromes for Air Ministry licences.

Arrangements are under discussion for the company to be appointed one of the three organisations authorised to supply route information and for the London Air Park at Hanworth to be established as a Customs and Emigration Air Port.

The company has obtained the services of Mr. Neville Stack as chief pilot. He is at present superintending the selection of additional pilots, who will be taken on as required.

The above points are the most important of those raised by the Chairman. The proceedings terminated with a vote of thanks, with which was coupled an appreciation of the progress which has been made to date.

NATIONAL FLYING SERVICES IN SOUTH AFRICA.

As the result of a visit to South Africa by Mr. G. E. F. Boyes, the Deputy Managing Director of N.F.S., the company has been appointed British representatives and consultants and sole agents to Union Airways Ltd., of South Africa.

This company has concluded a satisfactory contract with the Union Government for the payment of a Government subsidy for the air transport of mails between Cape Town, Port Elizabeth, Bloemfontein and Johannesburg, and also between Port Elizabeth, East London and Durban.

Major A. M. Miller, D.S.O., M.L.A., who was instrumental in forming Union Airways Ltd., expects that the company will establish taxi centres and flying clubs in South Africa on the same lines as N.F.S., and arrangements have been made between the two companies to work in close co-operation in their common interests.

THE FORUM CLUB.

The Forum Club has formed an Aviation Group under the presidency of the Hon. Lady Bailey, the object of the Group being to further the interests of British aviation. The Hon. Mrs. Forbes-Sempill, wife of Col. the Master of Sempill, is acting as Chairman of the Group. An interesting programme of activities has already been planned. One of the Group's first actions will be to hire a ten-seat cabin machine, complete with Sir Alan Cobham as pilot, to fly to the Hull Air Pageant on Oct. 10.

EUROPE—ICELAND—EUROPE.

On July 19 Herr von Gronau, of the Deutsche Verkehrsfliegerschule, arrived at Reykjavik, Iceland, from Sylt, by way of the Faroe Islands, in a Dornier Wal flying-boat.

On July 22 he left Reykjavik for the Faroe Islands on the return journey and will call at Edinburgh before returning to Germany.

AN INTERESTING NEWCOMER.

Pinchin Johnson and Co. Ltd., with whom is associated the firm of Robert Ingham Clark and Co. Ltd., both well-known manufacturers of paints and varnishes, have entered the Aircraft Industry with more than the average energy. For some years the allied companies have been experimenting with specialised finishes for aircraft and they have now placed on the market an entirely new preparation known as Britannia Dope.

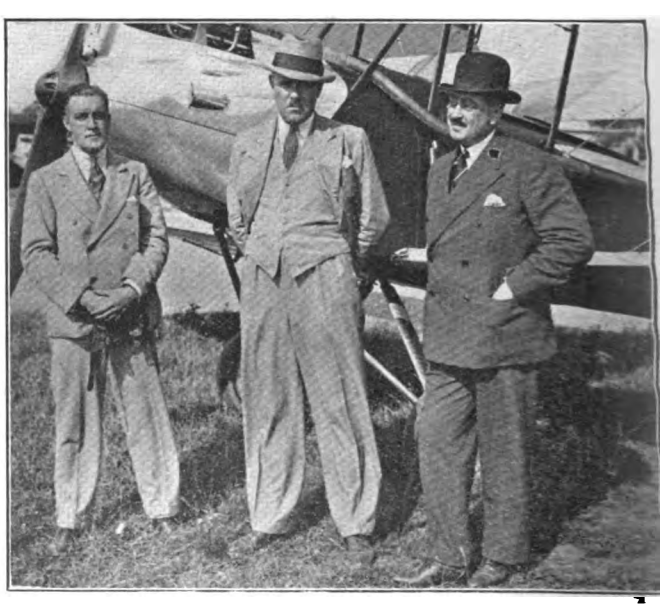
On July 17 at Stag Lane aerodrome an Avro Avian (D.H. Gipsy engine) which has been acquired by the company was baptised and taken off by Mr. C. G. Heywood, Vice-Chairman of Pinchin Johnson and Co. Ltd., and Major R. H. Ingham Clark, a director of Pinchin Johnson and Co. Ltd., and of Robert Ingham Clark and Co. Ltd. The machine, which has been doped and painted by materials produced by the joint firms, will be flown by Mr. J. Conway Cantrill, Sales Manager and Aviation Representative of Pinchin Johnson and Co. Ltd.

Mr. Cantrill is well known as one of the two voluntary instructors of the Lancashire Aero Club.

After the ceremony Mr. Cantrill took off for Bristol, Gloucester and Yeovil, having already flown from Manchester to London earlier in the day.

The firm is to be commended on its enterprise in acquiring a light aeroplane for the use of its Sales Manager. This practice is becoming increasingly common in the United States, but few firms in this country have yet realised the full value of having an aerial traveller's vehicle.

When the company deals with an aeronautical product an aeroplane becomes doubly useful. Apart from demonstrating in a practical way the firm's products, which in the case of Pinchin Johnson and Co. are dopes, paints, varnishes and cellulose enamels, nearly all of the firm's customers, existing and prospective, possess, or are located near, aerodromes. Therefore in addition to showing the products in actual service, a considerable amount of time is likely to be saved by the company. Pinchin Johnson and Co. Ltd. deserve to succeed in their enterprise.



Mr. Cantrill, Mr. C. G. Heywood and Major R. H. Ingham Clark standing in front of the Avro Avian (D.H. Gipsy engine) which has been acquired by Pinchin Johnson and Co. Ltd. (*"Aeroplane" photograph.*)

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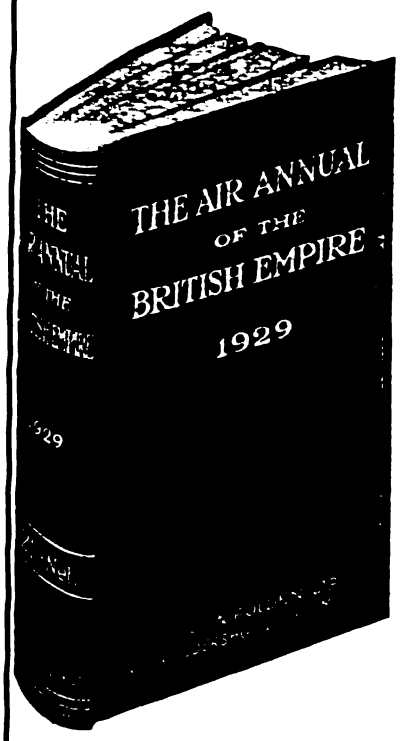

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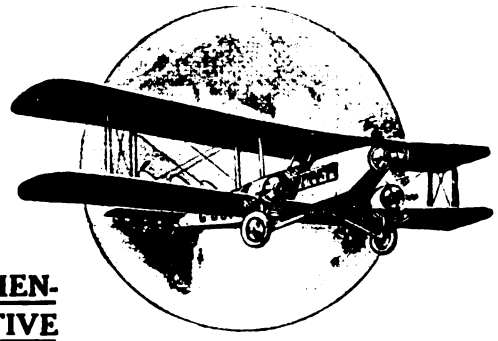

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 26; Monday, 38; Tuesday, 37; Wednesday, 42; Thursday, 44; Friday, 46; Saturday, 44.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 97, passengers 799, freight 38¼ tons. India Route: Inward, passengers 6, mail 794 lbs.; outwards: passengers 7, mail 584 lbs.

AIR UNION:

Paris—London and return: Machines 72, passengers 375, freight 24¼ tons.

K.L.M.:

Amsterdam—Rotterdam—London and return: Machines 49, passengers 321, freight 16 tons.

SABENA:

Brussels—London and return: Machines 13, passengers 96, freight 5¾ tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London and return: Machines 29, passengers 55, freight 5¼ tons.

MISCELLANEOUS:

British machines 12, passengers 18.

Foreign machines 5, passengers 8.

Total number of trips by British machines, 109, carrying 817 passengers. Foreign machines, 168, carrying 855 passengers.

COMPARATIVE FIGURES.

Week ending July 20:

Machines, 277; Passengers, 1,672; Crews, 614; Total personnel, 2,286.

Corresponding week, 1928:

Machines, 239; Passengers, 1,802; Crews, 451; Total personnel, 2,253;

Corresponding week, 1927:

Machines, 167; Passengers, 1,313; Crews, 328; Total personnel, 1,641.

Corresponding week, 1926:

Machines, 170; Passengers, 1,243; Crews, 215; Total personnel, 1,458.

Corresponding week, 1925:

Machines, 152; Passengers, 894; Crews, 213; Total personnel, 1,107.

Corresponding week, 1924:

Machines, 207; Passengers, 1,055; Crews, 255; Total personnel, 1,310.

Corresponding week, 1923:

Machines, 122; Passengers, 565; Crews, 212; Total personnel, 777.

Corresponding week, 1922:

Machines, 159; Passengers, 366; Crews, 251; Total personnel, 617.

Corresponding week, 1921:

Machines, 101; Passengers, 460; Crews, 126; Total personnel, 586.

Corresponding week, 1920:

Machines, 82; Passengers, 175; Crews, 104; Total personnel, 279.

AIR MAILS TO SPAIN AND PORTUGAL.

The Postmaster-General announces that correspondence (except parcels) for Spain and Portugal may now be accepted under the usual conditions for despatch by air to Bordeaux and onward transmission by train, thus gaining about a day over the ordinary route. The new service leaves London three times a week, on Tuesday, Thursday and Saturday, and the latest time of posting at the General Post Office, London, is 7.30 a.m.

An air fee of 2d. per ounce in addition to the ordinary postage is charged for this service.

WELCOMING THEM IN.

On Wednesday, July 17, the Anglo-American Oil Co. Ltd. gave a lunch at Olympia to welcome Mr. Kingsford Smith and his companions to England, whither they had flown on their Fokker monoplane Southern Cross, using Pratt's petrol.

Mr. Francis Powell, the chairman of the "Anglo," enumerated the various great flights already made by the Southern Cross, and said that the flight across the Pacific was one of the greatest feats of airmanship yet performed. He also paid a tribute to a number of outstanding personalities in the aeronautical community who were present.

Mr. Kingsford Smith acknowledged the help of his companions on the big flights, and stated that it was extremely probable that he would attempt an Atlantic flight on the Southern Cross in the near future.

He said that he had come over here to test some new all-British Avro 10 monoplanes which he had bought for the Air Line in which he is interested in Australia.

Mr. Ulm, who has accompanied Mr. Kingsford Smith in the voyages of the Southern Cross, then made a speech, but one is unable to report it, as it was inaudible.

The Chairman, in closing, paid a tribute to those who had lost their lives when searching for the Southern Cross when it was lost earlier in the year.—G. D.

AVIANS IN SOUTH AFRICA.

The Survey Department of the Tanganyika Government has acquired an Avro Avian IIIa (Cirrus II engine). This machine is fitted with a special camera and will be flown by the Director of Surveys, who is also Territorial Representative of the Aero Club of East Africa in Tanganyika.

The Rhodesian Aviation Co. Ltd., of Bulawayo, has bought an Avro Avian IV (Cirrus-Hermes engine) from Aeros (Pty.) Ltd., of Johannesburg, the local Avian agents, and this machine has been flown to Bulawayo by Mr. Roxborough Smith.

A DURABLE FINISH.

There is interest in noting in connection with the flight of the *Southern Cross* from Australia to England that the wings of the machine were treated with Permanoid Silver Paint, made by Lewis Berger and Sons Ltd., of Homerton, London, E.9.

In spite of the gruelling conditions through which these wings had passed, including continued exposure and sudden changes of temperature, examination at Croydon showed the paint to be in perfect condition.

Louis Berger and Sons, Ltd., are manufacturers of all kinds of paints, enamels, varnishes, lacquers and distempers of the highest class. Their Proxcelin finish was used on the *Golden Arrow*, which holds the World's Automobile Speed Record.

NEW COMPANIES.

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PERSONAL NOTICES.

DEATHS.

BENNETT.—On July 19, at Boreham Wood, Herts, as the result of a flying accident, Walter Patrick Dillon Bennett, Plt. Off., Reserve Air Force Officers.

BUTTENSHAW.—On July 17, at Skipsea, as the result of a flying accident, L-AC. Edward William Buttenshaw, R.A.F.

PRINCE.—On July 17, at Skipsea, as the result of a flying accident, Stanley Frank Prince, Flg. Off., R.A.F.

Mr. Prince entered the R.A.F. with a short service commission in July, 1925. After a course of training at No. 2 Flying Training School, Digby, he was posted to No. 207 (Bomber) Squadron.

MARRIAGES.

BARTLETT—NICHOLL.—On July 20, in London, Robert, only son of Mr. and Mrs. Arthur Bartlett, of 79, Redcliffe Gardens, to Peggy, widow of Lieut.-Col. Vincent Nicholl, D.S.O., D.S.C.

TRACE—JOHNSON.—On June 17, at Salisbury Cathedral, Southern Rhodesia, Garth Newbon Trace, D.F.C., F.R.G.S., Acting Manager of the Aircraft Operating Company's African Expedition, to Doris Mary, only daughter of Lt.-Col. H. H. Johnson, D.S.O., and Mrs. Johnson, of Sheffield and Salisbury, Southern Rhodesia.

BIRTHS.

BARRETT.—On July 16, at Wei-hai-Wei, to Grace (*née* Robertson), wife of R. H. Barrett, R.N., Flg. Off., R.A.F.—a son.

BROWN.—At River Brae, Bellingham, Northumberland, to Edith, wife of Flt. Lt. T. W. S. Brown, R.A.F.—a son.

GLASPER.—On July 4, at Parkstone Nursing Home, Wembley, to Mrs., wife of Flt. Lt. W. A. Glasper, R.A.F.—a daughter.

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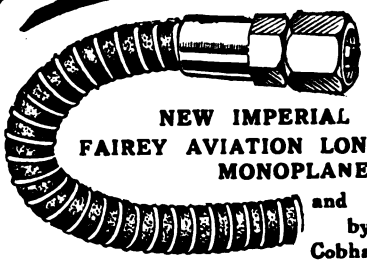

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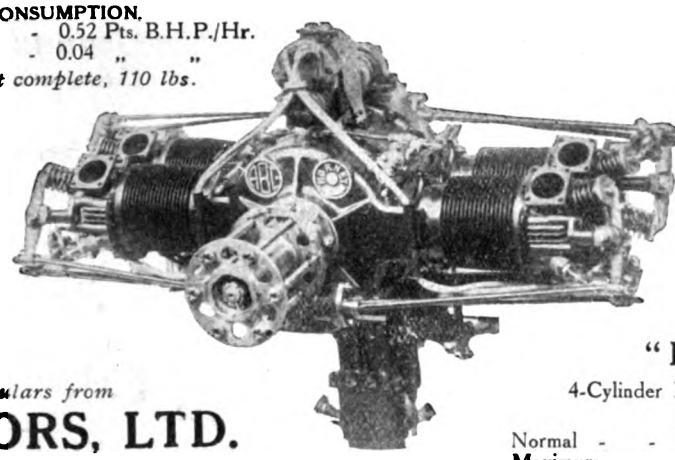

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VOL. XXXVII No. 5.

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ON THE AERO SHOW—II.

On behalf of the British Aircraft Industry one tenders humble, if not particularly sincere, apologies to the Press for the hard things said to it by Lord Thomson at the Banquet to our foreign guests on July 18, and written about it in THE AEROPLANE afterwards, on the subject of the lack of publicity given to the Aero Show. The fact has now been disclosed that the British Aircraft Industry as a whole did not want itself or the Show advertised to the mere common people.

Early in the first week of the Show a few of the leading men in the Aircraft Industry, men with active and progressive minds, protested against closing the Show at 9 p.m. and suggested that it should be kept open till at least 10 o'clock. Consequently the Show Management (not till the following Monday, mark you) sent round a notice to each Stand in the Show asking the Stand-holder whether he agreed to this proposition An overwhelming majority voted in favour of continuing to close the Show at nine.

Thus there is no disputing the fact that the majority of exhibitors at Olympia, who definitely included the whole of the British Aircraft Industry, did not care one little bit whether the great British Public came to see the Show or did not. For, perfectly obviously, if the great British Public were to be allowed to see the Show at all they could only see it after leaving work in the evening. And, as was said in this paper last week, very few people who leave work at six could get to the Show before eight, and obviously they were not going to the Show at eight if they were going to be thrown out again at nine.

In common justice to the more progressive firms, especially those who make light aeroplanes and those who cater for civil aviation, and those who are concerned with operating aircraft, one must say that they were in the first place amazed at the closing of the Show at nine and were thoroughly disgusted at the decision of the majority of the Trade. Before the end of the Show they were heartily fed up with standing around doing very little that was worth while from ten in the morning till after lunch, and then having to shut down just when they might have been preaching the Gospel of Airmindedness to the British Public.

BUSINESSLIKE HOURS.

If the hours of opening had been left to this progressive minority the Show would have opened at mid-day and would have been kept open till eleven at night. Then the people of leisure who are interested in flying, or who at any rate are curious about it, would have come in during the afternoon. And the private-owner class, together with foreign visitors who are interested in war machines would have had plenty of time to see all they wanted to see

Then in the evening the people who could not afford to leave their work, or who do not consider aviation as yet important enough to justify them in giving up an afternoon's work, would have come in after dinner. And with them would have come tens of thousands of intelligent people who likewise have to work for their livings but cannot hope to own aeroplanes.

These tens of thousands are the people who evidently were regarded by the British Aircraft Trade as being of no importance. But the said Trade obviously has not the intelligence to understand that these are the people who ultimately influence the buying of aeroplanes.

The great firms who are concerned with war machines realise the importance of thus influencing the working-classes,—whether they happen to wear black coats or overalls, and whether they work for a couple of thousand pounds a year or for thirty shillings a week,—because they are the people who vote for or against adequate air armaments. But there are other firms, some perhaps make aeroplanes but probably the majority are makers of material and accessories and components and so forth, who have not the intelligence to realise this essential fact and are content to conduct their business by creeping up the back stairs and passages of the Air Ministry to tout for business from Technical and Contracts Departments.

They are the majority who voted for early closing.

THE RAG-TAG AND BOB-TAIL.

Firms of that sort were only in the Show because all their big customers, the aircraft-constructing firms, were there and because some of their competitors were there and they could not afford to be out of it.

Possibly they hoped that the fact of their having a Stand at the Show might be accounted unto them for righteousness, seeing that the Air Ministry itself spent such an immense amount of time and trouble in putting up that extraordinarily fine show by the Aeronautical Inspection Directorate and by the Meteorological Department, and that illuminating historical display of models. Also perhaps they hoped that they might get orders for material or gadgets from representatives of foreign Governments. But they were not really interested in the Show as a business proposition, and least of all were they interested in preaching the Gospel of Aviation to the British Public.

Thus the intelligent minority in the Trade was out-voted by the rag-tag and bob-tail of hangers-on,—and, as so often

PRACTICAL INTEREST.—A party of foremen from the Bristol Works on the firm's stand at Olympia.—Showing how one firm, at any rate, encouraged the people who did the work to see the results of their industry.

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happens, the tail wagged the dog. In a way it serves us right, for after all the Show Committee were the people who in the first instance had the fixing of the closing hour, and they ought to have had the common sense to see that even though most of the Trade are primarily concerned with the making of war-machines the interest of the working classes whether highly or lowly paid was worth attracting.

MUZZLING THE OX.

One of the most lamentable effects of this foolish closing-hour was that the very men who built the Show machines never had a chance of seeing them in Olympia, or of comparing them with the products of their competitors,—for the workmen of the aircraft factories could not, obviously, get to the Show in time to see anything properly. And so the Trade committed the unforgivable sin of muzzling the ox which treadeth out the corn.

Naturally, every manufacturer with any sense gave the staff of his drawing-office time off to go to the Show to improve their knowledge. And naturally foremen and engineers were likewise allowed to go in the firm's time. But, equally naturally, bench-hands and machine-hands could not be spared during working hours,—and outside working hours they could not get to the Show in time to see anything.

In its own little way THE AEROPLANE did its best to promote airmindedness,—for sixty people in the printing works were given tickets for the Show, so that they might go and see in concrete form the machines about which they have been setting type and running printing-presses for so many years. Our printers have been having a terrible time for the past four or five weeks with our big special issues. They have been working practically day and night, and are now thoroughly worn out. But, such is their keenness, that they sacrificed their Saturday afternoons to go and see the Show, —whereas, if reasonable hours had been kept at Olympia they could have gone on week-day evenings when the rush of Press-days was done.

In a speech last February His Royal Highness the Prince of Wales asked "Is the salesmanship of this country up to the workmanship of the men?" Quite definitely the answer is in the negative.

The salesmen at Olympia were excellent. Our American visitors all commented on how well our stand-attendants knew their subject and how well they described their machines. One young woman from New Zealand, a friend of a member of the staff of THE AEROPLANE, said how much she was impressed by the trouble everybody took to show her all over their aircraft, although she was obviously not a buyer.—And this trouble may be well repaid some day,—for her family happen to have considerable wealth and interest.

But what on earth is the good of having first-class goods and first-class individual salesmen if the heads of firms collectively are so utterly fatuous and futile as to prevent the Public, who will ultimately buy, or will influence buying, from seeing either the goods which are for sale or the men who are appointed to sell them? And, when the men in the factories realise, as they do, how the Trade collectively is mismanaged, how can we expect them to be enthusiastic?

Individually, certain firms in the British Aircraft Industry have on their staffs some of the finest salesmen in the World. Collectively the British Aircraft Industry has not shown enough salesmanship to justify it in trying to sell ice to Judas Iscariot.

THE PRESS AND THE TRADE.

However, as the Trade evidently did not think that the interest of the working classes was worth attracting they cannot blame the Press for practically ignoring the Show.

Furthermore, to be fair to certain papers, one must say that they have done the Show very well. *The Times*, representing as it does all that is best in the British character and in journalism, has published articles on the Show day after day,—hardly ever less than a column in length, and on occasion rising to two columns. And, as always in *The Times*, those articles have been thoroughly sound, absolutely accurate and very readable.

They have attracted to the Show quite large numbers of the best people in the country. And probably more of those best people would have gone to the Show if the appeals of *The Times* had been backed by the persuasion of sons and daughters, nephews and nieces who read the cheaper papers but unfortunately have to work for their livings and could not get to the Show owing to the absurd closing time.

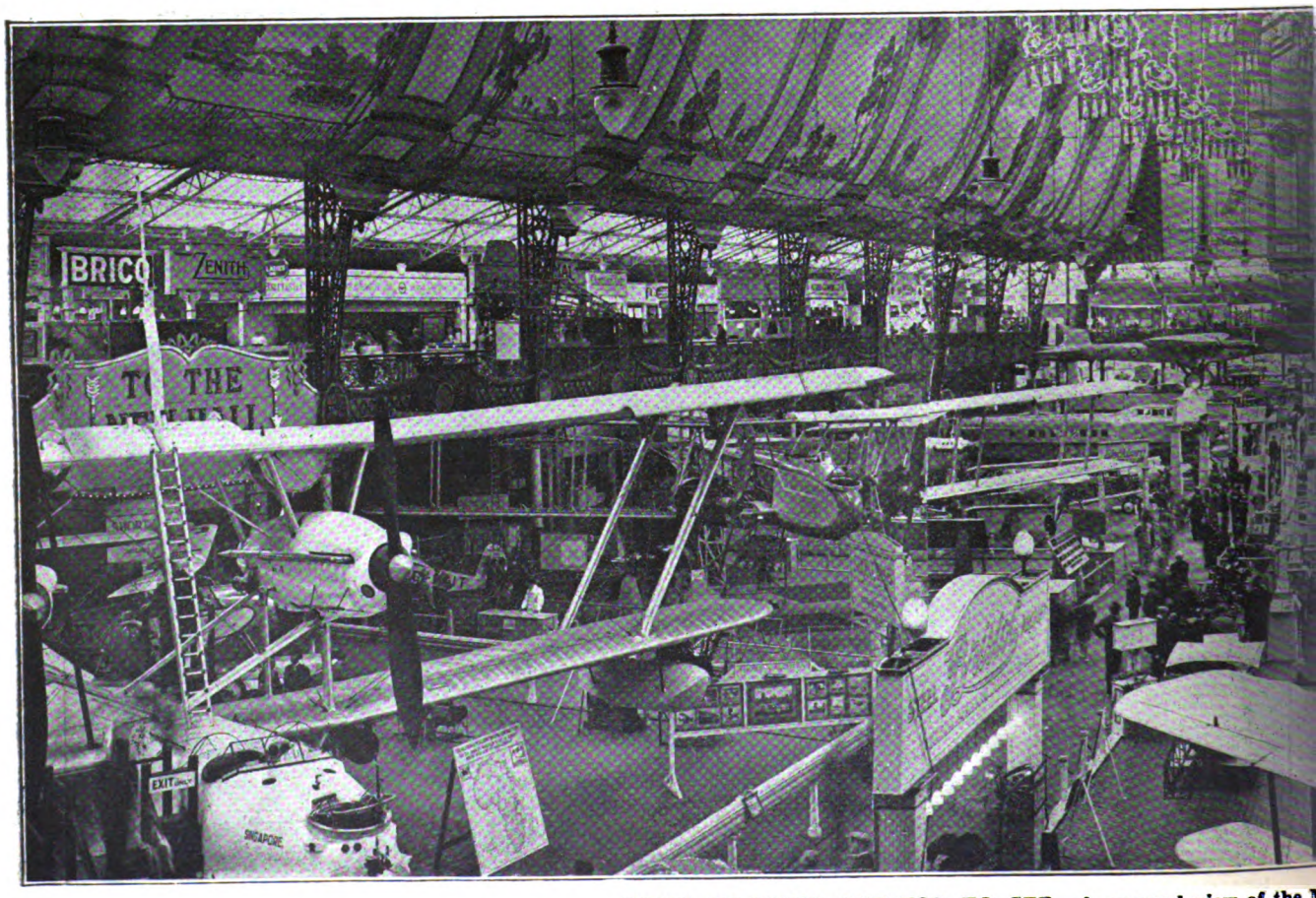
The more popular papers also did their part, so far as they were able, when they were provided with anything of the kind which seemed to them of heart-interest.

For example, when National Flying Services started that brilliant idea of holding a competition on the Reid Aptitude Indicator, with free tuition at Hanworth as a prize for one man and one woman, the popular papers took it up quite strongly. And quite a number of people managed to struggle away from their businesses in time to compete.

THE APTITUDE COMPETITION.

Incidentally, the results of these competitions are uncommonly interesting. The best man on the Reid Indicator turned out to have been an air mechanic in the R.F.C during the War, who had flown as an observer but had never had the chance of becoming a pilot. And the best woman turned out to be a winner of ski-ing competitions.

By the end of the Show the latter had done two hours



WHAT YE WENT OUT FOR TO SEE.—A general view of the

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dual-control instruction and looked like being sent flying solus (or rather sola) with very little further instruction. The mere man, a thorough sportsman, has taken a week of his Summer holiday so as to get in his instruction.

The keenness of people to take part in these competitions is an indication of what may be expected when the British Public are graciously allowed by the Aircraft Trade to take an active interest in flying.

Even the offer by National Flying Services of a trial lesson at two guineas a head, although in itself it is only what any school of flying would give, was taken up by the popular papers and attracted a great many customers.

TIME AND TEMPERATURE.

The first Saturday afternoon of the Show, in spite of the intense heat, people flocked to Olympia in crowds. And on the closing day there was quite a goodly crowd, although by that time the papers had quite justifiably lost interest.

Apart altogether from this idiotic mistake in the closing hour, the holding of the Show in July was in itself a mistake. If we had by sheer good luck struck a patch of cold, wet weather, which is unusual in July, certainly there would have been more people in Olympia during the day, because a certain number of the idle rich, or those who are unemployed on a modest income, or who are taking holidays, or can afford to take a day off when they want to, would have come into Olympia out of the wet instead of going to the seaside or up the river.

After all, those people are not really as important to the Aircraft Trade, and to the support of an adequate Air Force, as are the honest working people like ourselves. But to that extent the number who came to Olympia under existing conditions might have been larger if the fortnight had been wet.

WHEN THE SHOW SHOULD BE.

There is, however, a still more important reason why the Show ought to be held as late in the year as possible. That reason is that flying in this country is essentially a seasonal pastime, or occupation.

A couple of months before the Show one of the leading makers of light aeroplanes said that there had been a distinct falling off in orders, because would-be buyers of aeroplanes were waiting for the Show before deciding what to buy. Also, the Show stirred up an unnatural activity inside the aeronautical community itself just at the time of the year when aviation would be at its maximum of activity in any case.

Therefore the obvious thing to do is to hold the Show and stir up activity among the aeronautical people at a time of year when normally air affairs would be at their flattest.

Certainly the Show should be held at a time of year when there is a chance of some decent weather so that people who are interested in certain aeroplanes in the Show have a chance of going out to an aerodrome to see those same machines fly. Therefore November, December, January and February may be barred.

October would be a good time for the Show in a way, because by then people are back from their Summer holidays and, except for those who go away for the shooting, there is no particular attraction to keep people out of doors. But by October all the new types of machines that are coming out during the Summer have been flown and seen, and therefore there would be nothing very much fresh to put into the Show.

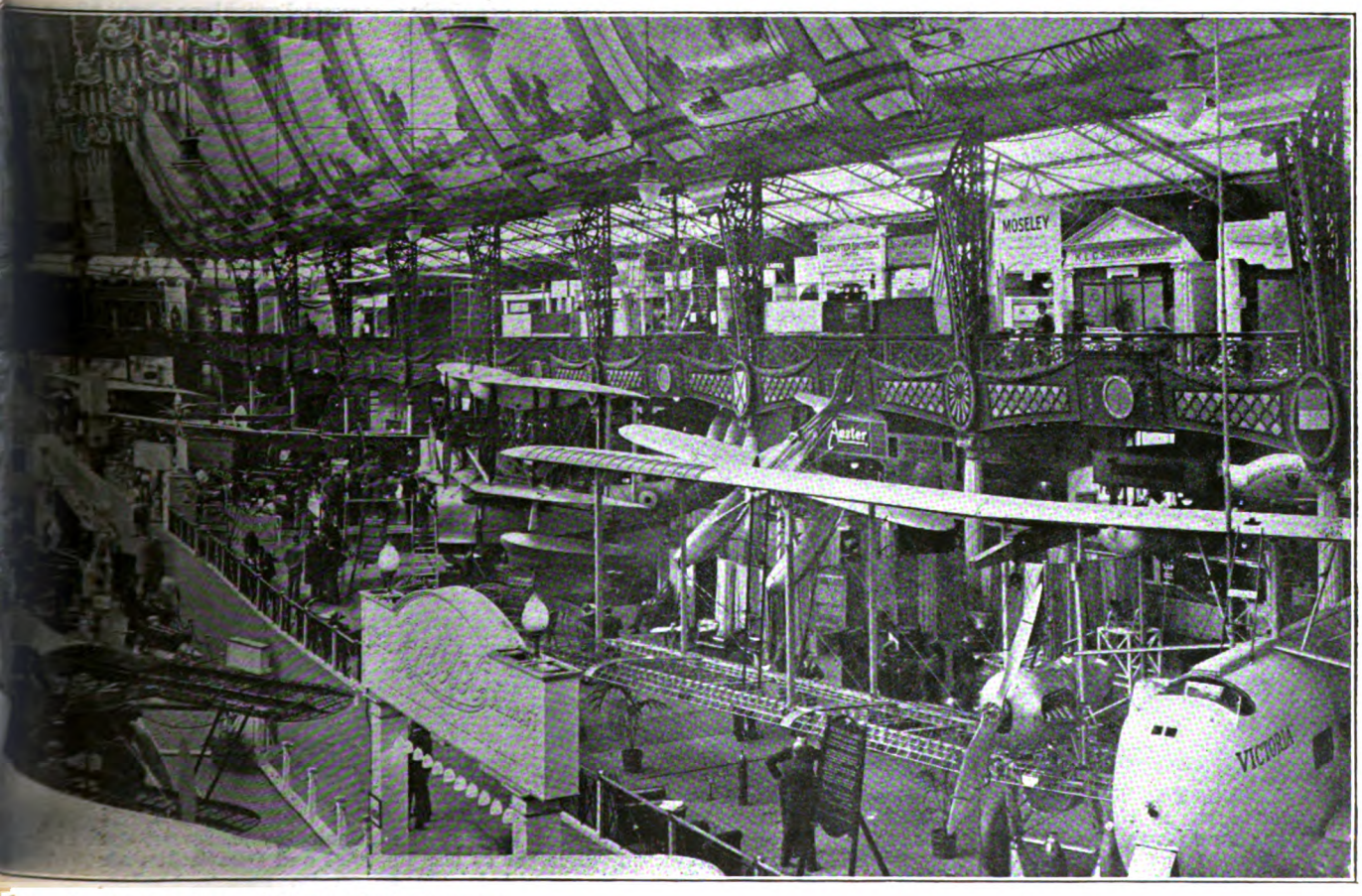
Actually March would be a much the best month. During the previous four months, when there is not very much flying except by enthusiasts and those who have to fly because they are in a hurry, firms could be working away on new designs and new types. Such new machines could be flown experimentally perfectly well during the Winter months, though there would be very little inducement for private owners to buy them. But when they appeared in the Show they would be properly tested, flyable machines, and buyers would not have to carry out experiments at their expense for the benefit of the manufacturers.

The prospects of the Show in March, the publication of projected designs or photographs of machines in their trial stages and so forth, would keep interest going among prospective buyers. And when the Show opened people would rush to look at the new machines with all the pent-up enthusiasm of the Winter instead of dragging themselves by a mental effort to a Show in the hottest part of the year to look at things most of which they have already seen flying or have actually flown. Thus the Show in March would mark the bursting forth of a new season in aviation.

THE QUESTION OF PLACE.

Probably the chief objection to a Show in March is that Olympia has already been let for the whole of March years ahead for an exhibition of Idle Homes, or Confectionery and Sticky Stuffs, or something of that sort, which is much more important than aviation. And there certainly is some difficulty in finding in London itself an exhibition building big enough to hold aircraft.

The Society of Motor Manufacturers and Traders is, one believes, tied up to Olympia by holding a large number of the shares in the company which owns Olympia. And apparently the Society of British Aircraft Constructors is tied up to the Society of Motor Manufacturers and Traders because some of the firms in the S.B.A.C. happen to be hooked



from the Gallery over Addison Road Entrance.

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up with the Motor Trade and are also members of the S.M.M. and T.

This has always been one of the troubles of the Aircraft Trade, because, though the motor firms which are interested in aircraft are singularly progressive, the Motor Trade, as a whole, is about the least progressive and the least intelligent of any British industry, with the possible exception of the Iron and Steel Trade.

If the S.B.A.C. could only cut itself loose from the Motor Trade and could find the money, either within itself or through some speculative capitalist, to buy the old Earl's Court Exhibition site and put up a first-class exhibition hall of its own, it would not only be able to hold its own exhibition at the right time of the year, and do the thing properly, but it would certainly make a very fine profit out of letting the exhibition buildings at other times of the year.

Olympia is a difficult place to reach anyhow, because the Tubes do not go anywhere near it, and the railway service to Addison Road is thoroughly inadequate, and the 'bus services down that road are overcrowded anyhow. On the other hand, Earl's Court can be reached from anywhere, either from the City or from the West End, or from the Western suburbs, or from anywhere on the Inner Circle, quicker than any place within the same distance of the middle of London. Why that site has lain idle so long is a mystery.

LOOK AHEAD.

One is discussing this question at considerable length now because if Civil Aviation develops as it seems to be developing we *must* have an exhibition of civil aircraft somewhere within two years of this date.

We can hardly expect to have a Show in 1930, but we certainly ought to have one in March 1931. And if the firms who are solely interested in war machines are not prepared to back an exhibition in March 1931 then the firms which are interested in civil aircraft and all these young firms which are springing up to build civil aircraft ought to hold a show of their own.

Some of them are possibly held down by that bond with the S.M.M. and T., which ties exhibitors at Olympia not to show anywhere else. But if they are going to make a success of the Aircraft Trade then they will find that the best thing they can do is to cut loose from the bond. At this recent Show civil aircraft were in the minority and of the civil aircraft the majority were intended for private owners and were not actually commercial aircraft.

OUR COMMERCIAL MACHINES.

One shrewd American visitor remarked that this was the finest exhibition of war machines that had ever been held in the World. And in spite of the League of Nations and Pacifism generally, that was a perfectly true statement.

Nothing has yet been produced in any country to touch certain of our new single-seat fighters and two-seat fighters. And certainly no other country in the World has anything to equal our big flying-boats, which were shown bristling with gun-rings and bomb-racks.

Our American friend added: "There are only three commercial machines in the Show. One of them is American and the other two are Dutch."

He referred to the Ford Tri-Motor, and to those two fascinating machines on the Armstrong-Whitworth-Avro Stand, one of which was built definitely to Fokker design and the other to what our American friend called a pantograph diminishment of it. This last statement was not strictly true, because the small tri-motor Avro, though built on Fokker lines and on Fokker principles, is entirely Avro in detail design.

In other respects his statement is not quite accurate, because such machines as the Westland IV and the Moths and the Avians and the Bluebirds can under suitable conditions be operated as commercial machines and not entirely as sport machines. Also, the Blackburn Nile is primarily intended for commercial work, and the Short Singapore, though shown with bombs and gun-racks, would make either a high-speed air-liner or mail-boat, or a very pleasing private yacht,—albeit for a millionaire.

Nevertheless, on the whole his phrase was a very good summing up of the situation. The Show was primarily a show of war machines, and the commercial element was comparatively a minor consideration.

But British aviation is not going to run on those lines for very long. If our more progressive firms who are taking Civil Aviation seriously will only send their representatives out into the British Dominions, and will get the market there with the types of machines which are wanted, and will do it before over-production in America starts the American Aircraft Trade dumping surplus stock into the British Dominions, our output of civil aircraft, both sport and commercial, will soon be very much greater than our output of war machines.

And if we are going to get that market, and are going to build up our home market for machines, either for private owners or for business men who want to hurry round the British Isles or round the Continent of Europe, we must have our properly organised shows of civil aircraft.

DO IT NOW.

Therefore one makes the suggestion quite seriously that those firms which are wide awake enough to see the immense possibilities of Civil Aviation should get together forthwith and discuss right now the right time and the right place for the next Aero Show in London. And one suggests that March 1931 is the right time for it.

If the question of the next Show be left to the makers of war machines and to the people who are tied down by the S.M.M. and T., and to the various and sundry makers of material and components and accessories and gadgets who voted against keeping the Show open for the benefit of the great British Public, we shall probably have to wait another nine years for the next Show, as we have waited since the last Show.

But if the people who are making civil aircraft decide to hold a Show of genuinely commercial machines about March 1931 we shall then find ourselves with plenty of civil machines which are well worthy of the high reputation built up for British aircraft by the makers of war machines and the makers of civil machines alike. And we shall have a goodly number of prospective buyers in this country, besides all those who are attracted from foreign countries and from our own Dominions Overseas. And when we decide to hold that Show let us hope that the promoters will realise that an Aero Show, like a theatrical show or any other show should be open during those hours of the day when people can come and see it.—C. G. G.

URSUS, THE BEAR.—The A.N.T.-5, a Russian-built cabin monoplane (three Gnôme-Rhône Titan engines), belonging to the Soviet Government. Piloted by M. Gromoff, it is making a flying tour of Europe.. It is shown above at the Littorio Airport, Rome. Eleven passengers are being carried, including M. Sarsar, the Chief of the Civil Red Air Fleet, MM. Podogin and Klewzoff, directors of the Dobrolot and Osoaviachim air transport companies, and a number of Russian journalists. It crashed in France on its way to London. Those who believe that URSS comes in peace will do well to remember Kipling's poem with the refrain, "Make not your peace with Adam-Zad, the bear that walks like a man."

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The following achievements prove the amazing efficiency of every Napier aero engine.

SPEED: The highest speed ever attained in the air was achieved by Flight-Lieut. D'Arcy Greig, flying a Supermarine-Napier seaplane—speed 319.5 m.p.h. This same machine, piloted by Flight-Lieut. Webster, won the Schneider Trophy in 1927. The engine was a NAPIER.

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ENDURANCE: The first non-stop flight from England to India was carried out with a Fairey monoplane, fitted with NAPIER engine, piloted by Squadron-Leader A. G. Jones-Williams, M.C., and Flight-Lieut. N. H. Jenkins, O.B.E., D.F.C., D.S.M. A distance of 4,130 miles was covered in 50 hrs. 38 mins.

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THE ROYAL AERONAUTICAL SOCIETY CONVERSAZIONE, AND THE WILBUR WRIGHT MEMORIAL LECTURE.

The Conversazione given by the Royal Aeronautical Society on Thursday, July 25, at the Science Museum at South Kensington, was an excellent affair of its kind. Before the conversazione a number of our more notable visitors were entertained to dinner by the Council of the Society, —the guest of the evening being the Hon. W. P. McCracken, Junior, who was to deliver the Wilbur Wright Memorial Lecture in the course of the evening.

The guests were graciously received on their arrival by the Honourable Mrs. Forbes-Sempill.

When the dinner-party had joined the rest of the guests Col. the Master of Sempill proceeded to present various awards to members of the Royal Aeronautical Society.

The Sir Charles Wakefield Gold Medal was awarded to Mr. H. B. Irving, of the N.P.L., for work on slots and controls: The Simms Medal was awarded to Mr. H. Sutton, of the R.A.E., for a paper on Corrosion of Light Alloys: The Taylor Medal was awarded to Prof. Melvill Jones, of Cambridge, for a paper on the Streamline Aeroplane: And the Busk Memorial Prize was awarded to Mr. W. G. Farren, of Cambridge, for his paper on Monoplanes and Biplanes.

Colonel Sempill then introduced Mr. McCracken in a few well-chosen words, reminding us that he spoke on hallowed ground, seeing that over his head was the original Wright Biplane on which the first flight in the world had been made, in December, 1907.

Col. Sempill also pointed out the original Blériot monoplane in which M. Blériot had flown the Channel for the first time on that day 20 years ago, and remarked that we were fortunate in having the machine there, because a few days after it had been despatched to England the idea suddenly occurred to the French authorities that they would like to have it at a Blériot Celebration themselves. When the French authorities asked for it from the museum in which it normally reposes they were told that it had already gone.

Mr. McCracken then gave the Wilbur Wright Lecture.

This was in fact a very fine effort on his part, because the request that he should deliver the lecture was only sent to him by wireless while he was on his way from America to this country a few days before the opening of the Aero Show. In the intervening time he had composed a notable paper and had secured for it a number of interesting diagrams and kinematograph films. When he came to deliver the lecture he found himself, as indicated, underneath the Wright aeroplane, and, backed by a Union Jack plus a large amount of red cloth, and without any means of displaying either the lantern slides of the diagrams or the movie films. Consequently he had to reduce to words the figures which should have been displayed.

In spite of these drawbacks the lecture was of absorbing interest and contained masses of interesting information about the development of Civil Aviation in the States.

THE WILBUR WRIGHT MEMORIAL LECTURE, 1929.

Science In Relation to Regulating and Promoting Civil Aviation.

The paper read as follows:—

During the past quarter of a century great strides have been made in perfecting the science of aviation. Too much credit cannot be given to the men who have laboured untiringly in the laboratories in an endeavour to determine with mathematical certainty the physical laws that govern the mechanical devices which mankind is using in his conquest of the air.

Science has done more for civil aviation, however, than unravel the mysteries of aerodynamics and internal combustion engines. It has provided many important aids to air navigation, such as improved lighting facilities for airways and airports, wireless as a means of communication between ground and aeroplane, and also as a beacon to guide the pilot on his course, and numerous instruments now adorn the cockpit of every aeroplane.

While at times the development of air transport may suffer because of lack of co-ordination between the laboratory and the factory, it will suffer far more should a similar condition exist between the scientists and those charged with the duty of regulating and promoting civil aviation.

It would seem that there are five fundamental factors which are controlling in the development of any form of transportation. These are: Safety, speed, reliability, cost and comfort. While opinion may differ as to the relative importance of these factors, it is not essential that this question should be solved. They are far from being separate and apart from each other. In fact, they are so interwoven that it is impossible to deal with one without in some degree affecting the others. They are not mentioned as a list of sub-headings, but rather that they may be borne in mind throughout this paper. They are the weather-vanes that indicate to scientists, manufacturers, financiers, operators, insurers, Government officials, and the general public alike, the progress which civil aviation is making. Each of these groups may either, by their action or inaction, materially affect the development of civil aviation.

In presenting one's views on such a subject as this, it seems advisable to draw primarily on one's own experience. Therefore, you will pardon me if I approach the subject from the point of view of what has taken place in the United States during the past few years. Also may I direct your attention at the outset to the fact that I am not an engineer nor a graduate of a technical school? This will no doubt be obvious before long, but there is no reason for concealing it, even in the beginning.

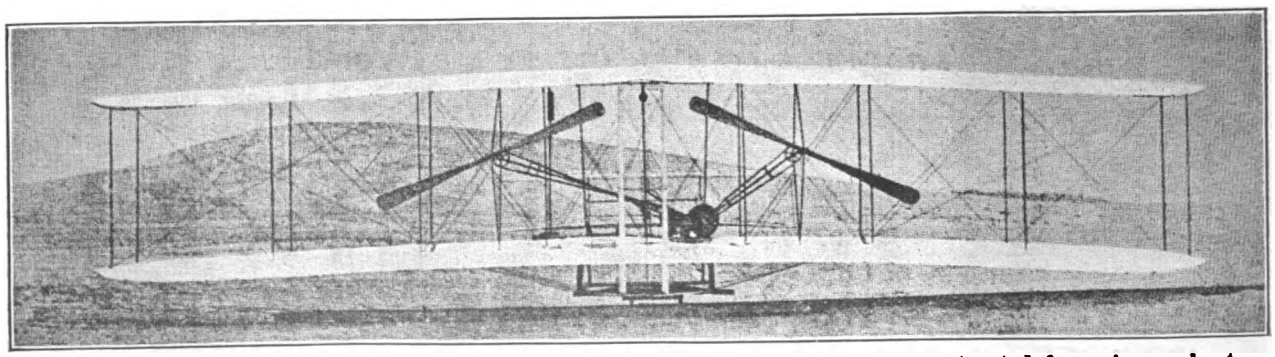
The Air Commerce Act, which constitutes the legal basis for the promotion and regulation of aviation in the United States, was approved May 20, 1926. It vested in the Secretary of Commerce power by regulation to provide for the licensing of aircraft and airmen, the establishment of air traffic rules and the rating of airports. Only aircraft and airmen engaged in inter-State and foreign commerce, as defined by the Act, were required to secure these licences, but others were at liberty to apply for them if they chose to do so. The air traffic rules, however, were made applicable to all those engaged in flying in the United States and its territorial possessions, except aircraft belonging to the national defence forces when operating over their own aerodromes or upon tactical missions.

The Act also charged the Secretary with the duty of fostering and promoting air commerce, specifying particularly the establishment of civil airways, the erection and maintenance of aids to air navigation other than airports and the exchange with foreign Governments, through existing Governmental channels, of information pertaining to civil air navigation as part of these duties.

THE GROUPING OF SCIENTISTS.

When this Act was passed there were five distinct groups of scientists dealing with aeronautical problems. There was one group in the Industry, another in educational institutions, a third composed of the technicians in the national defence forces, a fourth in the Government service known as the Bureau of Standards, which is an integral part of the Department of Commerce, and the fifth likewise in the Government service, but under the jurisdiction and control of a committee composed of representatives from the other four groups, and known as the National Advisory Committee for Aeronautics.

Under such circumstances, it is obvious that there was no occasion to create another purely scientific agency to assist in carrying out the provisions of the law. In fact, one of the controlling reasons for assigning these new functions to the Department of Commerce was that there were already in that department at least four bureaux which could logically be expected to assist in carrying out the duties prescribed by the Act.



END ELEVATION.—A rear view of the original Wright biplane, which, in a reconstructed form, is now kept in South Kensington Museum.

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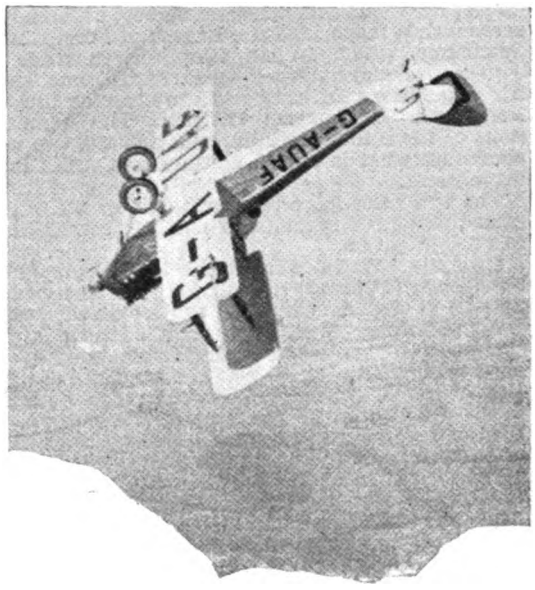

ALL-ROUND EXCELLENCE OF MOTH ENDORSED AT HESTON

INTERNATIONAL AEROBATIC CONTEST

Aerobatics test the qualities of a machine in all departments —speed, climb, manoeuvrability and general robustness. The International Aerobatic Contest, organised by the Royal Aero Club, on July 20th at Heston Air Port, was won by Captain H. S. Broad, A.F.C., flying a Gipsy Moth. Mr. G. Murray, also on a Moth, took second prize. Inverted flying figured largely in Captain Broad's programme which provided a convincing demonstration of the Moth's all-round strength of construction.

GIPSY MOTH FIRST

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These were the Lighthouse Bureau, to which was assigned air navigation facilities; the Bureau of Standards, to which was assigned research problems, engine testing and similar duties; the Coast and Geodetic Survey, which now makes our aeronautical maps; and the Bureau of Foreign and Domestic Commerce, which is promoting foreign trade in aircraft. Two new divisions have been created, one known as the Air Regulations Division and the other as the Airports and Aeronautic Information Division. The aeronautical divisions of these four older bureaux and the two new divisions constitute what is known as the Aeronautics Branch of the department.

The two most important problems at the outset were the promulgation of regulations and the establishment of aids to air navigation.

Over six months were spent in the preparation of the regulations. During this period the experience of other nations in dealing with this subject as carefully studied.

A preliminary draft of the regulations was prepared and submitted for criticisms to representatives of the aviation personnel of the Army, Navy, Post Office Department and the National Advisory Committee for Aeronautics. The draft was revised in the light of these criticisms and was then submitted to the manufacturers, operators, insurance underwriters and other similar groups interested in aviation. They were invited to submit written criticisms and also to attend group meetings held under the auspices of the department. All sections of the proposed regulations were submitted for discussion at each of the group meetings.

At the conclusion of these meetings the draft was revised and circulated to all those who attended any of the group conferences or had submitted written criticisms, with the request that if they had any further comments to make they submit them in writing. Then followed the final revision and the original regulations became effective on Dec. 31, 1926. At each of the group conferences there were one or more men who could be classified primarily as scientists, and underlying all the discussions were the same five fundamental factors of safety, speed, reliability, cost and comfort.

Each year since the regulations were promulgated, the department has had an annual conference open to all interested in aviation. These have been very well attended by representatives of all the various groups having occasion to deal with the department on aeronautical matters. While the principal subject of discussion has been proposed amendments to the Air Commerce Regulations, an opportunity has been afforded to discuss every phase of the department's aeronautical activities. Many special conferences have also been held dealing with such subjects as materials for landing strips, fire prevention in hangars, and the like. It is important not only that there should be the closest co-operation between scientists and the regulatory authorities, but also between the industry and Government officials.

To one of royal station rather than of scientific trend of mind is attributed the saying that "the test of the pudding is in the eating." While it would be arrogant indeed to attribute to the regulations themselves, to the manner of their enforcement, or to the combined activities of the department, the progress which has so recently been achieved in civil aviation in the United States, nevertheless, they have had sufficient bearing upon that progress to warrant referring to them in connection with what has transpired.

Before doing so, however, it might be well to point out that wherever possible pilots have been employed to do aviation work in the department. This applies to office as well as field positions. Naturally all the inspectors are pilots, as are the airway extension superintendents. Even the clerical and stenographic personnel have been afforded opportunities to fly if they cared to do so. We want them to be not only air-minded, but air-wise.

How It Was In the Beginning.

There had been some activity in civil aviation during the year 1926, in reliance upon the promise of the administration and the responsible leaders in Congress, that a definite federal aviation policy, as later set forth in the Air Commerce Act, would be adopted. Therefore, in order properly to present the picture, it is fair to make a comparison beginning with the 1st of January, 1926.

At that time almost all the aircraft in civilian hands consisted of war surplus training planes which had been adapted to various civilian uses. There were a few manufacturers of civil aircraft who were building a limited quantity of new models, largely along the lines of military training planes, and in almost every instance without the aid of any real scientific engineering staff. These planes were for the most part powered with war surplus engines and their use was confined to carrying passengers on short flights, instructing a few students, a limited amount of aerial photography, crop dusting, and aerial taxying.

The only scheduled flying was done by the Post Office Department, which had established an airway from New York to San Francisco, a distance of less than 3,000 miles. This airway was lighted from New York to Salt Lake City, a distance of 2,000 miles. There was a single daily schedule in each direction over the entire route, and a day and night schedule between New York and Chicago. The public as a whole took very little interest in the air mail service, and still less in the other forms of civilian aviation.

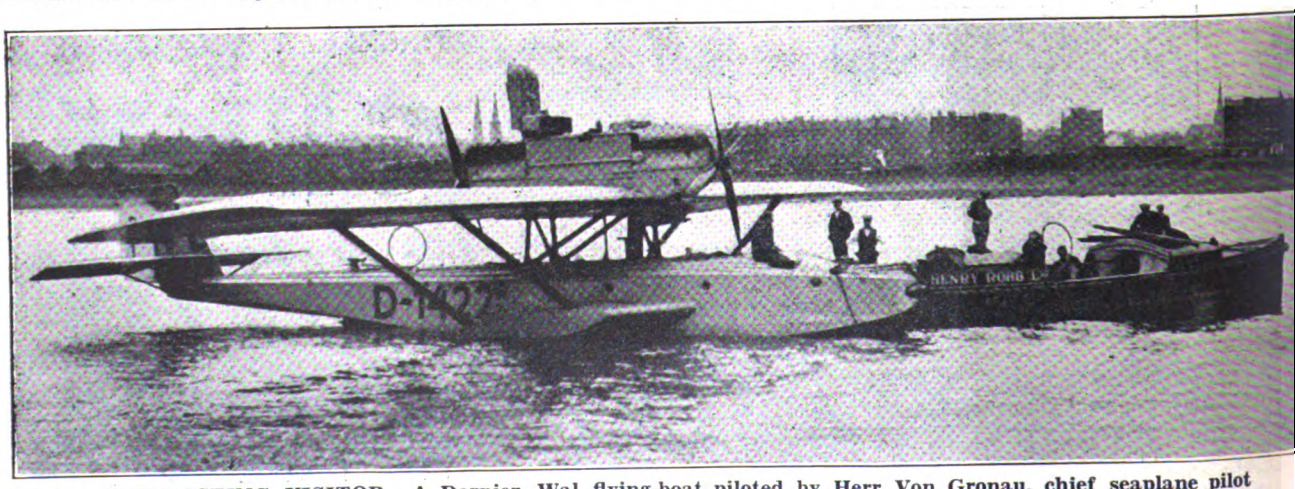
The advantage of the vast distances in the United States to aeronautical development is quite apparent, but experience has shown that the longest routes are not uniformly the most profitable. The determining factor involves, among other items, the available traffic and cost on the one hand and the speed and reliability of the service on the other.

Naturally, with such a rapid development in air transport one would expect a corresponding increase in the aircraft industry and other aeronautical services. However, the increment in this field has been even greater than in air transport. In 1926 there were 76 aeroplane manufacturers and 11 engine manufacturers. In 1928 the figures were 153 and 48. While all aeroplane manufacturers are included in the total, it should be mentioned that some of them are quite limited as to production and capitalisation.

The attitude of the public towards aviation may be gauged by the increase in the number of miles flown in each year and the number of passengers carried. In 1926 the passengers numbered 5,782 on scheduled lines, and 4,318,087 miles were flown. In 1928, 37,500 passengers were carried, and 11,000,000 miles were flown, on scheduled lines.

Figures for the first six months of 1929 were not available in time to be included on this paper, but more passengers were carried during that half-year than during all of 1928 and the daily average mileage for scheduled operations during the first six months of 1929 was three times what it was for the same period in 1928.

Attention should be called to the fact that 75 per cent of commercial aeroplanes manufactured in 1928 were of the open cockpit type, suitable for accommodating from one to three persons. This equipment is used primarily for civilian training and sport flying.



AN INTERESTING VISITOR.—A Dornier Wal flying-boat piloted by Herr Von Gronau, chief seaplane pilot of the Deutsche Verkehrsfliegerschule, refuelling at Leith during a tour of the North Sea. The boat left Sylt on July 17 and flew to Reykjavik, Iceland, returning to Sylt by way of the Faroe Islands and Leith, where it arrived on July 25. This is the actual boat used by Capt. Amundsen in his 1925 attempt to reach the North Pole and was later used by Mr. F. T. Courtney in his first attempt to fly the Atlantic. After reconditioning it was bought by the Deutsche Verkehrsfliegerschule and used by them for oversea training.

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TYPE CERTIFICATES.

The number of approved types certificates issued by the Department in 1928 was 152. This tells a very important story. By way of explanation, may I describe what is involved in securing an approved type certificate for aircraft? Manufacturers must first submit to tthe Air Regulations Division complete plans, specifications and drawings of the aircraft, together with a stress analysis certified by a competent aeronautical engineer. These data are checked by aeronautical engineers in the employ of the Engineering Section. In cases where they do not conform to the safety factors and practices prescribed by our airworthiness requirements, the question is taken up with the engineers for the manufacturer.

Static tests are not required in every instance but will always be accepted, and may be required when the department's and manufacturer's engineers are in disagreement as to the strength of the structure. When these discrepancies, if any, are all satisfactorily adjusted, the application is then referred to the Inspection Section.

This section first sends one of its men to the factory to check up the materials they are using and their shop practices. When specifications, materials and factory are approved, and a plane is built in accordance therewith, it is given what is termed an engineering flight test by one of the department's engineering inspectors. When this test is passed, the certificate is issued.

The manufacturer is then entitled to build planes similar to the one which passed the final engineering flight test, with the assurance that they will be licensed, provided the planes, including workmanship and materials, conform with the approved specifications.

The Government does not keep an inspector continually at the plants, but the plant of a manufacturer holding an approved type certificate is subject to inspection at any time. Frequent factory inspections are made, and if the manufacturer is not complying with the requirements of the department, his certificate may be suspended or revoked.

As regards the manner of testing engines, the department requires that the manufacturers run the preliminary tests at his own factory or at any other place he may select. The final 50-hour test is run by the department at the Bureau of Standards, and constitutes the basis of the h.p. rating and the maximum speed for the propeller setting. In lieu of this test the department will accept test certificates by either the Army or Navy.

METEOROLOGICAL SERVICES.

The Air Commerce Act prescribes that the Secretary of Commerce shall make recommendations to the Secretary for Agriculture as to the necessary meteorological service for aerial navigation. It has required some study to determine just what type of service was necessary. In making these studies we have had the assistance of the meteorological experts in the Weather Bureau, the Army and Navy, a specialist employed by the Daniel Guggenheim Fund for the Promotion of Aeronautics, as well as the members of our own staff. It would be remiss not to mention the recommendations of the operators and their pilots.

All this has resulted in a revised system of aeronautical weather service. The current fiscal year, which began on July 1, 1929, will witness a substantial expansion in this type of service along our airways and particularly in connection with what is known as a secondary network of stations off the airways, but reporting to a central control station on the airway. However, even during this period there has been a marked improvement in the quality of aeronautical weather service with a corresponding reduction in the percentage of accidents due to adverse weather conditions

Here mention is made of the fact that at Dec. 31, 1926, there were 2,041 miles of lighted airways, with 612 beacons and 92 intermediate lighted fields, whereas at Dec. 31, 1929, there were 6,988 miles lighted, with 1,188 beacons, and 210 intermediate lighted fields.

The Department of Commerce furnishes communication facilities for desseminating weather information once it is prepared by the meteorological authorities. For distributing this information wireless, teletype, telephone and telegraph are used.

The teletype has been found particularly useful not only in connection with transmitting weather information, but also other information pertaining to air operations. It consists of a series of typewriters installed at the various airports along a particular route. A message written by an operator at one machine is automatically recorded on a tape by every other machine attached to the circuit. Circuits may be joined together or disconnected by means of a switch board as occasion requires.

The fact that the wireless bands available for aeronautical communications are limited in number requires that they be conserved as far as possible for communicating with aircraft in flight. This makes it necessary to use every practicable means of ground communication for transmitting information from one airport or intermediate landing field to another.

WIRELESS BEACONS.

During 1928 only two wireless beacon stations had been installed, but these demonstrated conclusively the practicability of this particular type of air navigation facility, and the programme for the current year contemplates a substantial extension of this service.

The wireless beacon consists of a mechanically operated station transmitting two or more signals over antennæ set at fixed angles to each other. The mechanical transmitters are so synchronised that three signals are sent out by each pair of transmitters, one on the right of a given course, the other on the left of the given course and by overlapping a dot with a dash a third signal is sent out on the course itself.

In the preliminary stages it was necessary for the pilots or navigators to wear a headphone and to listen constantly for the signals. However, there has now been developed by the aid of scientific research a visual indicator of the vibrating reed type which can be installed in the pilot's cockpit and which automatically informs the pilot whether he is on the given course or to the left or right of it.

INCREASE IN LICENSES.

Another index of the rapid increase in air operation will be found in the number of licences of various kinds which have been applied for and issued.

In 1926 there were none. At the end of 1927 there were 1,027 pilot licences issued and 4,145 applied for against 4,887 and 8,375 at the end of 1928. In 1927 the aircraft licences issued were 681, and applied for 2,823. In 1928 the figures were 3,165 and 6,611.

In 1927 aircraft identification numbers issued were 832, and 908 applied for. In 1928 the figures were 1,939 and 3,031.

In 1927 student permits issued were 545, and 800 applied for. In 1929 the figures were 10,262 and 11,372.

In 1927 temporary licences were granted to 1,227 aircraft. In 1928 the number was 549.

It will be noted that there has been a decrease in the number of temporary licences. These were made necessary by the fact that during the years 1927 and 1928 the applications were received much faster than they could be handled, with the result that it was found expedient to issue temporary licences in order to avoid seriously interfering with commercial aerial operations.

In 1927 mechanics' licences issued were 1,678, and 2,891 were applied for. In 1928 the figures were 4,383 and 6,189.

The air commerce regulations provide for four classes of pilots' licences in addition to student-pilots' licences. However, the fact that a comparatively small number of industrial pilot licences have been issued indicates that there is no further need for continuing this particular classification.

It is particularly noteworthy that the number of transport pilots almost quadrupled between the years 1927 and 1928. It exceeds by 100 per cent. the expansion of the airway mileage during the same period and yet there was a shortage of transport pilots. The most impressive fact, however, is the large number of student pilot permits issued during the year 1928. At the present time there is every indication that a substantial increase will be made during the current year over the figures of last year.

It might be well to give a short explanation with reference to student pilots' permits. These are required only when a student is taking instruction in licensed equipment. In order to secure a student pilot's permit, the applicant must go to a physician designated as an authorised examiner by the Department of Commerce. The student may elect to take the physical examination prescribed for either a private, an industrial, a limited commercial, or a transport pilot's licence. The examiner's fees, which range from $10 to $15 according to the type of examination, are paid by the student. In making application he or she must indicate the school in which enrolled. These permits are valid for one year from the date of issue, but may be renewed at the expiration of that period by passing another physical examination.

AIRWAYS EXPANSION.

The expansion of the airway system was from 8,404 miles in 1927 to 16,667 miles in 1928. This shows what has been accomplished in developing the airway system of the United States, with the exception of the combined air and rail service between the Atlantic and the Pacific coasts.

At the present time the total lighted airways exceeds 10,000 miles in length and the programme for the new fiscal year, when carried into effect, will provide approximately 4,000 additional miles of lighted airways.

During this three-year period there has been a very substantial improvement in the lighting equipment. Originally it consisted of one revolving beacon of two-million candle power every 25 miles with intermediate acetylene flashing beacons at from three to five miles' intervals. The standard

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equipment to-day consists of one revolving 2,000,000 candle power beacon every 10 miles.

A lens has been inserted in the top of the beacon permitting the stray light to shine upward to serve as a ceiling light. In addition to this, the revolving light has on each side of it two stationary lights of 500,000 candle power which shine in opposite directions up and down the course. These lights flash the number of the beacon in the Morse code when the revolving light is shining off the course.

The lens of the course lights is red for beacons which are not placed at intermediate landing fields and is amber-coloured if the beacon is located at an intermediate landing field. A green lens is used at the airports. The lens of the revolving beacons along the airway is white.

At the base of each beacon is a large concrete arrow pointing along the course. It is flood lighted at night and has painted on it letters identifying the course and the numerals indicating the number of the particular beacon.

This is really a very matter-of-fact description of the accomplishments of these illuminating engineers who have wrestled with this problem. They have also made marked progress in illuminating airports for night operations and equipping the planes themselves with improved landing lights.

In addition to lighting and marking the airways, the Federal Government, with the aid of various civic organisations, has undertaken a campaign to prevail upon municipalities, railroads and corporations to provide airway marking insignias on the roofs of buildings or in public squares, to inform the pilot of his location, compass direction and the direction and distance to the nearest airport.

In order that this work might be done with uniformity to the best possible advantage, a research programme was organised. It was carried out over a considerable period of time and involved the selection of contrasting colours, size and shape of letters, as well as experiments in illumination for night operations.

AIR MAIL INCREASE.

As air mail constitutes the backbone of scheduled airway operations, it is important to show the increase in air mail poundage and mileage during the period under consideration.

In 1926, 810,855 lbs. was carried over 8,264 miles of airline. In 1928, 4,061,481 lbs. were carried, and the mail lines covered 14,156 miles.

In explanation of this increase it should be pointed out that not only have more communities been accorded the benefit of air mail service by the new mileage and its speed and reliability increased, but also that on Aug. 1, 1928, the air mail rates were substantially reduced.

The theory of our contract mail law is that the excess revenue derived from the sale of air mail postage should be paid to the contractors as compensation for the services rendered. However, under the system of awarding contracts by competitive bidding, the rates charged to the Post Office Department were substantially reduced during the latter part of 1927 and the early part of 1928. As it was never contemplated that the Post Office should profit from its air mail service, the law was amended authorising a reduction in the rates charged to aerial postal users.

While it is true that this reduction was of such a substantial nature as to result in a loss to the Post Office Department, the law empowered the Postmaster-General to negotiate for a six-year extension of existing contracts on the basis of a downward revision of the rate of compensation paid to the contractors.

It is believed that the present rate charged can be maintained without involving any greater loss to the Post Office Department than it would sustain if the mails were transported over similar distances by surface carriers. Monthly payments to air mail contractors for the first six months of 1929 were on the basis of more than 500 pounds per month.

Perchance it has occurred to you that so far this discussion has touched very casually upon the part that science has played in promoting and regulating civil aviation. However, science has been defined as "knowledge of principles or facts." It therefore seemed appropriate to give first some of the facts pertaining to the unprecedented expansion in civil aviation which has taken place in the United States.

SAFETY FIRST.

As was indicated at the outset, one of the most important factors in aeronautical development and regulation involves that of safety. The National Advisory Committee for Aeronautics, in co-operation with the representatives from the Army, Navy and Department of Commerce, organised about a year and a half ago a Committee to formulate a uniform method of aircraft accident analysis. All three of these departments had been engaged in accident investigation and analysis, but until this time there has been no attempt at uniformities of terminology or methods which are necessary for a scientific study of the conclusions reached by the investigating authorities.

After several months of careful study on the part of the committee, an aircraft accident analysis form was adopted accompanied by a special report containing definitions of the terms used and an explanation of the method of reporting and analysing aircraft accidents. As copies of the special report have been widely distributed, there is no occasion for going into great details about the report itself. The work of the committee in drafting this analysis form was so thorough and clear that it is possible for any person with a practical knowledge of flying to correctly analyse an accident.

The method of analysis recommended was promptly adopted by the Army Air Corps, Bureau of Aeronautics of the Navy and the Aeronautics Branch of the Department of Commerce. Already it has been of great assistance to us in the department in analysing aircraft accidents with a view to modifying the present Air Commerce Regulations in order to make air transport safer.

ACCIDENT STATISTICS.

The result of this analysis for the six months' period, beginning July 1, 1928, and ending Jan. 1, 1929, was as follows:—

PERSONNEL.—PILOT: Error of Judgment, 12.64%; Poor Technique, 29.80%; Disobedience of Orders, 2.65%; Carelessness or negligence, 10.12%; Miscellaneous, .58%.

55.79% Errors of Pilot.

OTHER PERSONNEL: Supervisory, .50%; Miscellaneous, 1.68%.

2.18% Due to Other Personnel.

57.97% Total Personnel causes.

MATERIEL.—POWER PLANT: Fuel System, 3.78%; Cooling System, .74%; Ignition System, 2.48%; Lubrication System, .30%; Engine Structure, 1.75%; Propellers and Accessories, .56%; Engine Control System, .58%; Miscellaneous, Undetermined, 5.55%.

15.74% Power Plant Failures.

STRUCTURAL: Flight Control System, .29%; Movable Surfaces, .07%; Stabilising Surfaces, Wing, Struts and Bracing, 1.15%; Undercarriage, 1.87%; Wheels, Tyres and Brakes, .85%; Pontoons or boat, Fuselage, Eng. Mount. and Fittings, .07%; Tail Skid Assembly, .14%; Miscellaneous, Undetermined, .03%.

4.47% Structural failures.

HANDLING QUALITIES: .25%.

.25% Handling Qualities.

20.48% Total Materiel Failures.

MISCELLANEOUS: Weather, 4.67%; Darkness, .50%; Airport and Terrain, 3.70%; Other, 3.25%.

12.12% Total Miscellaneous Causes.

UNDETERMINED AND DOUBTFUL: 9.45%.

9.45% Total Undetermined and Doubtful.

100.00% Total.

VITAL STATISTICS.

KIND OF FLYING.—Schedule Flying (Airway), 51; Student Instruction, 65; Experimental, 32; Miscellaneous (Commercial), 191; Miscellaneous (Pleasure), 333.

672 Accidents.

PILOT.—Licensed, 361; Letter of Authority, 86; Unlicensed, 225; Average Age of Pilots, 28.9 Years; With Medical Waiver, 31; Fatal Injury, Class "A," 88; Severe Injury, Class "B," 91; Minor Injury, Class "C," 101; Uninjured, Class "D," 392.

PASSENGER.—Fatal Injury, Class "A," 127; Severe Injury, Class "B," 98; Minor Injury, Class "C," 106; Uninjured, Class "D," 366.

AIRCRAFT.—Licensed, 338; Temporary Number, 209; Not Licensed, 125; Completely Demolished, "A," 287 (Including 26 fires after crash); Complete Overhaul, "B," 159; Major Assembly Repairs, "C," 165; Minor Repairs, "D," 54; Not Damaged, "E," 7.

NATURE OF ACCIDENT.—Class "A," Collision, 6; Class "B," Collision, 60; Class "C," Engine Failure, 37; Class "D," Without Engine Failure, 144; Class "E," Forced Landing, 143; Class "F," Landing Accidents, 139; Class "G," Take Off Accidents, 78; Class "H," Taxying, 17; Class "I," Fires in the Air, 5; Miscellaneous, Class "L," 42; Unknown and Doubtful, "M," 1.

LIGHTER-THAN-AIR CRAFT.—Total number of accidents reported, 672.

This subject of accident analysis is of sufficient importance to warrant a somewhat detailed description of the manner in which it is conducted.

The Air Commerce Act directs the Secretary "to investigate, record and make public the causes of accidents in civil air navigation in the United States." The Air Commerce Regulations require that "every accident in the operation of licensed aircraft which results in injury to the aircraft shall be reported without delay." They also provide that "when serious injury to personnel or property is suffered or death results a report shall be made by telegraph."

When the accident is a minor one, resulting in no serious damage to the plane nor injury to persons, the report of the

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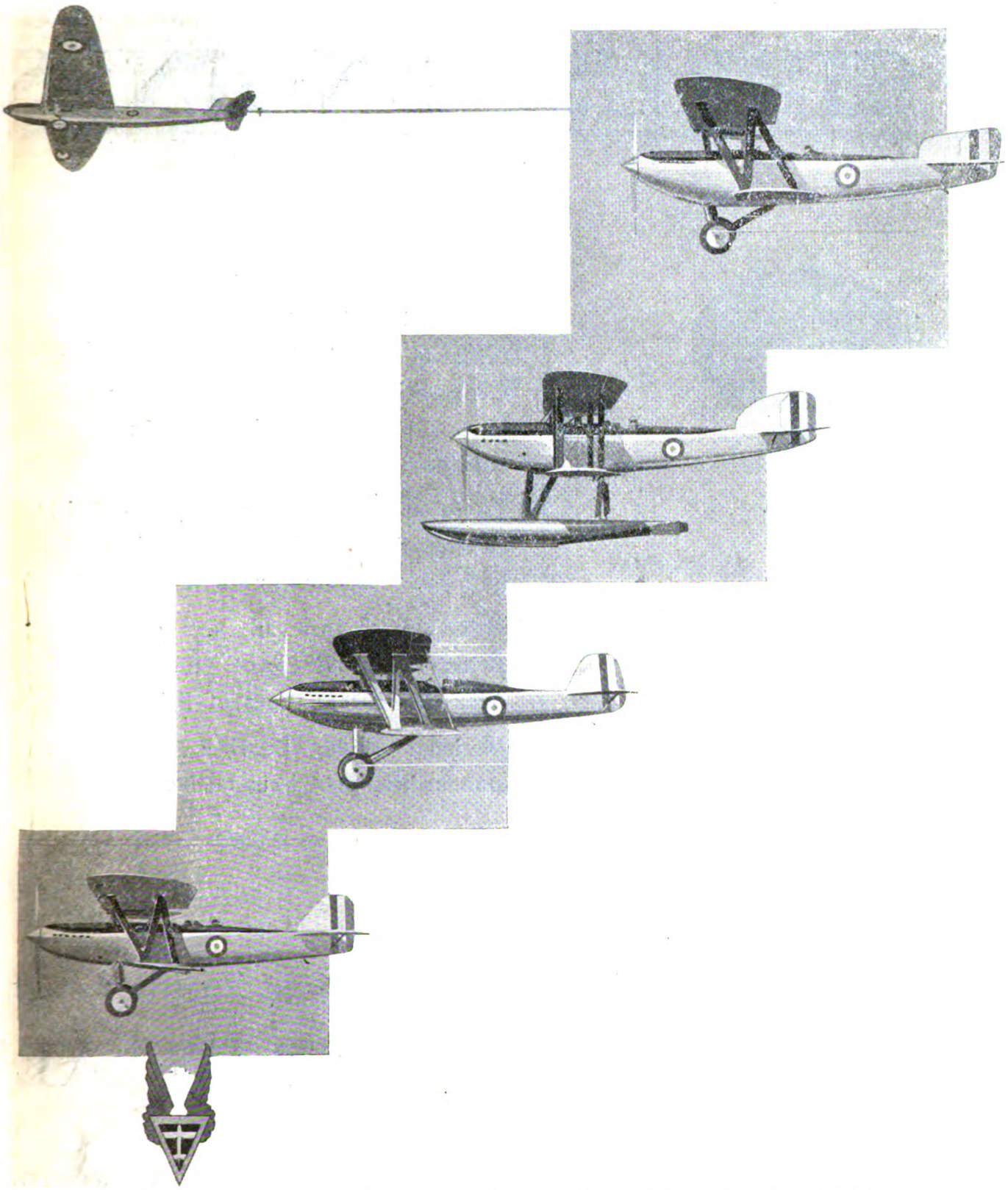

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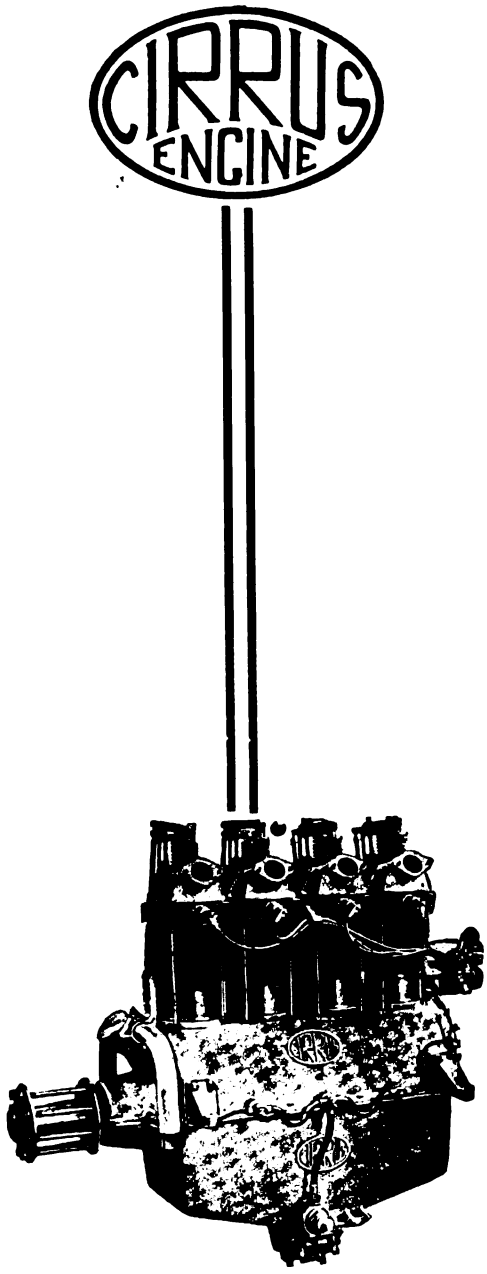

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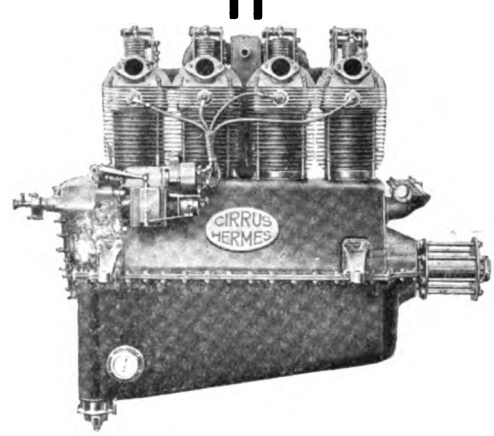

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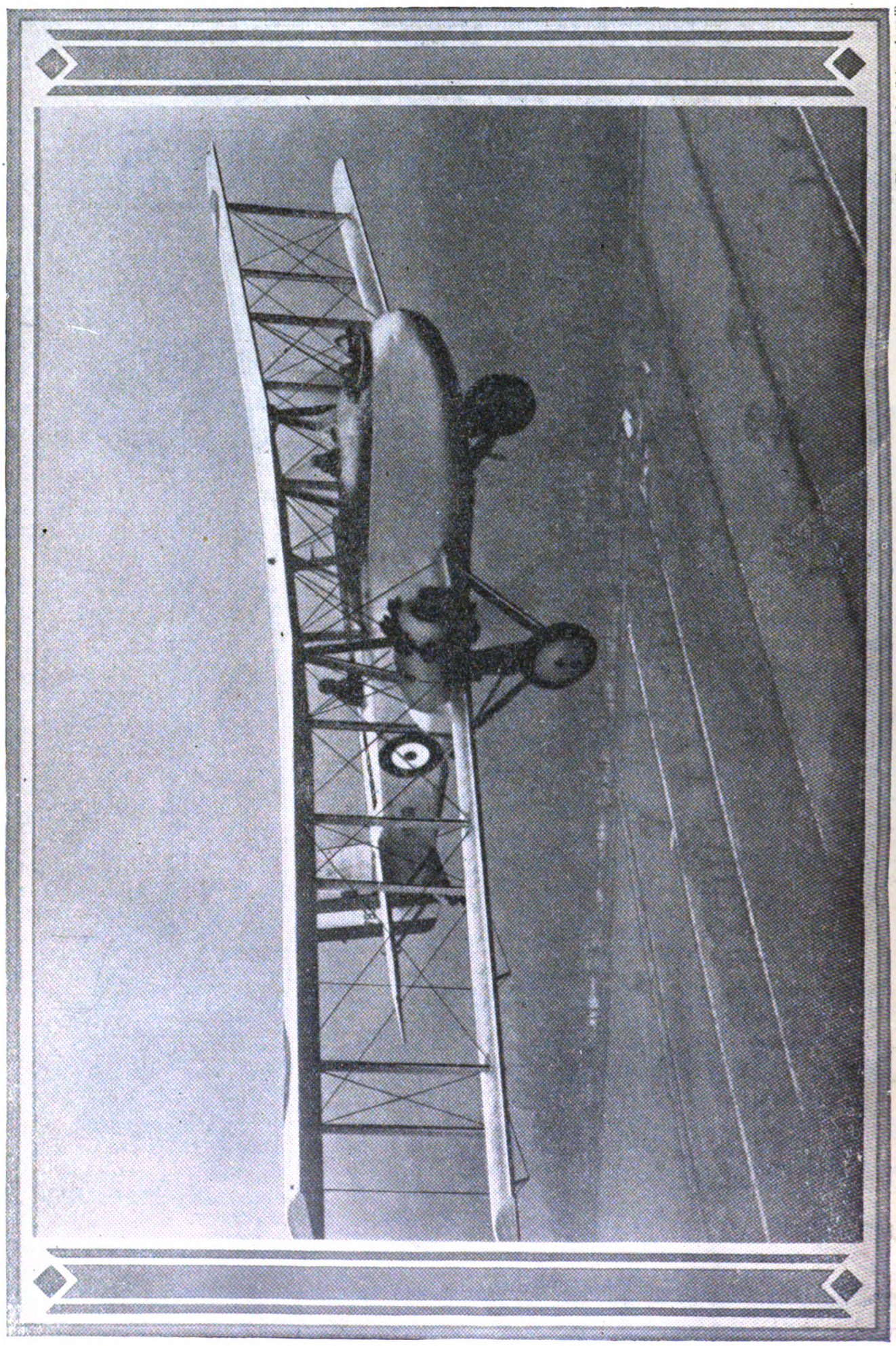

(Photograph by "Aeroplane.")

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

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owner may be submitted to the Accident Board without being investigated by one of the department's inspectors. However, if the plane is seriously damaged, or any injury results to pilot or passengers, an inspector of the department is immediately sent to investigate the accident.

As was previously pointed out, all the inspectors in the department are men of extensive experience as aeroplane pilots. They secure the statements of all witnesses, examine the damaged plane, taking specimens of the material and also securing photographs of the wreck and surrounding territory when it is believed that such specimens or photographs would be of assistance to the Crash Board in reaching its conclusions.

The report of the inspector, together with all accompanying exhibits, is then submitted to the Crash Board. This board consists of six members: Two supervising inspectors who are stationed at the headquarters in Washington, the medical director, or in his absence, his assistant, a representative of the Engineering Section, the chief of the Enforcement Section, and the chief statistician. Over half of the members of the Board are qualified pilots and all of them have had considerable experience in aeronautical matters. This board proceeds to determine the causes of the accident and apportion percentages to the various factors involved. In case of disagreement, averages are taken.

The results already quoted represent the opinions of this board. It is interesting to note that 55.79 per cent. of all accidents during the period were charged to "errors of pilots." This clearly indicates that more rigid examinations should be given to applicants for pilots' licences and also that improvements should be made in the training of civilian pilots.

You will recall that the Air Commerce Act requires only aircraft and personnel engaged in inter-State commerce to secure licences. Students' instruction in practically every instance is confined within the borders of a single State. Therefore, at the outset, the department was not in a position to regulate the civilian flying schools other than to provide that of those pilots holding federal licences, only transport pilots could give flying instruction for hire or reward.

However, there was a general demand that the department should have some supervision over the schools. After the facts which have been quoted were made public, the Air Commerce Act was amended so as to authorise the Secretary of Commerce to examine and rate civilian flying schools, provided these schools made an application for such examination and rating. While it is not compulsory under the law that schools have a rating from the department, there is every indication that competition, in conjunction with State legislation, will practically force all of them in the near future to secure such a rating.

The regulations governing the examination and rating of flying schools were promulgated last April and the task of carrying out the mandate of the amendment to the Act is just getting well under way. Sufficient time has not yet elapsed for the results to become apparent, but all are confident that this represents a forward step in making aviation much safer.

The careful analysis of all aircraft accidents of commercial types of aircraft affords an opportunity to determine these factors in the design and operation of aircraft which demand improvement.

As an example, I will take a period of six months, from July to December, 1928, during which time 672 accidents were reported (Chart 12). The accidents to aeroplanes by cause are as follows:—

Collision—full flight—with other aircraft ..	6
Collision with other than aircraft	60
Loss of speed following engine failure	37
Loss of speed, not due to engine failure ..	144
Forced landings	143
Landing accidents	139
Take-off accidents	78
Taxying accidents	17
Fires in the air	5
Miscellaneous	42
Unknown and doubtful	1

From these figures it appears that 80 per cent. of the accidents during that period were due to the following causes:—

Loss of speed (stall)	181
Forced landings	143
Bad landings (not forced)	139
Bad take-offs	78
Total	541

The general conclusions that can be drawn from the above figures are:—First, that the modern aeroplane is too easily stalled; second, that it is too hard to land; and third, that it is too hard to take-off.

The National Advisory Committee for Aeronautics, in preparing its research programme, has considered the analysis of aircraft accidents, and has included a programme of research intended to improve the safety of aeroplanes from the standpoint of aerodynamics. In accordance with this programme of aerodynamic safety the Committee is studying the stability, controllability, manœuvrability, landing and take-off, and spinning characteristics of aeroplanes.

Studies are also being made of ice formation in flight and of gusts.

For the improvement of aerodynamic efficiency the Committee is studying the problem of aeroplane performance and the subjects of increased lift and decreased drag.

Studying Structure Failures.

Although there have been very few accidents to commercial aeroplanes as a result of structural failures, the National Advisory Committee is planning to extend the work on the determination of the aerodynamic loads and load distribution to commercial type aeroplanes.

A study of the loads supported by the structures of aeroplanes of military types has been carried on for the last three or four years and has reached the furthest development in the tests on the PW-9 Boeing pursuit type aeroplane. The Advisory Committee, in investigating the pressure distribution over the PW-9 aeroplane, not only included the wings, tail surfaces, and the control surfaces, but investigated the pressure distribution over the fuselage.

The PW-9 was tested in a pull-up at 186 miles per hour, where the acceleration registered is 9 g. The weight of the aeroplane is 3,000. The total load on the structure in this manœuvre was 27,000 pounds, of which the upper wing took 18,300 pounds, the lower wing 6,700 pounds, the fuselage 1,650 pounds, and the tail 350 pounds.

The National Advisory Committee plans to investigate in as thorough a manner the pressure distribution on commercial types of aeroplanes. I appreciate that commercial aeroplanes are not expected to be subjected to the kind of treatment that the PW-9 received, and that at the present time there is a lack of information on the structural conditions under which commercial aircraft have to work.

There is also a lack of information on the loads really imposed in flying under severe weather conditions or in rough country. It will be of considerable value to designers of aircraft if the maximum loads under which transport aeroplanes must work can be determined, especially when operating over mountains or under the most unfavourable weather conditions. It is important that a study be made to include the measurement of the total load and of the load distribution on both biplanes and cantilever type monoplanes.

The results of these investigations will have an important bearing on the regulations affecting the stress analysis of commercial type aeroplanes.

The study of pressure distribution has been extended to include the determination of water pressures on seaplane boats and floats with various types of landing gear. This information will, of course, be extended to commercial type seaplanes and will have an important bearing on the design of the structure of a seaplane boat.

Another example of the problems being studied by the National Advisory Committee in connection with the determination of the loads on an aeroplane structure is the investigation of landing gears. In making a study of landing gear characteristics a comparison has been made of the load transmitted to the fuselage when using the oleo type shock absorber and when using a rubber type shock absorber. Tests indicated the amount of load transmitted to the fuselage with both types of shock absorber in a normal, a two-point and a pancake type of landing. In all cases the oleo type of shock absorber transmits only about one-half of the load to the fuselage that is transmitted when a rubber type shock absorber is used. This work is increasingly important if imperfect landings are made.

As mentioned before, most of the investigations to determine the aerodynamic loads in the aeroplane structure in flight and in landing have so far been conducted on aeroplanes of the military type. The instrument equipment and our technique in conducting such investigations have been developed to a point where it will be comparatively easy to extend the investigations to commercial aeroplanes of different types. With the information obtained from such investigations the regulations governing stress analysis can be drawn so that in the future the factor of safety will be such that structural failures will be greatly decreased, and if they do occur they will probably not be due to using a too low design factor but to imperfect workmanship or material.

Spin Studies.

The experience we have had in America with peculiar and dangerous spins of aeroplanes of widely different types has necessitated the study of the spinning problem from every angle. The accidents recorded as a result of spins are due in a large measure to an aeroplane stalled in such a position that recovery is not possible, although the spin in most cases is of the so-called "normal" type.

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One problem which is regarded as of very great importance from the standpoint of safety is that of the "flat" spin, so called because the aeroplane spins with its longitudinal axis at an angle close to the horizontal. We have had a number of cases of aeroplanes falling from a normal to a flat spin after two or three turns. In most cases it was impossible to recover control of the aeroplane from the flat spin.

It is commonly recognised that there are two separate systems of forces at work on an aeroplane in a spinning manœuvre, the aerodynamic and the mass or inertia forces. As an example, I will cite our experiences with the NB training type seaplane.

There are a number of instances where this type of aeroplane crashed as a result of a flat spin. The rate of descent, however, was so slow that in no case was the result of the crash fatal to the pilot or the observer.

In studying this particular type of aeroplane, free dropping tests were made of models of the aeroplane, demonstrating that the type of spin, flat or normal, could be controlled by shifting weights along an axis of the model.

The mass distribution of the aeroplanes of which we know the type of spin, and particularly all that have a tendency to flat spin, has been determined, and these mass distributions have been studied to discover if any consistent relation between mass distribution and type of spin exists. The method employed in determining the mass distribution of the aeroplane is briefly as follows:—

The aeroplane is swung as a pendulum about several different axes to determine the ellipsoid of inertia of the aeroplane. Without going into detail, it is sufficient to say that the ellipsoid of inertia represents the mass distribution of the aeroplane. The ellipsoid of inertia gives us the principal axis of inertia in a direction with respect to the vertical and horizontal. From this information and from the fact that a solid in revolution tends to rotate about its principal axis, we can determine the type of spin the aeroplane will make if acted upon only by the dynamic forces due to its mass.

I have outlined one or two investigations of a programme of research that is being undertaken as a result of our experience in the analysis of accidents to commercial types of aeroplanes. We shall strive to take advantage in every way of what we learn from accidents, in planning our further research programme. From our present analysis more than half of all air accidents are attributable to the pilot, resulting from stalls, spins, landing, and taking off.

Our final aim is to make the aeroplane capable of assuming a much greater share of the responsibility for safe flying than it can assume at present. The extreme safety requirements of the aeroplane for the private owner can be considered as a most effective guide in planning our research programme.

CAUSES OF ACCIDENTS.

While our experience in accident analysis has been rather limited, it is interesting to compare the results of the board during 1927, 1928, and 1929. Accidents attributable to structural failures, adverse weather, darkness, airports and terrains all show a constant decrease, indicating a steady improvement in the design and manufacture of planes and the construction and maintenance of air navigation facilities.

With the supervision of pilots' training, accidents due to errors of judgment and poor technique should also decrease. However, it must be borne in mind that in analysing the accidents you always arrive at a total of 100 per cent. Therefore, charts and figures cannot be relied upon to indicate the true progress which is being made in improving the safety of aerial operations.

The greatest percentage of accidents is due to spins and stalls with or without engine failure. However, the accidents caused by spins and stalls with the power plant functioning properly show a steady tendency to decrease. This is due to the results of the scientific studies which have been made to control more effectively the planes at or under stalling speeds. The department now requires that all the smaller types of planes must be spun six turns and recover when the controls are released.

Next in importance to spins and stalls are take-off and landing accidents. The latter are divided into two classes: those resulting from forced landing and those occurring under normal conditions. The percentage of accidents due to forced landings is relatively high. While not all forced landings are caused by power plant failure there is a close similarity between the percentage under forced landings and power plant failures.

It is quite apparent that the pilot is at the present time the most important factor in safe air transport. It is, therefore, interesting to study the experience of pilots with reference to their own fatalities. We have made such study and the results have been charted.

The curve shows clearly that the critical period for a pilot is during his first 600 hours in the air. At that point the curve begins to flatten out, and by the time that it reaches 1,500 hours it becomes practically a straight line. This chart was compiled from the experience of commercial pilots. Similar charts have been plotted for the pilots of the Army Air Corps and the Naval Bureau of Aeronautics. They indicate the same characteristic curves.

During the past four years a trophy has been awarded annually to the naval pilot flying the greatest number of hours without injury to personnel or material. In each case the trophy has been won by the pilot having the greatest number of hours of flying. At the time of the last award it was suggested that the conditions be altered so as to award the trophy to a squadron rather than to an individual. If this change is made it will be interesting to note whether the same results will be obtained with reference to a group as has been the case during the past four years when the records of individuals alone were the determining factor.

It is encouraging to observe that the flying time per fatal accident has increased from 650,000 hours at the beginning of the year to nearly 800,000 at the end of the year.

From the study of aircraft accidents it should be possible for us to determine the weak points in the existing air regulations or in the technical development and construction of aircraft. It is our hope that similar methods will be adopted by the aeronautical authorities of other countries thus permitting a composite analysis of all aircraft accidents on the same basis.

While safety is of primary importance in air transportation, if civil aviation is to develop on a sound economic basis it must be able to render a service worth more to the user than the cost to the operator plus a reasonable profit.

THE VALUE OF SPEED.

Speed is a factor which vitally affects the value of the service and the cost of performing it. A very interesting and important study was undertaken a little over a year ago by the scientists on the staff of the National Advisory Committee for Aeronautics. It had to do with reducing the parasite resistance of radial air-cooled engines. By means of full scale wind tunnel tests a new cowling was developed for this particular type of engine. When the tests were actually made in the air the results achieved were most satisfactory.

The new cowling increased the speed of the plane equipped with a single engine of 220 h.p. by from 15 to 20 miles an hour without any increase in engine speed or fuel consumption. Obviously, this not only reduced the cost to the operator but enabled him to render better service to his customers.

However, the most important study which has been conducted with reference to power plants is the one pertaining to the development of the Diesel engine. While there are indications that this problem is well on the way to solution I am not in a position at the present time to give any detailed information as to what has been accomplished.

GROUND ORGANISATION.

As was mentioned in the beginning, the contributions of science to the development of civil aviation have not been confined to the fields of aerodynamics and internal combustion engines. As has been truly stated, an airway begins and ends on the earth's surface and all of the equipment for the airway must be located thereon. A striking illustration of the number of items involved in laying out such an airway is to be found on the progress chart of the Transcontinental Air Transport. This chart was prepared by engineers of that company which, as you know, is now operating a combined air and rail service between New York, Los Angeles and San Francisco. There are eleven intermediate stops between the three terminals and nearly a hundred different items to be attended to at each terminal and intermediate stop.

This involves the selection and acquisition of the site, lights, buildings, wireless, meteorological service and communication systems, each of which requires scientific study if the best results are to be obtained. Likewise, practically all of them have some bearing on the five fundamental factors upon which the success of civil aviation depends. It is obvious that with such a diversity of problems confronting this newest method of air transportation, the closest co-operation not only between the scientists and the Governmental authorities is essential, but co-operation between those interested in the solution of these problems.

The field is international as well as national in scope. The truth of this statement is well demonstrated by the occasion. This meeting is held in England under the auspices of the Royal Aeronautical Society. The lecture is dedicated to the memory of an American, Wilbur Wright, who, with his brother, Orville Wright, first demonstrated the practicability of man navigating the air in a power driven heavier-than-air machine. The date selected is the twentieth anniversary of the first great international flight. It was made by Louis Blériot, a Frenchman, from Calais to Dover, across the English Channel. As an illustration of the youthfulness of this art, it can be pointed out that both Orville Wright and Louis Blériot are still actively engaged

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in applying their efforts and genius to the advancement of the science in which they were pioneers. Thus it is certainly apparent that the promotion and regulation of civil aviation presents one of the most fascinating scientific as well as economic and administrative problems of our age.

PROFESSOR FRED LANCHESTER, who is largely famous for having written two books, entitled "Aerodynamics" and "Aerodonetics," which nobody seems to understand, then proposed a vote of thanks to Mr. McCracken, and told us a good deal about what he (Professor Lanchester) had done for aviation.

LIEUT.-COL. MOORE-BRABAZON seconded the vote of thanks in his usual humorous way, saying that the highest tribute to Mr. McCracken's excellent paper was the way in which so many of our foreign visitors had listened to it with rapt attention,—without understanding a word of it. Col. Brabazon ended by saying that Mr. McCracken had told us how in America flying was being turned into dollars and he would now proceed to show Mr. McCracken how lecturing on flying could be turned into pounds,—whereupon he handed him a cheque for the fee which is conferred by rule on those who deliver the Wilbur Wright Memorial Lecture. Which fee was duly and gracefully returned by Mr. McCracken.

Col. Sempill having wound up the proceedings in proper form, the assembled company proceeded to converse and one noticed that they were all so interested in one another that hardly any of them even took the trouble to walk round the extraordinarily interesting aeronautical relics in that section of the museum. This at any rate indicates that the Conversazione as such was a remarkable success.—C. G. G.

THE CIVIL AVIATION COMMITTEE.

The Air Ministry announces that Lord Thomson, Secretary of State for Air has formed a "Civil Aviation Consultative Committee," to assist him in the examination of questions relating to Civil Aviation. Mr. F. Montague, M.P., Under-Secretary of State for Air, will be the Chairman.

The terms of reference are:—"To examine and report to the Secretary of State for Air on questions relating to the development of Civil Aviation in the British Empire."

In addition to the Chairman, the Committee will consist of seven members, three being Members of Parliament (one from each party), one having expert knowledge of aviation, and the remaining three having special experience of industrial and transport problems.

The names of the Committee are:—Sir William Brass, M.P., Sir Archibald Sinclair, Bt., M.P., H. Snell, Esq., M.P. (Parliamentary Representatives); Sir Allan Anderson, K.B.E. (Shipping); F. G. Evans, Esq., C.B.E. (Railways); Sir Ronald Nugent (Federation of British Industries), and Lt.-Col. Mervyn O'Gorman, C.B. (Aviation).

AN AUSTRALIAN LUNCH.

A lunch was given at Australia House on July 18 by Major C. W. C. Marr, D.S.O., M.C., Minister of State, Commonwealth of Australia, on behalf of the Government and people of Australia, to welcome Sq. Ldr. C. E. Kingsford Smith, M.C., A.F.C., and his companions on their flight from Australia.

Major Marr, proposing the toast of Sq. Ldr. Kingsford Smith and his companions, said that the lunch had been rather hurriedly arranged because the Guests were leaving for Amsterdam on the following morning. Letters of regret for their inability to attend the lunch had been received from Lord Stradbroke, a former Governor of Australia, Marshal of the R.A.F. Sir Hugh Trenchard, Air Vice-Marshal Sir Sefton Brancker, the Duke of Sutherland, Sq. Ldr. Hinkler and many others.

In the course of his remarks, Major Marr said that Australia had every reason to be proud of the part played in the development of aviation by her sons. He spoke of the pioneer work of Alcock and Brown, the Smith brothers and Bert Hinkler. Sq. Ldr. Kingsford Smith was the first man to fly across the Pacific and when he had crossed the Atlantic from East to West, as he proposed to do, he would have flown round the world. Sq. Ldr. Kingsford Smith's flight had brought England and Australia within a fortnight of each other and the flight was the beginning of a regular air route. It was not difficult to realise the value to the development of trade within the Empire when Australia would be brought so near to the Mother Country. The growth of Aviation in Australia recently had been tremendous. In the year ending June 30, 1929, 1,200,000 miles had been flown, exactly three times as many miles as the previous year. The new air mail which had recently opened between Perth and Adelaide had brought Perth three days nearer to England. The Commonwealth Government was subsidising a valuable and efficient air medical service. A few weeks ago some shearers had finished the clip at a station some 40 miles from Longreach in Queensland and had telephoned to the aerodrome there for an air taxi to come and take them to the railway station as the roads were impassable owing to floods. The Sydney Flying Club had trained 100 pilots and was flying 100 hours a week. In developing Civil Aviation Australia was at the same time helping its air defence.

A WINNER.—Miss Sale-Barker, winner of the Women's Competition on the Reid Aptitude Indicator,—at Hanworth, with Mr. Schofield, of National Flying Services,—in the new uniform of the N.F.S. pilots.

Mr. F. G. L. Bertram, C.B.E., Deputy Director of Civil Aviation, supporting the toast, congratulated the pilot on a gallant and successful flight. Their performance was still more remarkable when it was considered that they were actually only flying on 12 days. Their flying time had been 112 hours with a ground speed of 90 m.p.h. over a distance of 9,755 miles. The Department of Civil Aviation was in close touch with the Dominions and communications were made by means of Air Liaison letters from a representative in each Dominion. He hoped that by the end of next year there would be a weekly air service between England and South Africa.

Sq. Ldr. Kingsford Smith said they were very sorry to have to leave London the next day but they had to go to the works at Amsterdam. They were delighted to meet so many other Australians in London. During their very agreeable stay nothing had amazed them more than the superlative flying of the R.A.F. at Hendon. Throughout their flight they had received great courtesy and kindness from all the British Service and Civil air authorities.

Mr. Ulm said that if their flight had been of service to Aviation within the Empire they had been amply repaid. He had been very much impressed by the enormous importance of the Singapore Base. During their flight they had realised that this Base brought the Royal Air Force within two days of Australia. He understood that financiers in Sydney had expressed their willingness to support the expansion of the air route from India to Australia. The flight would not have been possible without the valuable co-operation of the other two members of their crew, Mr. Litchfield and Mr. McWilliams. Their flight had made them realise what a wonderful thing Sq. Ldr. Hinkler had done in flying alone to Australia in a light aeroplane in 15 days.—C. M. MCA.

GOLD BY AIR.

On July 27 seven British and French aircraft transported from London to Paris 18,000 lbs. of gold in ingots, representing, in value, about £4,400,000. One machine alone carried over 5,000 lbs.

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THE CLOSING BANQUET AND THE HONOURING OF M. BLERIOT.

On July 27 The Society of British Aircraft Constructors held the closing function of this strenuous fortnight. Such of our guests from overseas as had survived the Show, and had not either returned home or collapsed, were bidden to this banquet, and all and sundry who were concerned with the Show were allowed to buy tickets for it and to bring their feminine attachments. The result was one of the biggest companies yet gathered together in the name of aviation, and certainly one of the brightest. Even the speeches were brief and bright.

The Toast of the evening, "The Pioneers of Aviation," was proposed by the Honourable W. P. McCracken, Junior. He said that the proposing of such a toast was an honour to the representative of that country which was so fortunate as to have the Wright Brothers among its citizens. Every country had made a substantial contribution to the new art of flying. In the twenty years since M. Blériot had flown the Channel every Continent had been spanned and every ocean crossed and both Poles had been explored by air. This should be a consolation to our pioneers. Since the earliest days Man's ambition had been to fly and because of our pioneers we now realised the longing of our forefathers.

M. LOUIS BLERIOT, responding, said that he was sorry he did not know English and was obliged to speak in French. He expressed his profound deference to our Minister of Air and he referred gracefully to the British pioneers whom he had known personally, recalling by name Captain Bertram Dickson, and Hamel, and Hucks, and Sopwith, and Alcock and Brown. He complimented us on what he gracefully called our Marvellous Exposition.

SIR ARTHUR WHITTEN BROWN said that when ten years ago he and John Alcock had flown the Atlantic they counted themselves as treading as closely as possible on the track of M. Blériot. He said that M. Blériot was the first to show that the aeroplane was not a toy but a means of transportation. The fact that in ten years he himself should be included among the pioneers of aviation was a sign of the times, though it was an honour which he much appreciated. The Wright Brothers had shown that flying was practicable and M. Blériot had proved it to be a means of transport.

MR. T. O. M. SOPWITH said that he felt that we were all still pioneering to-day. Aviation was still so young, and development was as fast as ever. During the War he had said that every new machine was out of date before it left the workshop, and that was equally true to-day. [One would go farther and say that thanks to the curious inertia which afflicts humanity the majority of aeroplanes are out of date before they are designed.—C. G. G.] Manufacturers, he said, could not develop their goods without customers, and the Aircraft Industries of all nations owed a debt of gratitude to their Governments. Personally he thought that we were lucky to be alive. But the younger generation took flying entirely for granted.

He expressed his pleasure at having M. Louis Bréguêt present, as well as M. Blériot, besides Sir Alliott Roe and Mr. Handley Page. He recalled the names of the earliest British pioneers,—in particular Howard Wright, Manning, Short, de Havilland, Cody, Rolls and Cecil Grace, and he proposed that before drinking to the living pioneers of Aviation we should drink a silent Toast to those who had gone before.—Which was duly honoured.

SIR SEFTON BRANCKER, proposing the Sport of Flying, said that this was a fitting conclusion to a strenuous fortnight. He had looked up the word "sport" in the dictionary and found that it meant "that which promotes mirth." Searching further he found that it was derived from "*se desporter*," meaning to carry oneself away from one's work. Since M. Blériot flew the Channel other had beaten us at all forms of sport but we should in time get our own back.

He said that he had found that Governments are not so stupid as they look [a statement which caused huge delight] and consequently we had had light aeroplane competitions promoted by our Government, and we had had a certain mediocre support for our Flying Clubs. The light aeroplane movement, he said, was essentially a sporting movement run by young men and women who worked for the Clubs in their spare time. The result was that to-day we have more private owners and more sporting flying than the rest of the World put together. This Aircraft Exhibition of ours was intended to give foreigners a chance of catching us up.

Continuing, Sir Sefton said that the great thing to promote progress was to get away from rules and regulations. Personally he was all in favour of letting people break their necks if they wished. Sportsmen, he said, were usually poor, consequently we owed much gratitude to the supporters of the sport of flying like Jacques Schneider, Gordon Bennett, Pulitzer, and Sir Charles Wakefield, whom he always called the Patron Saint of Aviation.

He regarded M. Blériot as being the greatest sportsman in flying up to date. When he flew the Channel his engine had never run as much as the 33 minutes which he took to cross the Channel, and it never ran as much again. He said that among our pioneers we certainly should include his old friend Henri Jullerot, who made the first flight in India when he took him (Sir Sefton) flying over the Jungle.

Civil Aviation, Sir Sefton said, was a boon. We were now able to bathe in other peoples sparkling wine instead of stewing in our own juice at home. He said that M. Flandin had been set down to reply to this Toast, but unfortunately he was unable to be present. Neverthless he would couple M. Flandin's name with the Toast as a courageous and good friend who had done much to smooth out the difficulties in Civil Aviation. He coupled also with the Toast the name of M. Caproni, the famous Italian aircraft constructor, who made the first tri-motor aeroplane, and Lieut.-Col. Mervyn O'Gorman, who, he said, was a very old bird in aviation and had represented Great Britain on every international sporting committee.

SIGNOR CAPRONI, once the maker of the World's biggest aeroplane and now a maker of some of the smallest aeroplanes as well, thanked everybody for a nice and friendly week and congratulated us on our beautiful Show. He assured us that we should be very proud of our small 'planes. And he expressed his pleasure at the way aviation made for friendship.

LIEUT.-COL. MERVYN O'GORMAN said how delightful it was to be connected with a movement which thus made for friendship. He said that he might add much to Sir Sefton Brancker's definition of sport, as the epithet "a sport" ranged all the way from a brave fellow to a good sort. He said that a French friend of his, endeavouring to get the exact meaning of the word sport, had said that in France they had many words for a sharp fellow at a race meeting.

Becoming serious, he said that the Royal Aero Club and *Fédération Aéronautique Internationale* had done much hard work to keep the sport of flying clean and pure, and to promote competition between the brains of designers and the skill of pilots. At least the sport of flying was completely above-board and those concerned with it had borne in mind that the sport had a great human objective, namely a friendly interchange between nations.

Unfortunately, he said, Europe was cut up into little parcels, at which there were people ready to pick everybody's pockets at every frontier town. Hence the invention of the *triptyque* and the *carnet de passage*. This at any rate made journeying into foreign countries easier, in that one only had one's pocket picked at home at the start.

CAPT. P. D. ACLAND (Chairman of the S.B.A.C.), proposing the Toast of the Chairman, Lord Thomson, said that this was a happy culmination of one of the happiest periods in the history of British aviation. Such pleasure was difficult to express in English. Other languages could do it so much more gracefully.

He wished to pay a tribute to the men who had worked so hard behind the scenes to make a success of the Show and everything that went with it. He referred in particular to Mr. C. V. Allen, the Secretary of the S.B.A.C., and to Mr. J. C. P. Phillips, the Manager for the Organisers of the Show, who, he said, speaking as an exhibitor, "is always up against us and yet remains one of us." He also tendered his thanks to Squadron Leader A. R. Boyle, O.B.E., M.C., of the Air Ministry, who, with his devoted staff, had contributed so enormously in looking after the distinguished visitors whom we had had the pleasure of entertaining.

Lastly he referred to our Chairman, the Secretary of State, who, he said, needed no recommendation. While out of office he had continued to study aviation, and he now returned to carry on the good work of Sir Samuel Hoare.

LORD THOMSON said that there was little to thank him for. He had meant to remain silent to the sweet end of an agreeable evening. Certainly none of his distinguished fellow-guests would grudge the tributes paid to M. Blériot. It was an extraordinary satisfaction to the Government and to himself to be able to do honour to this great airman. The Government had paid him the tribute of sending a Squadron of the Royal Air Force to escort him to this country and to mark the friendly relations between our two great nations. Speaking as an old soldier himself he said that soldiers respected men of deeds, and M. Blériot was essentially a man of achievement.

In conclusion he asked his hearers to consider what a difference will be made to the World if in future we use and do not abuse this great gift of aviation. He ended by proposing a Toast to Madame Blériot.

The hour being then about 23.00 the majority of those present lingered for a considerable time as if unwilling to bring to an end what Capt. Acland so rightly called "the happy culmination of one of the happiest periods in British Aviation."—C. G. G.

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THE BLERIOT CELEBRATIONS.

M. Bleriot at Dover.

On July 27, to celebrate the twentieth anniversary of his first flight across the Channel on July 25, 1909, Monsieur Louis Blériot flew across the Channel in a Blériot 127 monoplane. He was met over the Channel by No. 41 (Fighter) Squadron, R.A.F., and escorted to the English Coast. At Dover a landing was made at Swingate Aerodrome, and, after being received by the Mayor of Dover, Alderman H. E. Russell, Sir Sefton Brancker and M. M. Datte, French Consul at Dover and Folkestone, M. Blériot visited the North Fall meadow, where he alighted at the end of his historic flight in 1909.

The Mayor of Dover spoke of the historic value of the first flight across the Channel, and cordially welcomed M. Blériot. Sir Sefton Brancker said that the first flight had made this country definitely part of the Continent of Europe. M. Blériot recalled his first flight and thanked everybody for his welcome. Thereafter he left Swingate aerodrome for Croydon.

M. Blériot's arrival at Croydon.

A large crowd of notabilities and others were at Croydon on Saturday, July 27, to welcome M. Blériot. Punctually at 16.30 hrs. a Blériot 127 (two 500 h.p. Hispano-Suizas) arrived over the aerodrome escorted by *The Daily Mail's* Giant Moth, two of the De Havilland Company's Gipsy-Moths and Air Taxi's Fokker Universal.

M. Blériot was in the second pilot's seat and M. Bossoutrot was pilot. M. Bajac, chief pilot of the Air Union, was navigator, so that M. Blériot could not have had a more competent crew.

A crowd surged round the machine and M. Blériot had considerable difficulty in reaching the aerodrome buildings, where he was received by the Air Minister, Lord Thomson of Cardington, the Under-Secretary, Mr. F. Montague, M.P., Air Vice-Marshal Sir Sefton Brancker, Mr. G. E. Woods Humphery of Imperial Airways, Major Richard, O.C. Aerodrome, and, of course, the usual collection of modocks.

M. Blériot contrasted the modern air liners with Blériot XI (25 h.p. Anzani) on which he flew the Channel 20 years ago.

The Calais Welcome to M. Blériot.

On Sunday, after having been honoured by British aeronautical and civic organisations at the Closing of the Exposition Banquet by the S.B.A.C., as described hereinbefore, M. Blériot received an enthusiastic home-coming welcome at Calais.

Accompanied by two Golden Ray aeroplanes of the Air Union, M. Blériot left Croydon aerodrome in the big Blériot monoplane bomber at 10.30 hrs.

A party of distinguished guests flew in the two commercial air liners by the invitation of M. Grosfils, the London Director of the Air Union. These guests included the Hon. Wm. P. McCracken, Jnr., Assistant Secretary of Commerce for Aeronautics in the U.S.A., Sir Sefton Brancker, M. Louis Bréguêt, Col. the Master of Sempill and the Hon. Mrs. Forbes-Sempill, Lady Cobham, Mrs. Blackburn, Lieut. de Vaisseau Sala (the French Air Attaché), Mr. Lester D. Gardner of New York, M. and Mme. Grosfils.

At the aerodrome of St. Inglevert about forty aeroplanes of military and civil types awaited M. Blériot, and as he landed, followed immediately by the two accompanying airline machines, he was given a most enthusiastic reception.

As greeting, a newly-built replica of his original Cross-Channel monoplane, with an Anzani motor, flew over the scene of welcome, and after it landed M. Blériot, accompanied by Mme. Blériot, received the applause of the several thousand people standing around the primitive-looking machine.

The guest party were then driven to Les Baraques, where, at the monument erected by the Aéro Club de France on the place from which the first Cross-Channel flight started, speeches were made on the historic spot by M. Laurent Eynac, French Minister of Air, and M. Pierre E. Flandin, President of the Aéro Club de France.

A Civic Banquet followed at the Hotel Terminus, which was attended by about a thousand notables of Calais, as well as many visiting guests. M. Eynac, Sir Sefton Brancker, Mr. McCracken and many other speakers toasted M. Blériot, who responded with an appreciative speech.

After the banquet a display of seaplane flying was held along the Plage, and at the St. Inglevert aerodrome a series of exhibition flights was given to entertain the thousands of visitors who had come from all parts of Northern France.

Squadrons of French military aeroplanes gave exhibition flights of formation flying during all the ceremonies, much to the discomfiture of some of the speakers and listeners as well. At 18.00 hrs. the two Golden Ray aeroplanes left St. Inglevert, flew to Dover, where they circled M. Blériot's original landing-field, and returned to Croydon with the guests who had left England in the morning.

WELCOME AGAIN!—M. Louis Blériot greeted on his arrival on Swingate Down by the Mayor of Dover and Sir Sefton Brancker.

M. Blériot's Historic Film.

On July 29 Monsieur Louis Blériot gave a short lecture describing his film of Twenty-Seven Years of Flying before members of the Royal Aeronautical Society and others at the theatre of the Royal Society of Arts.

Colonel the Master of Sempill, Chairman of the Royal Aeronautical Society, introducing the speaker, said that M. Blériot had made a habit of flying across the Channel during the last few days. He had come back to-day on purpose to show us this film, which he was taking straight back to the Sorbonne, and it would not be seen in England again. As M. Blériot would speak in French, Mr. Bramson, a member of the Council of the Royal Aeronautical Society, would interpret for the benefit of those who did not understand French.

M. Blériot said that he had been asked to express his views on the subject of the future of Aviation. Although he believed that a good deal of flying would be over the sea he believed that the greater proportion of the World's air routes would be operated by land machines.

He thought that within five or six years air communications between Europe and America would be maintained by land machines which would alight on floating islands in the Atlantic. He had seen small-scale models of such islands with their surface well above the surface of the water, and he thought that they could be designed to remain stable in the roughest seas. These islands would have to be kept in position by motor power as it would be impossible to anchor them. There should be six or seven of them between Europe and America. A complete chain of wireless direction finding for navigation would also be necessary.

Such routes could be operated by the ordinary machines of to-day. But the ideal means would be two great wings carrying a life-boat. The life-boat must be completely closed in and unsinkable, and there must be a device for detaching the wings immediately the boat touched the water. [*Vide* THE AEROPLANE any time for the past ten years.—C. G. G.]

Each trans-Atlantic aeroplane would have to carry enough fuel to enable it to pass over any floating island which was fog-bound and go on safely to the next. The success of such a route would be dependent on the "ground" organisation for many machines were now in existence which could do the flying part.

M. Blériot apologised for the film, which he said he had built up bit by bit for his family and was therefore of rather a personal nature. Also the earlier parts of it, some of them dated from 1905, were rather old now and were somewhat flickering and sketchy. [These ought to be copied and multiplied for the benefit of posterity, before they become invisible.—C. G. G.]

M. Blériot had no need to apologise for his film. Apart from the tremendous interest such a film must have for anyone who is interested in the early flying days, this film is remarkably clear and steady.

Beginning in 1905, it shows his very early experiments with

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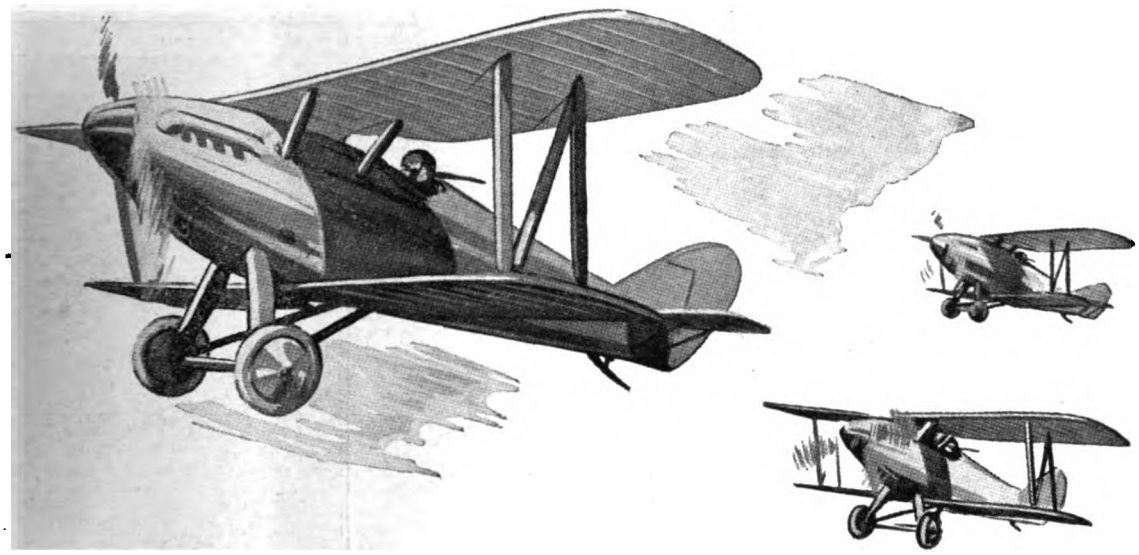

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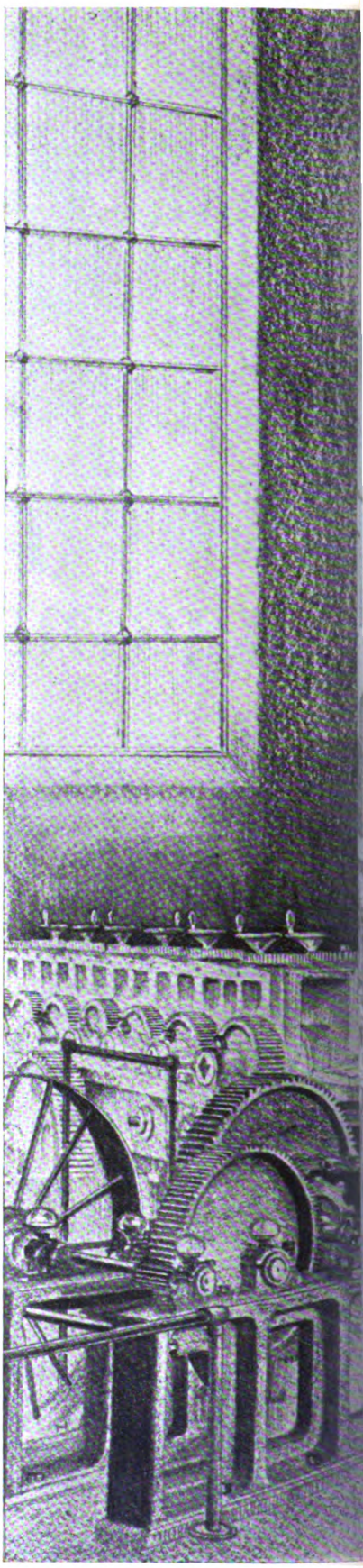
Information concerning the Bulldog single-seater fighter and other military, commercial and training aircraft is available, together with a full description of the steel construction used.



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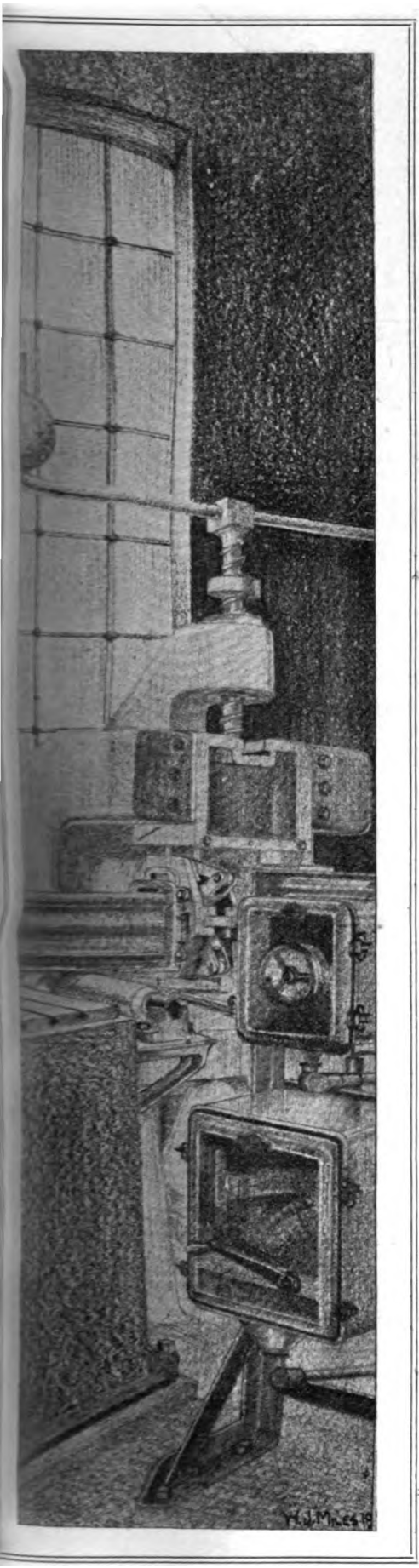

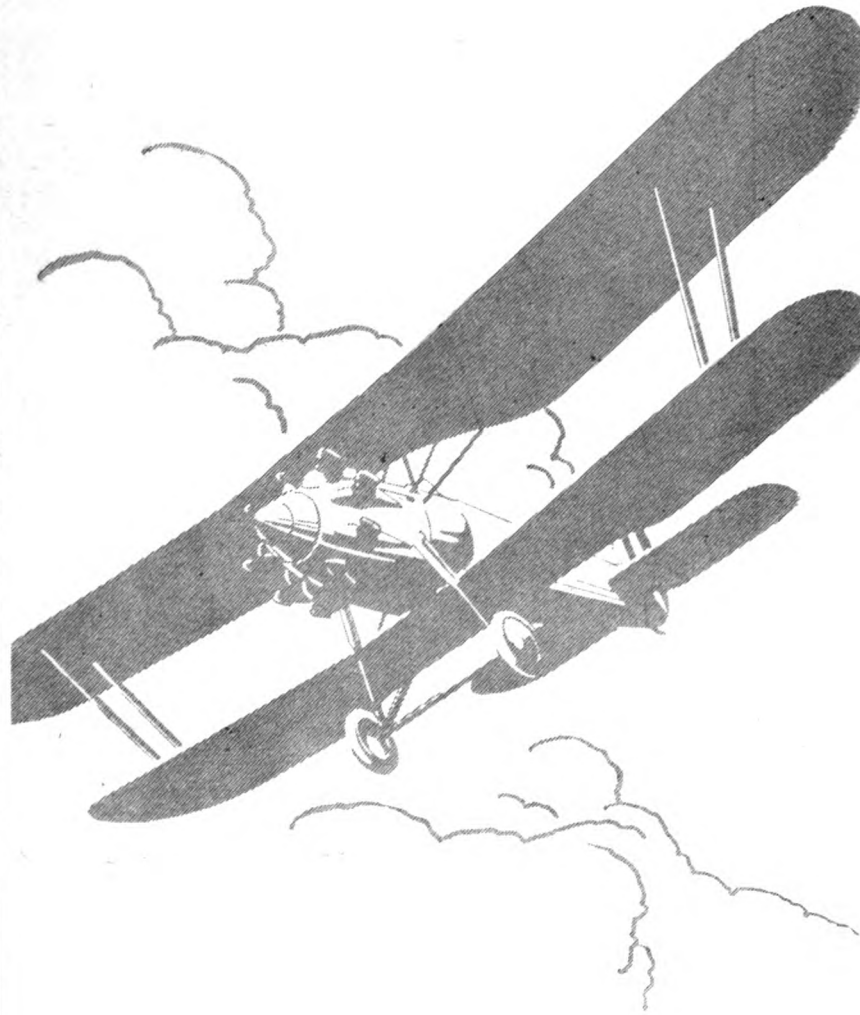

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the ancestors of all the Blériot machines. The triumph of the first hops of a few yards and the disaster of the experiments with his seaplane on the Seine are followed by the more substantial 60 metres flight in 1907 and the 184 metres a few months later.

We saw the whole Blériot series from I to XI, the latter the machine which crossed the Channel. In 1909 he won the Prix Osiris and in 1910 he received pilot's licence No. 1 of the Aero Club de France.

We saw him hobbling on crutches from an earlier crash to climb into his machine to cross the Channel and the weird shape of it disappearing into the distance. Then came the first aviation meeting at Reims, the triumph of Blériot machines in the Circuit de l'Est, and the experiments with a launching apparatus consisting of a few wires. Pégoud's first parachute descent and the wonderful movements of the machine after he left it to fall uncontrolled have been marvellously filmed.

From that the film goes to 1914 and the production of the first Spad. There is a glimpse of some famous Spad pilots, Guynemer, Fonck, Nungesser and others.

Then came the Armistice and the four-engined commercial machine, the big amphibian designed for Blériot's son to fly the Atlantic in. M. Blériot said that he was bringing this machine over for the Schneider Trophy, but not in order to compete. Lastly the film showed the B127 in which he crossed the Channel on Saturday. He calls it a destroyer of the air.

After the film had been shown, a short film brought over from the U.S.A. by Mr. McCracken was shown, chiefly because M. Blériot wanted to see it. It showed a Loening Amphibian falling to the ground from 4,000 ft. in a series of 32 flat spins. Neither of the two occupants of the machine was hurt.

Proposing a vote of thanks on behalf of the assembled company to M. Blériot, Mr. McCracken said that, in addition to all his wonderful pioneering work, the World owed a debt of gratitude to M. Blériot for his vision and foresight in taking and keeping this fine record for posterity.—

C. M. MCA.

THE SCHNEIDER TROPHY CONTEST.

The draw for the order of starting in the Schneider Trophy Contest to be held in the Solent on Sept. 7 was made at the Royal Aero Club on July 24 in the presence of the Air Attachés of France, Italy and the United States of America. The draw resulted as follows:—

1 U.S.A., 2 England, 3 France, 4 Italy, 5 England, 6 France, 7 Italy, 8 England, 9 France, 10 Italy.

Arrangements for broadcasting the contest have been made with the B.B.C. Sq. Ldr. W. Helmore and Flt. Lt R. L. Ragg, A.F.C., R.A.F., will be the announcers and, in addition to a running commentary, results of the laps and the final result will be relayed throughout the World.

The transmissions from 5SW, the B.B.C. experimental station at Chelmsford, will be specially energised for long-distance transmission.

Messages from Daventry will be picked up at official stations in Paris, Rome and Berlin, translated immediately by special interpreters and broadcast again in the appropriate language.

The B.B.C. transmitting station will be on Ryde Pier and messages from Ryde will begin ten minutes before the start of the contest.

A special service of loud speakers on the shores of the Solent will pick up the messages transmitted from Daventry,—and that is about all the public are likely to see of the contest; except at few overcrowded points.

The following notice, prepared at the request of the King's Harbour Master at Portsmouth, should be noted by seafaring readers of this paper:—

Anchorages and Instructions for Small Vessels.

1. Small craft drawing less than eight feet of water may anchor in any of the following areas which have been reserved for them:—
Brambie, Browndown, Hayling, Horse Sand, Mother Bank, Wootton, and West Middle to the East of West Ryde Middle Light Buoy.

2. The details of these areas are shown on a published chart which can be obtained from the Secretary, Royal Aero Club, 3, Clifford Street, London, W.1, the prices of which are eight shillings and sixpence for one of large size and two shillings for a smaller chart, post free.

3. Further details and instructions to be observed by all vessels will be published at a later date.

According to *The Gloster*, the house magazine of the Gloster Aircraft Co. Ltd., the Gloster Company who have for so many years been associated with the Schneider Trophy Race and whose machines have hitherto all been biplanes, have decided to construct a monoplane for the 1929 race. This does not signify that the Gloster Company have altered their views as to the comparative potentiality for speed of the two types. They are still of the opinion that a biplane can be made as fast as a monoplane and it was originally intended to construct a biplane. Models of this biplane were made and it was called the Gloster V. The tests as a biplane were very satisfactory, but difficulties were encountered later owing to the fact that the new supercharged Napier engine was nearly 300 lbs. heavier and consequently, in order to give the correct C.G. position, would have brought the front top spar over the centre cylinder-block. This arrangement was such that it was found impossible to locate the top wing so as to provide adequate view. The Gloster Company were therefore forced to the only alternative of changing over to a monoplane which they have called the Gloster VI.

THE SCARBOROUGH RALLYE.

The following telegram has been received:—

Winner of On To Scarboro Rally will be first machine to arrive and pass between two tents on aerodrome flying from South to North after 14.30 hours Aug. 5, no other conditions whatever. Other competitive events will also be held on Aug. 5 afternoon. Northern Air Lines.

THE MANCHESTER—LIVERPOOL INTER-CITY AIR RACE.

The list of entries for the Inter-City Air Race, to be held on Aug. 10, between two teams of pilots representing Manchester and Liverpool, has now been closed.

Manchester is represented by three private owners—Miss W. Brown, Mr. J. C. Cantrill and Mr. E. Cohen. All of these will fly Avian light aeroplanes.

Liverpool is represented by two entries from the Liverpool Aero Club and one private owner, Mr. T. H. Naylor. The pilots for the Liverpool Club machines are Flt. Lt. Allen and Mr. A. Mousdale. They will use Avian and Moth light aeroplanes.

The race will start and finish at Wythenshawe Aerodrome, Northenden, there being a stop at Liverpool of one hour. During the afternoon and evening there will be an Air Pageant at Wythenshawe, starting at 3 p.m. The public will be charged 1s. admission.

The Inter-City Race is for a Trophy presented by Sir William Cundiff, a former Lord Mayor of Manchester, for competition between two teams of pilots representing Liverpool and Manchester. The pilots must be resident within twenty miles of either City. The aircraft must be standard light aeroplanes and no "faking" or special streamlining, nor alterations of any sort are allowed.

The machines will be handicapped as to their starting time at Wythenshawe. The total distance of the race is about sixty miles.

THE NEW NOTTINGHAM AERODROME.

On July 27 Alderman Atkey, the Lord Mayor of Nottingham, flew from Nottingham to London in a Moth belonging to the Nottingham Aero Club to receive from Mr. F. Montague, the Under-Secretary of State for Air, the licence for the Nottingham Municipal Aerodrome, near Tollerton.

Nottingham is thus the second city in the country to possess a municipal airport. Manchester was the first, but the Manchester aerodrome is not yet in working order,—and is not likely to be for some years, unless the City Fathers make the present temporary aerodrome at Wythenshawe permanent and give up the idea of filling up Chat Moss.

A CIVIC RECEPTION.—Alderman Atkey, Lord Mayor of Nottingham, receiving the license for the Tollerton Aerodrome from Mr. F. Montague (Under-Secretary for Air), while Sir Sefton Brancker blesses the union.

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THE ROYAL AIR FORCE.

The London Gazette.

July 23.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—Air Commodore P. F. M. Fellowes, D.S.O., is appointed Director of Personal Services, Air Ministry (July 1).

362672 Sergt. E. C. W. S. Smith is granted a permanent commission as a Plt. Off. on probation, with effect from July 15, and with seniority of June 17. The following Plt. Offs. on probation are confirmed in rank, Feb. 8:—W. R. Hartwright; N. C. Odbert.

The following Plt. Offs. are promoted to the rank of Flg. Off.:—JUNE 9.—F. B. S. Downey, G. F. Hales, F. L. Truman, S. I. Ubee. JUNE 14 (WITH SENIORITY OF JUNE 9).—C. Stephenson, C. H. R. Little. JUNE 16 (WITH SENIORITY OF JUNE 9).—G. Wood. JUNE 17.—J. S. Dewar, R. C. Field, E. A. Jones, J. E. MacCallum, N. B. Norris, G. H. H. Procter. JUNE 30.—C. W. F. Carter, C. S. Ellison, J. B. Fyfe, R. L. Mills, L. S. Snaith. JULY 21.—A. F. Britton.

Flt. Lt. J. B. P. Angel is placed on the retired list at his own request (July 22). Flt. Lt. A. L. Chick, A.F.C., is placed on the retired list at his own request (May 14). (Substituted for the notification in the *Gazette* of May 21). The S.S. comns. of the undermentioned Plt. Offs. on probation are terminated on cessation of duty (July 24):—L. W. A. Binks, G. H. Binns, J. F. M. Hearne.

Lt. M. S. Slattery, R.N., Flt. Lt. R.A.F., ceases to be attached to the R.A.F. on return to Naval duty (July 15). Lt. R. M. Giddy, R.M., Flg. Off. R.A.F., ceases to be attached to the R.A.F. on return to Corps Duty (July 15).

ACCOUNTANT BRANCH.—Flt. Lt. H. C. F. Ellis is transferred to the Reserve, Class C (July 24).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—The following are granted commissions in Class A.A. (ii.) as Plt. Offs. on probation:—JULY 8.—R. A. Robbins, E. G. Villiers. JULY 9.—J. H. Goodden. JULY 10.— R. S. Odd. JULY 15.—J. P. Dewsbery. C. C. Clark was granted a commission in Class A. as a Flg. Off. on probation (July 23). The following Plt. Offs. on probation are confirmed in rank:—E. W. Mackay (June 13); L. F. Hooper (June 25); P. L. D. Teichman-Derville (June 25); P. F. England (July 2); J. F. Legard (July 17).

Flg. Off. F. W. Winterbotham is promoted to the rank of Flt. Lt. and is granted the honorary rank of Sq. Ldr. (July 23). Flg. Off. H. A. Deiny is transferred from Class A. to Class C. (July 20). The following Flg. Offs. are transferred from Class C. to Class A.:—R. H. Mahon (June 19); E. G. Whinney (June 23). The following Flg. Offs. relinquish their commissions on completion of service:—JULY 7.—J. G. Argles, D. R. Sharman, M.C. JULY 21.—H. A. Record. Plt. Off. on probation J. O. Mortlock relinquishes his commission on account of ill-health (July 24).

MEDICAL BRANCH.—Flg. Off. G. Clark relinquishes his commission on completion of service (July 19).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 605 COUNTY OF WARWICK (BOMBER) SQUADRON.—The following to be Plt. Off.:—J. F. Gummow (June 13).

Appointments.

Week ending July 29.

GENERAL DUTIES BRANCH.—Air Commodore P. F. M. Fellowes, D.S.O., to Air Ministry, on appointment as Director of Personal Services, 1/7.

Group Captains H. R. Nicholl, C.B.E., to Air Ministry (D.P.S.) on appointment as Deputy Director of Personal Services, 8/7. G. P. Grenfell, D.S.O., to H.Q., A.D.G.B., for duty as Officer-in-Charge Administration, 17/7.

Wing Commander A. H. Peck, to H.Q., A.D.G.B., for Air Staff duties, 15/7.

Squadron Leaders F. E. P. Barrington, to Air Ministry (D.D.M.), 13/8. L. J. MacLean, M.C., to R.A.F. Depot, Uxbridge, 15/7.

Flight Lieutenants H. J. Gemmel, to Air Ministry (D.D.P.), 15/7. S. L. G. Pope, D.F.C., A.F.C., to Air Ministry (A.M.S.R.), 13/7. W. A. D. Brook, to No. 13 Sqdn., Andover, 8/7. E. S. C. Vaughan, M.C., to R.A.F. Depot, Uxbridge, 1/7.

Flying Officers A. H. Willetts, to Home Aircraft Depot, Henlow, 9/7. G. I. L. Saye, to No. 201 (F.B.) Sqdn., Calshot, 13/5. O. G. Williams, to Armoured Car Wing, Iraq, 2/7. H. H. Martin, to No. 47 (Bomber) Sqdn., Middle East, 3/7. J. N. Young, to Aircraft Park, India, 13/6.

Pilot Officers R. F. Williams, to R.A.F. Depot, Uxbridge, 21/6. J. G. W. Weston, to Andover Communication Flight, 4/7. The following Pilot Officers are all posted to No. 2 F.T.S., Digby, with effect from 15/7:—G. E. Agard-Butler, N. Alexander, F. C. Allen, C. A. Ball, G. Bearne, N. Stratton, J. M. Waddell, G. N. Warrington, G. E. S. Williams, S. N. Wiltshire, G. Calvert, N. J. Capper, I. A. Critchley, C. H. Glover, D. H. A. Golege-Steel, W. E. Grant, D. C. Harrison, W. J. Hodge, A. H. Houghton, G. M. Levers, F. J. B. Keast, D. W. Lydall, I. L. S. McNicol, C. W. Marriott, C. E. Morse, J. T. Vyners, B. Paddon, and H. G. J. Purcell.

MEDICAL BRANCH.—Squadron Leader E. D. D. Dickson, M.B., F.R.C.S. (E.) D.L.O., to R.A.F. Officers' Hospital, Uxbridge, 15/7.

Flying Officer P. M. Margand (Dental), to Station H.Q., Worthy Down, 20/7.

STORES BRANCH.—Flying Officer J. E. Welman, to Home Aircraft Depot, Henlow, 11/6.

ACCOUNTANT BRANCH.—Pilot Officers H. D. Nicholson, to Station H.Q., Tangmere, 22/7. G. E. Shirley, to R.A.F. Training Base, Leuchars, 22/7. E. A. Biddle, to Station H.Q., Upper Heyford, 22/7. C. F. G. Rogers, to Station H.Q., Worthy Down, 22/7. K. Fraser, to Station H.Q., Kenley, 22/7.

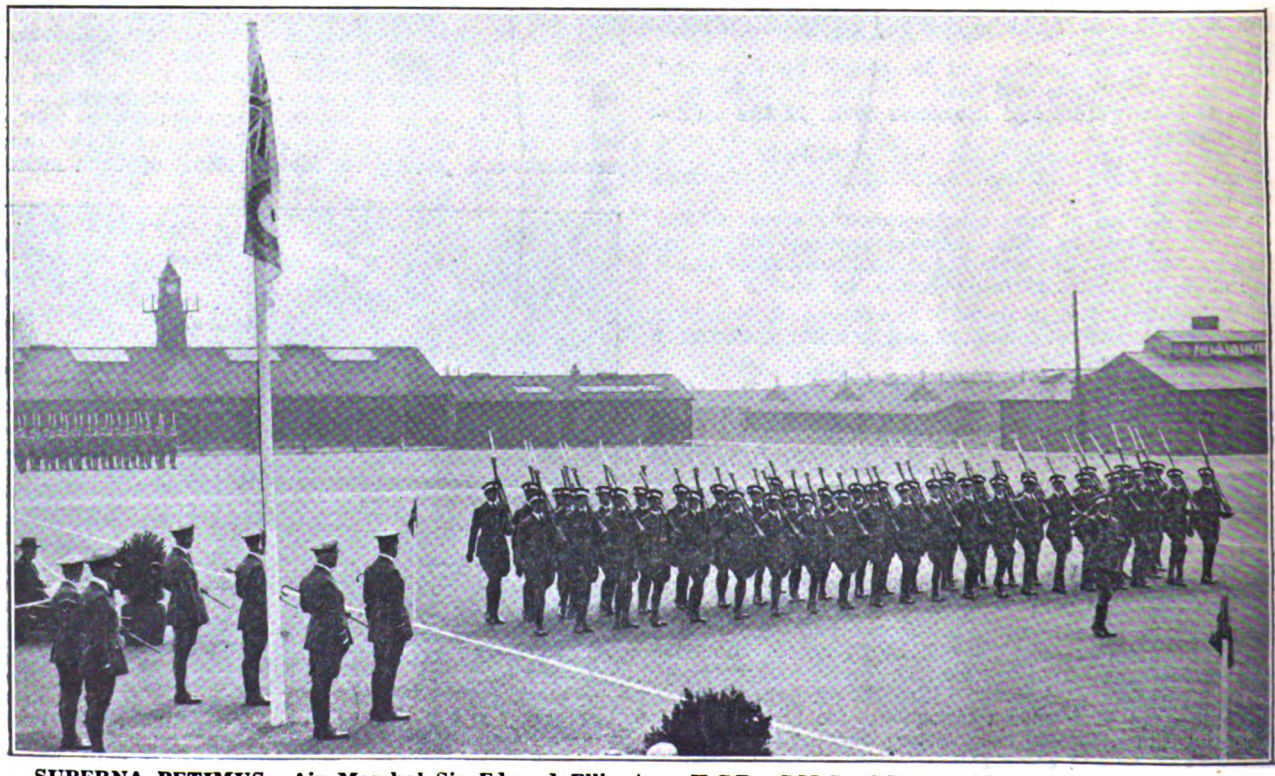
CHAPLAINS BRANCH.—The Rev. T. A. P. King, to R.A.F. Depot, Middle East, 19/7.

The Cranwell Passing Out Inspection.

Air Marshal Sir Edward Ellington, K.C.B., C.M.G., C.B.E., Air Officer Commanding-in-Chief, Air Defence of Great Britain, inspected the Cadets of the R.A.F. College, Cranwell, on July 26, on the occasion of the Passing Out of Flight Cadets.

The Commandant, Air Vice-Marshal F. C. Halahan, C.M.G., C.B.E., D.S.O., M.V.O., in his Report said that the total strength of the College was 104. The total flying time during the term had been 4,456 hours, which had broken all records by a considerable amount. The Cadets now passing out had averaged 91 hours' flying, of which 37 hours had been solo on Service types.

The work done in Aeronautical Engineering and Aeronautical Science had been satisfactory. Steps were being



SUPERNA PETIMUS.—Air Marshal Sir Edward Ellington, K.C.B., C.M.G., C.B.E., taking the salute at the march-past of Cadets of the Royal Air Force College, Cranwell, at the passing-out on July 26.

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taken to co-ordinate the lectures on aerodynamics given by the Science Professors with the practical work in the Cadets' instructional workshop. In English literature and history the term passing out had not fulfilled the promise of its first year and the second term had not yet attained a very high standard. The work done by the third and first terms had been good. Two hundred books had been added to the College library.

The Wireless syllabus had been completely revised. Instruction in Armament and Musketry had been proceeding satisfactorily. The standard achieved in Air Pilotage had considerably improved and more experience had been gained in cross-country flying than had been possible previously. The senior Cadets had been given a series of lectures in Elementary Meteorology.

The Discipline had been good with the exception of one case of disobedience to flying orders.

During the period under review 36 Cadets had been admitted to Hospital as compared with 31 during the period July to November 1928.

The foundation stone of the new College had been laid and the work of building was making good progress.

The standard of physical training had been fair. The Cadets had taken part in five Skill-at-Arms matches this term, two were won and three lost. Far more interest had been displayed in boxing. The cricket season had been fairly successful. The best performance had been that in the match against Woolwich. Rowing had been taken up with great keenness and the membership of the Rowing Club was larger than ever before. The Athletic team had had a very good season and had only been narrowly defeated by Sandhurst in the Triangular contest. Four contests had been held against various Cambridge colleges and one with the London Athletic Club. They had won two against Cambridge. The standard of Hockey had shown a marked improvement. Twelve matches had been played and seven won.

The Chimay Cup for Inter-Squadron games had been won by "B" Squadron with 35 points against "A" Squadron's 5 points.

The Trenchard Cup for Service Subjects had been won by "B" Squadron with 35 points. "A" Squadron had scored 5 points.

"B" Squadron had gained the title of Champion Squadron-at-Arms and was entitled to parade on the right of the line, scoring 70 points to "A" Squadron's 35 points.

The Sword of Honour, presented to the best all-round Flight Cadet in the Senior Term, was awarded to Flt. Cdt. F. W. Niblett.

The R. M. Groves Memorial Prize, for the best all-round pilot in the senior term, was awarded to Flt. Cdt. Cpl. F. C. Cole.

The Abdy Gerrard Fellowes Memorial Prize, for the Flight Cadet obtaining the highest total marks in Mathematics and Science, was awarded to Flt. Cdt. R. L. Phillips.

The Prize awarded to the Flight Cadet in the senior term obtaining the highest marks in Humanistic subjects was awarded to Flt. Cdt. E. de T. Vintras.

The Prize awarded to the Flight Cadet in the senior term obtaining the highest marks in Aeronautical Engineering was awarded to Flt. Cdt. Cpl. D. W. Lane.

The R.A.F. Display.

In the House of Commons on July 26 in reply to a question by Mr. Day, the Under-Secretary of State for Air said that the R.A.F. Display was the culmination of the year's training and it was impossible to isolate practice for the Display from other flying.

The total number of personnel employed in the Display at Hendon had been 340 officers and 1,679 airmen, and the number of aircraft 171. The consumption of petrol and oil at the Display, including journeys to and from Hendon, had been 9,800 gallons of petrol and 653 gallons of oil.

[One may remind Mr. Day, who seems fond of asking futile and/or irritating questions, that if Hendon and the Display did not exist the annual training of the R.A.F. would have to work up to a similar climax, even if the final tests of flying were made over Salisbury Plain or over some part of the Highlands judged inaccessible to the public. So the public, who pay for the R.A.F. anyhow, may just as well see what they are getting for their money, and at the same time contribute to R.A.F. Charities.—C. G. G.]

Fatal Accidents.

The Air Ministry regrets to announce that as the result of an accident near Coventry to a D.H.9 machine of a reserve civil flying school on July 9, Flg. Off. John Douglas Williamson, Reserve of Air Force Officers, the pilot and sole occupant of the aircraft, was seriously injured and died in hospital on July 27.

The Pembroke Air Base.

In the House of Commons on July 26, in reply to a question by Maj. Lloyd George, the Under-Secretary of State for Air said that the total number of civilians who would be directly employed by the Air Ministry at Pembroke was not likely at first to exceed 40, rising to 60 or 70 as soon as an Air Force Unit was stationed there, which could not be for some time to come. Some indirect employment might result before an Air Force Unit arrived from work on structural adaptations, and afterwards from the ordinary local requirements of the Unit.

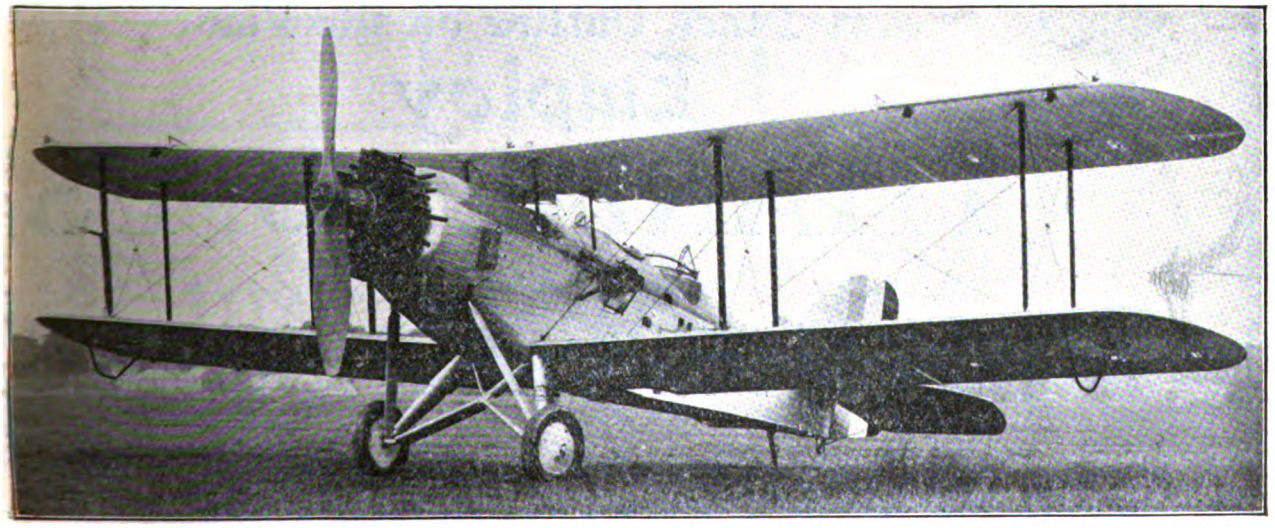
The Worthy Down Court Martial.

Sentence was promulgated on July 24 on AC.1. William Charles Baldwin, of No. 7 (Bomber) Sqdn., Worthy Down, an account of whose Court-Martial appeared in THE AEROPLANE last week. He was sentenced to nine months' detention with three months' remission.

The Airship Trials.

In the House of Commons on July 26, in reply to a question by Mr. H. Balfour, the Under-Secretary of State for Air said that parachutes would be carried by the crews during the trials of H.M. airships R.101 and R.100. But they would not be worn on the person, as that would impede work. They would be carried in a convenient place in the airship. [Those would-be lighter-than-air travellers who are looking forward to dancing in the ball-rooms of these craft will be relieved to read Mr. Montague's assurance.]

On July 29 the inflation of R.100 was begun at Howden under the supervision of Lt.-Comdr. Burney. This operation will take a week and will be followed by indoor tests. In a month the ship may be ready to take the air.



THE JAGUAR-WAPITI.—A three-quarter view of the Wapiti with the Armstrong Siddeley Jaguar engine and the new Westland split undercarriage.

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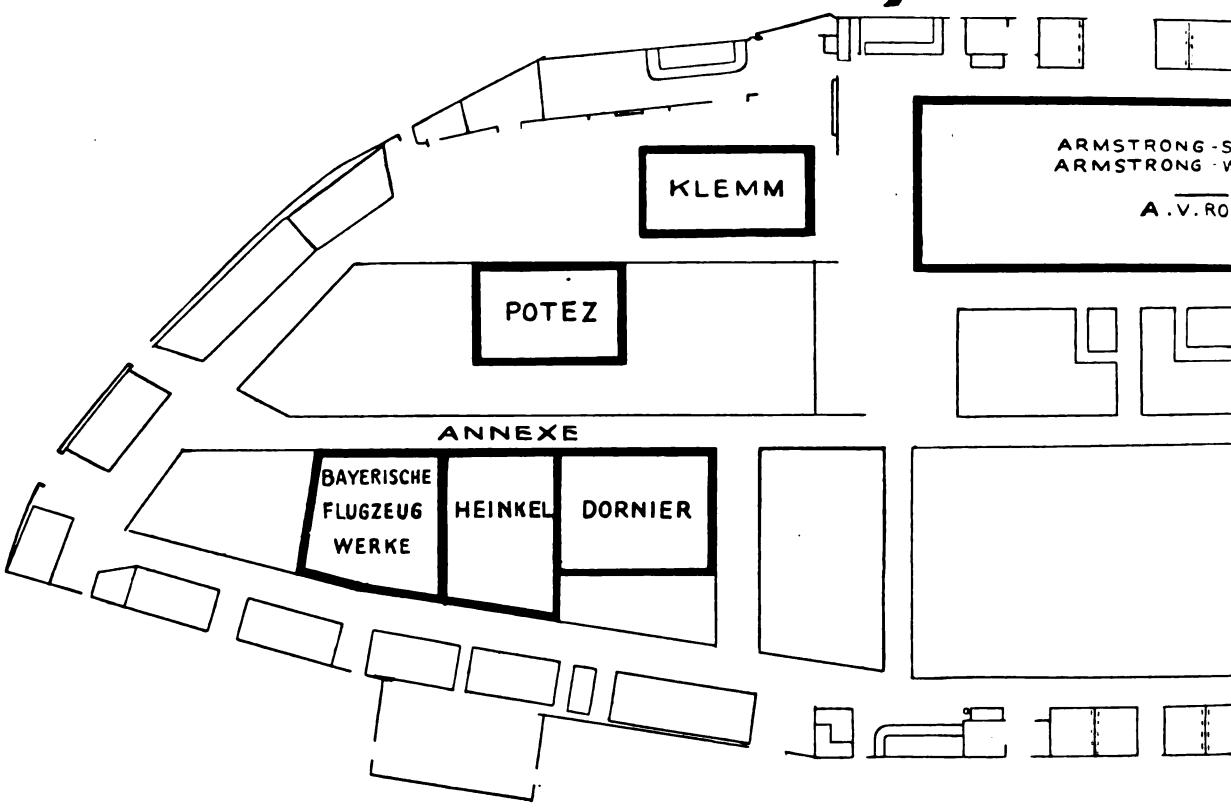
"Titanine" Dopes a



AERO EXHIBITION OLYMPIA, 1929

The Firms whose Stands are shown in Black Outline on the Plan

Employ

TITANINE DOPES

AND

FINISHING MATERIALS

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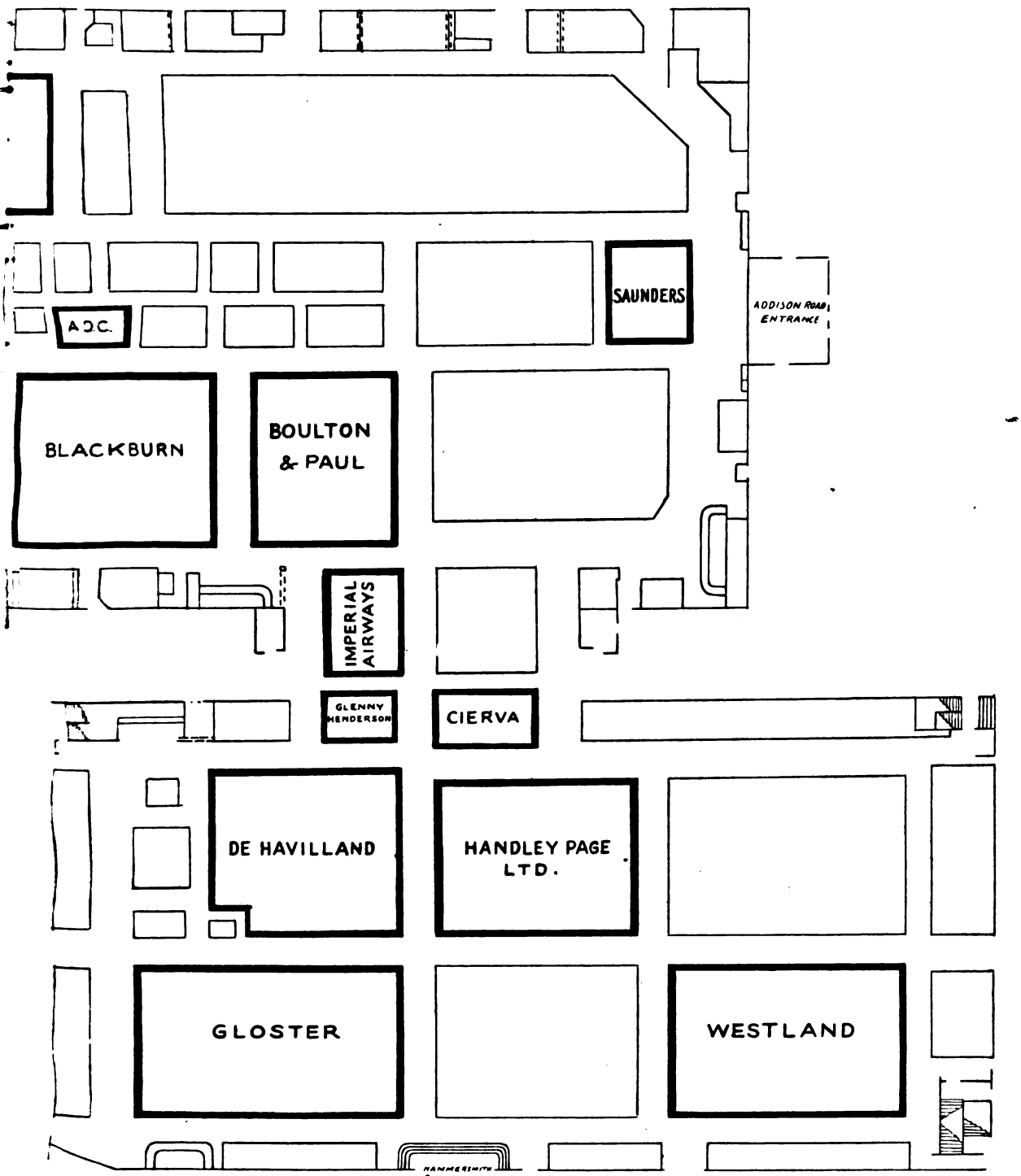
The Aero Exhibition



Manufacturers & Sole Proprietors :-

TITANINE-EMAILLITE LIMITED

HEAD OFFICE: EMPIRE HOUSE, 175, PICCADILLY, LONDON, W.1.

Telephones:- Gerrard, 2312. Regent, 4728.

Telegrams:- "Tetrafree" Piccy, London.

Codes, A.B.C 5th Edition & Bentleys.

WORKS:-HENDON (London N.W.), NEW JERSEY (U.S.A.), MILAN (Italy), BREMEN (Germany)

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Central Flying School Categories.

The following officers have been re-categorised from the dates stated against their names:—A2 to A1,: Flt. Lt. J. S. Chick, M.C., A.F.C. (June 14, 1929). B to A2.: Flg. Off. H. H. Brookes (June 28, 1929).

The following officer has been re-categorised as a "B" Flying Instructor:—Flt. Lt. C. L. Lea Cox.

The Useful R.A.F.

A *Reuter* message from Simla dated July 26 states:—

Late on Wednesday night the Foreign Department in Simla received an urgent telegram from the British Minister in Bangkok, which brought news that the heir-presumptive to the throne of Siam, the half-brother of King Prajadhipok, was lying dangerously ill.

The message conveyed an appeal from the king for certain rare drugs, which were apparently unprocurable in Siam, to be sent from Calcutta by aeroplane.

Early the next morning two Royal Air Force Wapitis—said to be the only machines in India capable of making the dangerous passage through the monsoon area to Bangkok—were on their way from the frontier station of Risalpur to Calcutta. The most necessary of the drugs was immediately ordered from Smith and Co., Calcutta, who held in readiness duplicate packets, one for each aeroplane.

Late last night the foreign Secretariat received a further telegram from Bangkok, stating that the Siamese medical authorities had at last succeeded in procuring this drug. The Wapitis were therefore stopped halfway on their flight to Calcutta. No news has yet been received of the condition of the Royal patient.

A *Reuter* message from Aden dated July 26 states:—

The Greek steamer *Hermes*, which sent out an S.O.S. signal on July 19 to the effect that she was short of coal, and that her wireless had broken down, has been found ashore off Ahwar, in Latitude 13.28 and Longitude 47.00.

The first news of the discovery was brought by a runner to Sultan Monasar Bin Ali, of Lower Aulaki, who is at present harbouring the crew. A Royal Air Force machine went there yesterday and conveyed a woman who was suffering from exposure, and the captain of the ill-fated vessel to Aden.

Arrangements are being made for the return of the crew, communication being maintained by Royal Air Force machines.

Aircraft Versus Locusts.

The report of the locust investigation sub-committee of the Committee of Civil Research states:—

We are hopeful that it may be found possible to employ aeroplanes for purposes of reconnaissance, and perhaps for the destruction of locusts. If this is to be effected, it is very desirable that arrangements should be made to secure the co-operation of the Royal Air Force in locust-inhabited countries. In any case where the Royal Air Force were able to assist in this way appropriate arrangements would require to be made to reimburse Air Votes in respect of the expenditure involved.

Our appointment synchronises with one of the recurrent outbreaks of the desert locust. Its appearance in small numbers in 1927 was followed in 1928 by an invasion on a large scale in Southern Sudan from the East, in Kenya from the North, and later in the Tanganyika territory through Kenya. In the same year there were important invasions in Palestine, Transjordan and 'Iraq. There is no evidence available regarding the probable duration of the present invasion, but judging by past experience it may safely be assumed that it will continue in 1930, and probably 1931.

High Speed Practice at Calshot.

An Air Ministry *Notice to Airmen* states:—

The R.A.F. High Speed Flight temporarily stationed at Calshot will be carrying out practice flying in the vicinity of Calshot from the date of this Notice to the date of the Schneider Trophy Contest, Sept. 7, and foreign teams will also be practising in the same vicinity from August until the date of the Contest.

The practice area is that bounded by Calshot Castle, Stone Point, Egypt Point, Hillhead, Chilling, Calshot Castle.

Pilots of civil aircraft are warned not to enter the area in question under 1,500 feet unless they are proceeding to or from the R.A.F. seaplane station, Calshot.

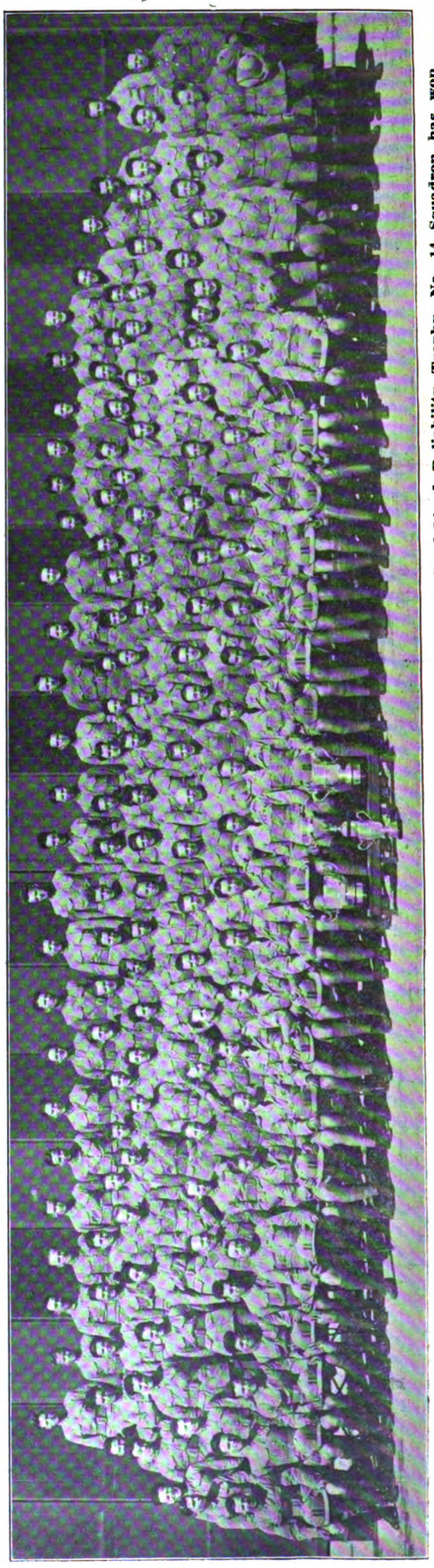
When high speed aircraft are practising, the following signals will be displayed from the end of Calshot Spit:—One white strip 18 feet by 3 feet as soon as the aircraft leaves the slipway. A second strip will be placed across the first when the aircraft takes off. The second strip will be removed immediately all high speed aircraft engaged in practice flying have landed.

Pilots of aircraft proceeding to the R.A.F. seaplane station, Calshot, should, as far as possible, remain outside the practice area and exercise the utmost caution in landing when the above-mentioned signals are displayed.

AEROPLANE CATAPULTS.

In the House of Commons on July 26, in reply to a question by Cmdr. Bellairs, the First Lord of the Admiralty said that no catapults for launching aeroplanes were fitted in any Japanese battleships, and one cruiser only had been fitted with a catapult,—which it was understood to be for experimental purposes.

The position in the United States was that 12 battleships were fitted with two catapults each and six had one each and would be fitted with two. Ten cruisers had two catapults each and eight cruisers building were being fitted with two each.



A MIDDLE EAST SQUADRON.—No. 14 (Bomber) Squadron, R.A.F., at Amman, Palestine. In addition to the Lord Lloyd Reliability Trophy, No. 14 Squadron has won the Proficiency Cup, the Bombing Cup, and the Musketry and Pistol Shooting Cup. The Squadron was also third in the Air Gunnery Competition. The Commanding Officer is Sq. Ldr. E. G. Hopcraft, D.S.C.

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ACCESSORIES AT THE AERO SHOW.

[This report is written in the present tense, as if the Show were still in being. In this way a better sense of continuity is given to the narrative.—C. G. G.]

THE AERONAUTICAL AND PANEL PLYWOOD CO. LTD. Stand No. 1.

The stand is built entirely of this company's aircraft plywood, "Mallite," and forms a good display in itself. All forms of plywood panels are shown, birch and mahogany for structural work, balsa—that peculiarly light wood—for fairings and cabin linings and various decorative panels for cabin doors and internal decoration.

A wide selection of made-up parts of aircraft structures is shown, ranging from gun-ring deckings to wing ribs.

Fireproofed and metal-faced plywood is also shown.

A large block of balsa wood in the front of the stand enables those interested to test its extraordinary lightness.

A specimen dashboard in figured walnut, used for the Civilian Coupé, shows how use may be made of such decorative woods to replace the more ordinary mahogany.

THE ANGLO-AMERICAN OIL CO. LTD. Stand No. 30.

"Pratts Spirit advertised with Art," best expresses the Anglo-American Co.'s stand. Gone are the ubiquitous Petrol Pumps and cans of lubricating oil, and instead they have arranged a series of really delightful pictures of representative aircraft, displayed so cunningly that they appear to stand out and give one a sort of stereoscopic effect.

The aircraft are chosen to show that Pratts Spirit has been used to perform every kind of work from Records to taxi-work, and, moreover, with aircraft of all Nations. The centrepiece showing two R.A.F. fighters diving through clouds is certainly a most artistic display.

The Anglo-American Co. were the first to develop the T.E.L. doped fuel in this country and it is worth noting that the consumption of this fuel in the U.S.A. was last year equal to the total consumption of all motor spirit in this country. It has very definite advantages over petrol-benzol mixtures for aviation use, one of these being that the freezing point is not brought up higher.

Also, for trips to outlying parts of the World where only straight petrol is obtainable, engines which are designed for petrol-benzol mixtures cannot be made to run satisfactorily. But when T.E.L. doped fuel is used it is a simple matter to carry the dope in the aircraft and to mix it in the fuel as one goes, as the quantity used is so very small. In war time benzol would all be used for explosives, but the source of supply of T.E.L. would still remain.

Conforming to the growing tendency to use mineral oil for engines in aircraft, this company has now started to retail their own lubricating oil in all the necessary grades, but, as has been said, no mechanical demonstrations of its properties are to be seen on this stand, and one is left to assume, quite rightly, that they are of the same high class as the artistry of the stand.

THE A.C. SPARKING PLUG CO. LTD. Stand No. 31.

A range of A.C. products applicable to aircraft use is shown on this stand. It consists of sparking plugs, oil filters, fuel pumps and air cleaners.

None of these products are as yet approved by the Air Ministry, but application has been made for approval.

The Air Picture Stand.

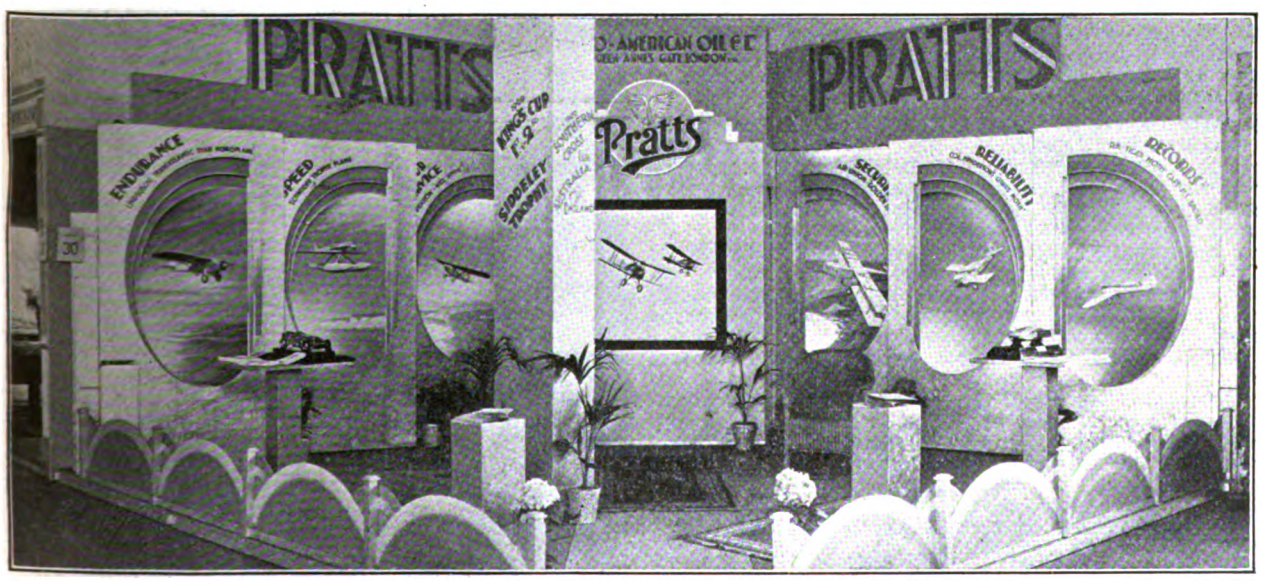
THE AIRCRAFT AND GENERAL FINE ART CO. Stand No. 27.

Mr. and Mrs. W. E. Johns, who constitute the Company exhibiting on this stand, specialise in pictures of aircraft which are technically correct, and yet are real pictures. Last year they must have supplied the majority of Christmas Cards used by the Royal Air Force, either as Squadron or Unit cards, or for individuals. And thousands of aviation enthusiasts and people in the Trade must also have been among their customers. Mr. Johns is his own artist and printer. Mrs. Johns is also an artist, and manages the firm's office-work as well.

A large selection of pictures of all types of aircraft is shown. These are suitable for reproduction for all purposes, either in large sizes as household decorations, or in small sizes as cards (Christmas or post).

Other lines in which these illustrations play an important part are playing cards, post cards, greeting cards, calendars and all kinds of catalogues or brochures for advertisement purposes. All of which the firm produce and print themselves.

Though originally started as a side line, the sale of Air Mail



The Stand of the Anglo-American Oil Co. Ltd. in the New Hall.

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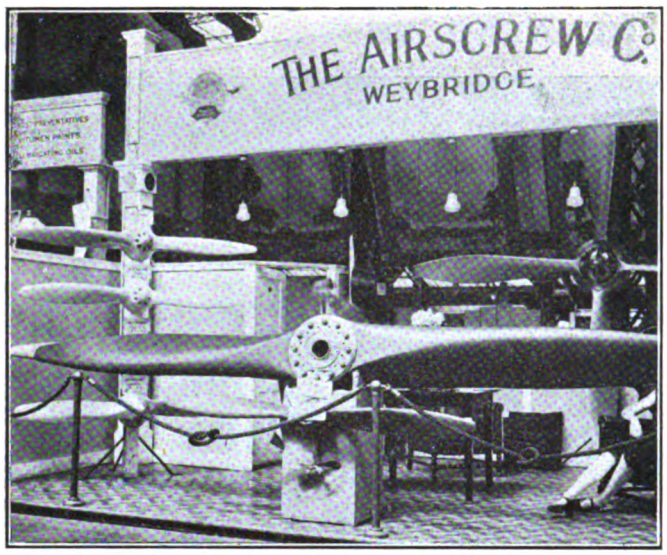

Wooden Airscrews are Made Here.

Stamps and complete stamped envelopes has proved a considerable attraction and several unique specimens are exhibited, some of which have been carried on well-advertised long-distance flights.

Altogether the exhibit is a credit to its owners, who by sheer hard work, and strict attention to business, coupled in a most unusual way to true artistic sense—without too much of the artistic temperament—have made for themselves a definitely useful place in the Aircraft Trade and in the aeronautical community.

AIRCRAFT MATERIALS LTD., Midland Road, N. W. 1. Stand No. 132.

"Aircraft materials for every purpose" accurately describes this exhibit of standard components and fittings to Air Ministry and B.E.S.A. specifications.

Included in a very extensive range are 3 A1 bolts, shackles, pins, copper tubes, and various steels and alloys.

A range of 5 W.3 streamline wires are also shown.

The short end of these wires is threaded left-handed, and the long end right-handed. The wires are treated for anti-corrosion with electro-cadmium plate.

One interesting exhibit is a steel bomb-release gear with spring jaws operated by a Bowden cable, and able to take a load of 520 lbs.

THE AIRSCREW COMPANY, Weybridge, Surrey. Stand No. 129.

This pioneer firm of airscrew manufacturers are showing a varied range of wooden airscrews from the 6 foot 6 inch "Cirrus" type to the 16 feet propeller for R.101, to be fitted on the Beardmore Tornado.

The airscrews are finished in cellulose lacquer, and make an imposing display.

A Napier engine fitted with one of the company's airscrews, and a number of windmills for generating purposes, complete the exhibit.

There is interest in noting that a portion of the Weybridge works has been set aside to deal specifically with airscrews for light aeroplanes. Members of flying clubs are invited to inspect the works and see the airscrews in the course of manufacture.

THE AUTOMOBILE ASSOCIATION, Fanum House, New Coventry Street, W.1. Stand No. 156.

Private owners, and visitors to flying club meetings, are by now familiar with the valuable services performed by the Aviation Department of the Automobile Association under the able leadership of Mr. Ivor McClure.

For the unitiated these services were fully explained at Olympia. Some idea of the growing popularity and appreciation of their work can be gauged by the fact that to-day over 95 per cent. of the private flying traffic through Lympne is handled by the Association, and hundreds of inquiries are being received from abroad, notably from Italy and Spain.

An interesting feature of the exhibit is the new weather-map, which is to be installed at Heston Air Port. The map is corrected periodically from Air Ministry meteorological reports, and the recognised Air Ministry weather symbols are employed.

Members of the Association contemplating a flying tour may take advantage of any, or all, of the facilities offered by the Aviation Department.

The department undertakes the procuring of permits, carnets, and all other necessary documents. A detailed weather forecast for various places en route is supplied, and special flying maps can be hired from the department for a small fee.

These maps are of the strip type on a scale of four miles to the inch. The direct route from air port to air port is clearly marked, with the compass bearing in each direction. An alternative route is also shown, and prohibited and danger areas are marked. The route is divided into sections of ten miles. The mileage from the starting point is given, and the time taken to cover any section can be referred to a table on the cover, which will then give the ground speed.

Detailed information of the locality of aerodromes, and the facilities obtainable are also given, together with advice on hotels, and other valuable data.

The air message service is yet another useful aid to pilots, and has been approved by the Secretary of State for Air. A special message-bag, with streamers, is provided, which may be dropped near the recognised A.A. telephone boxes. The message is then telephoned to its destination. The boxes are shown on the A.A. General Flying Maps of Great Britain, and are approximately 80 in number. This service is of great use in an emergency, and serves to illustrate the valuable work being done by the Association in the interests of aviation. Such work deserves the widest support.

A map of Europe showing flying routes recommended by the A.A. is displayed, together with a map of England showing all existing aerodromes.

During the Schneider Trophy Contest the Association will take charge of the arrangements for air visitors at Hamble and Cowes aerodromes, and application for aircraft parking space should be made to the Aviation Department.

AUTOMOTIVE PRODUCTS COMPANY, 3, Berners Street, W.1. Stand No. 147.

This company has acquired the licence for the manufacture and marketing of the Lockheed Hydraulic Braking system for aircraft and automobiles. On this stand at Olympia is an aeroplane wheel fitted with the Lockheed brake, and the tail portion of a fuselage. The action of the brake is demonstrated by spinning the wheel, then pulling over a hand-lever on the fuselage, which sets the brake, and finally putting a lot of weight on the end of the fuselage. This latter action compresses the tail-skid, which applies the brake and stops the wheel from spinning.

Castor oil, denatured alcohol, and certain reagents are used for the fluid in the system. The hand-lever operates a master cylinder, which puts an initial load in the system, bringing all the mechanism to the "ready." The tail-skid operates a cylinder, which is spring-loaded to prevent over-braking. This cylinder increases the pressure, thereby applying the brakes. Once the tail is on the ground and the machine braked to a standstill, the hand-lever is released and the tail-skid places the initial load in the system. In this condition the auxiliary cylinders attached to the rudder bar come into operation, and assist in steering.

The great feature of the Lockheed system is the point that a brake operated by the tail-skid is an automatic safety device, the brakes cannot come on till the tail is down, so there is no tendency to "ground-loop," or put the machine on its nose.

The Public Benefactors.

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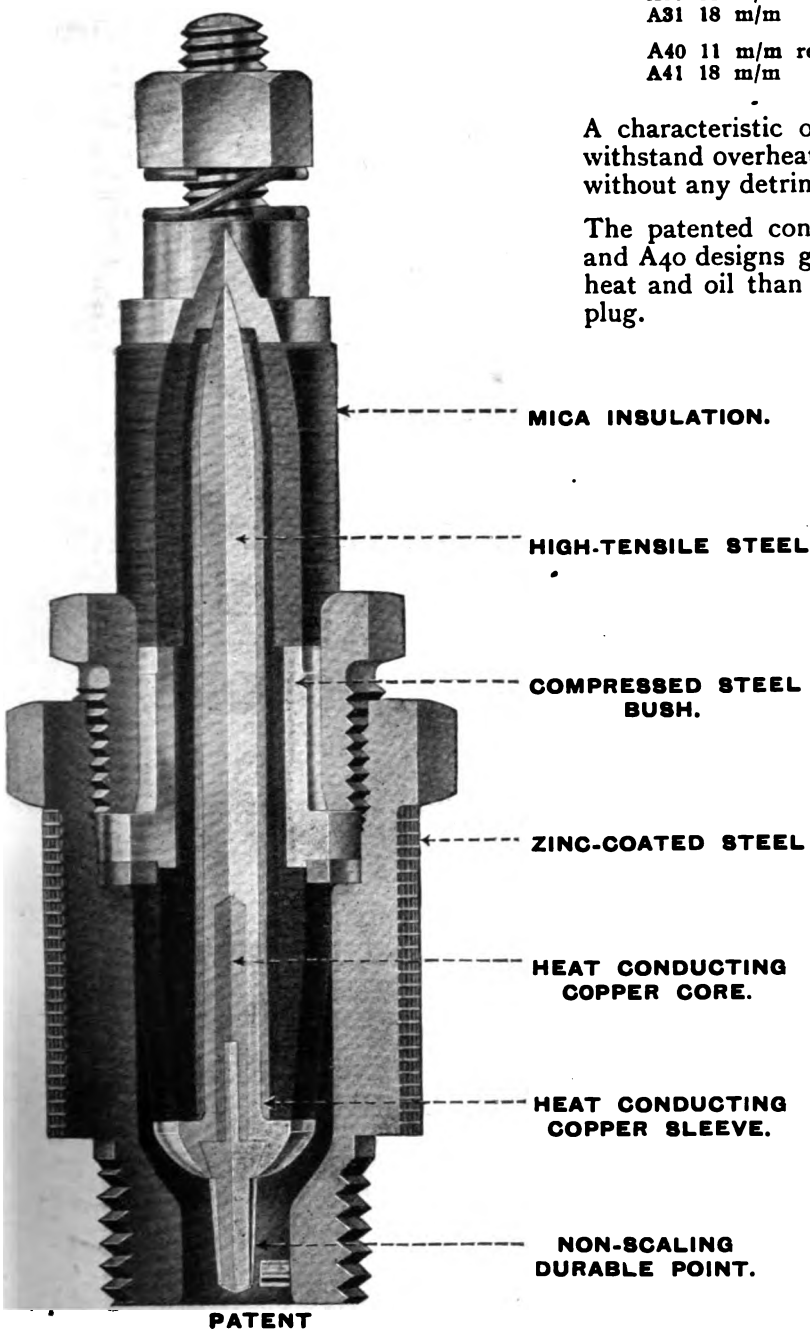
AVIATION PLUGS

are made in the following models:—

A20 11 m/m reach A21 18 m/m ,,	for medium compression engines.
A30 11 m/m reach A31 18 m/m ,,	for medium and high compression engines.
A40 11 m/m reach A41 18 m/m ,,	for engines of exceptional output such as Rolls F.XI.

A characteristic of all these plugs is that they will withstand overheating of the engine for short periods without any detriment.

The patented construction incorporated in the A30 and A40 designs gives a wider range of resistance to heat and oil than is obtainable in any other make of plug.



PATENT 308438.

Illustration of the Lodge A40 partly sectioned to show the construction.

On A.I.D. Air Ministry Approved List.

LODGE PLUGS LTD., RUGBY.

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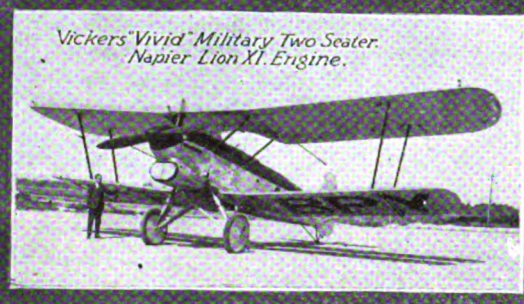
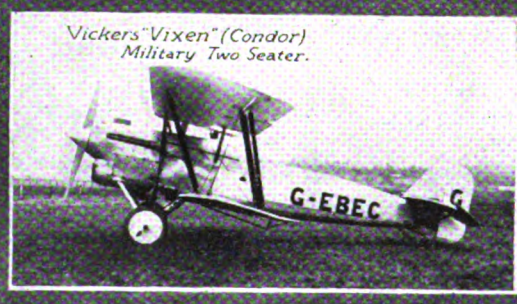
Vickers "Type 143" Single Seater Fighter.

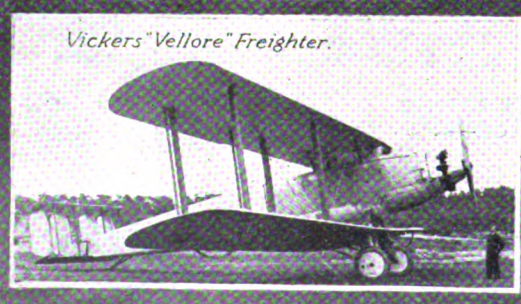
Vickers "Vespa" Two-Seater for Military Reconnaissance.

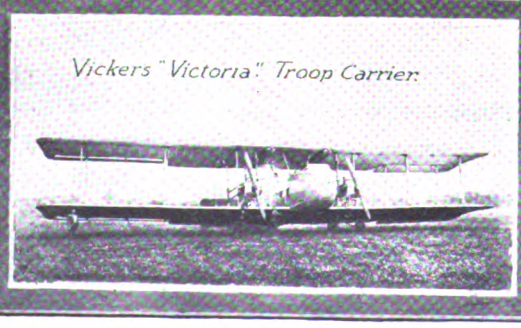

Vickers "Vivid" Military Two Seater. Napier Lion XI. Engine.

Vickers "Vivid" Seaplane.



Vickers "Vixen" (Condor) Military Two Seater.


Vickers "Vellore" Freighter.


Vickers "Victoria" Troop Carrier.

Vickers "Virginia X" Bomber.

VICKERS [AVIATION] LIMITED

AIRCRAFT DESIGNERS AND CONSTRUCTORS

SBAC THE SOCIETY OF BRITISH AIRCRAFT CONSTRUCTORS

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VICKERS HOUSE, BROADWAY.
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SURREY.

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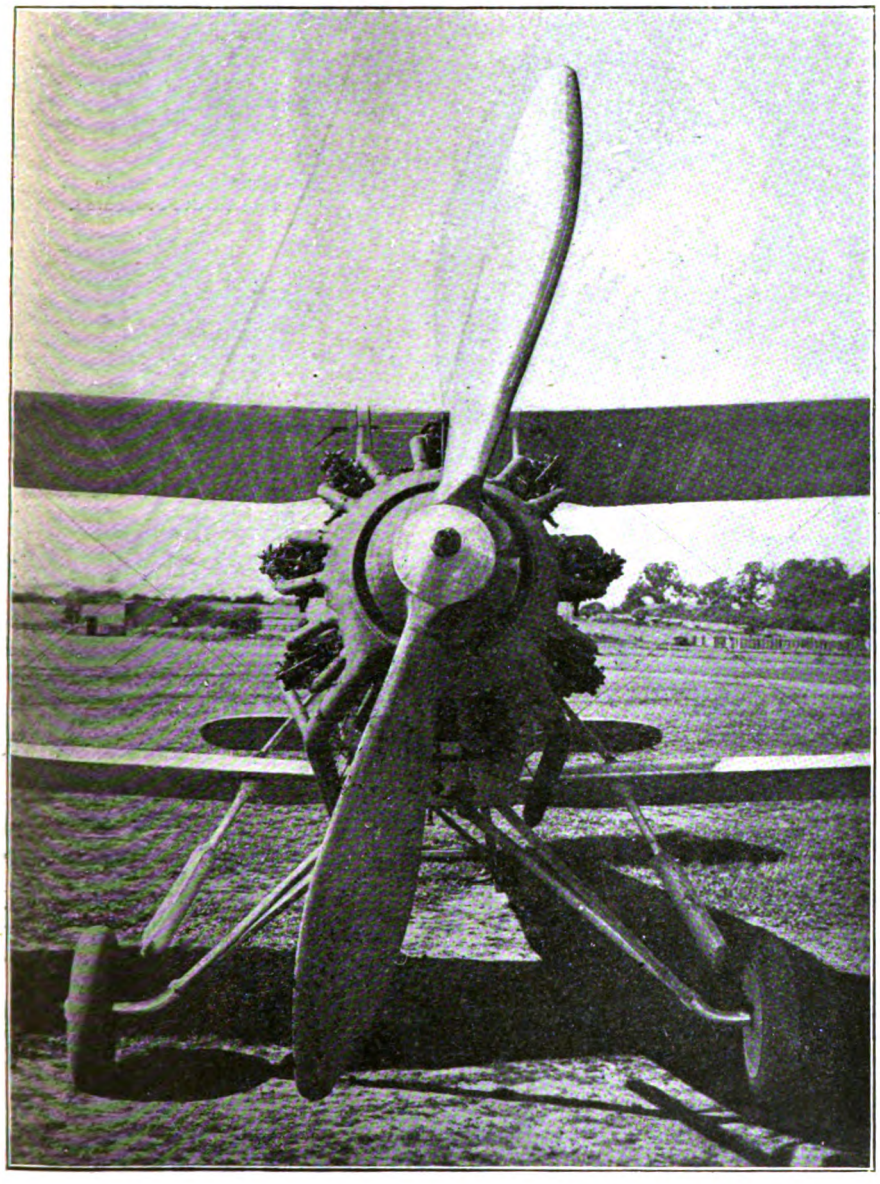
A 'Plane is as Reliable and Efficient as its Airscrew !



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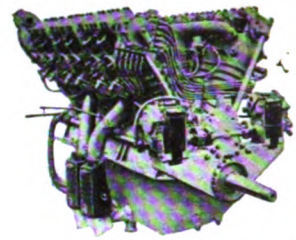
SOCIÉTÉ LORRAINE

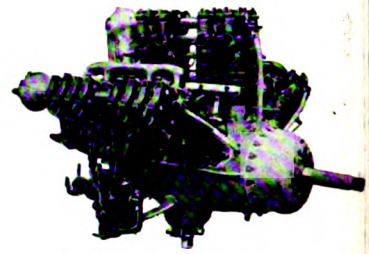
200 ROUTE DE BEZONS
A ARGENTEUIL. (S.&O.)

TÉLÉPHONE
WAGRAM: 99.87

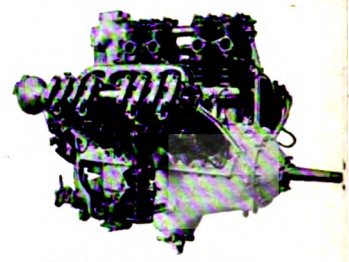
REG. COMMERCE
SEINE. Nº 111·677



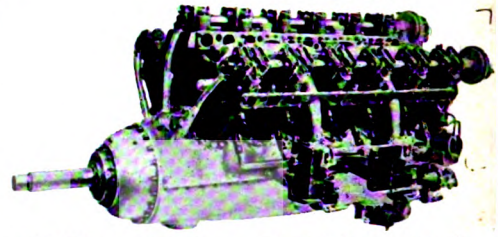
400/410 h.p. 12 Cyl. in V.



450/500 h.p. 12 Cyl. in W.
Direct Drive or Geared.



480/510 h.p. 12 Cyl. in W.

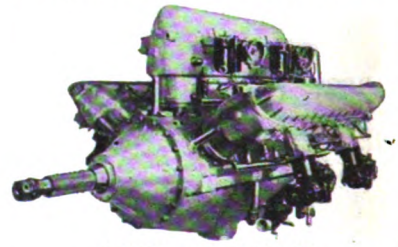


650/750 h.p. 18 Cyl. in W. Direct Drive or Geared.

MOTEURS D'AVIATION

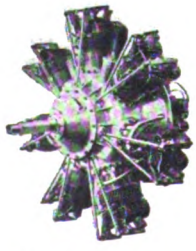
LORRAINE

AERO ENGINES.

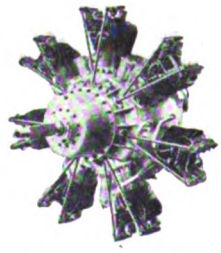


600/700 h.p. 12 Cyl in W.
Direct Drive or Geared.

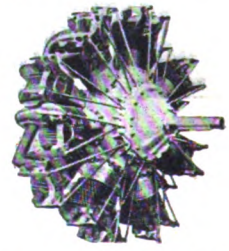
100/120 h.p. 5 Cyl. Radial.



40/270 h.p. 7 Cyl. Ra ial.



140/270 h.p. Geared.



470 540 h.p. 14 Cyl. Radial.
Direct Dr.ve or Geared.

Marine Engines, 250 h.p. & 500 h p.
15 h.p. Motor Cars, Grand Sports & Touring.

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THE AIR SURVEY CO. LTD., 39, Grosvenor Place, S.W.1. Stand No. 158.

A large mosaic of part of Borneo recently surveyed by this company is an interesting feature of this exhibit. The mosaic is on a three inch to the mile scale, and embraces an area of 600 square miles.

Stereoscopic photographs from this mosaic are also shown, and the views of the dense jungle are very impressive.

A number of aerial photographs are also shown illustrating the company's work in India and the East. Some of these are highly interesting from an archæological point of view.

ANTI-ATTRITION METAL CO. LTD., Glengall Works, Glengall Road, S.E.15. Stand No. 138.

This exhibit consists of a display of chill-cast solid, and cored, sticks, white bronze ingots, and bronze machine bearings.

The sticks are in 24-inch lengths, conforming to A.B. specification B.8.

Gun-metal and phosphor-bronze ingots of A.B. specifications B.2, and B.8, respectively, are also shown.

THE AIRCRAFT OPERATING CO. LTD., 8, New Square, Lincoln's Inn, London, W.C.2. Stand No. 187.

A comprehensive exhibit showing the work of this company is displayed on this stand and comprises mosaics, oblique photographs, and maps, as well as air survey equipment.

The mosaics shown are part of the Iraq and Egyptian surveys, and also from the recent survey of Rio de Janeiro and the Federal District of Brazil.

A very fine mosaic of Central London is also shown. This was reproduced on a poster for the Underground Railway, and is on a scale of 25 inches to the mile, and is made up of approximately 350 photographs. The photos were taken by Aerofilms, a subsidiary company, who also show examples of commercial air photography.

On this stand also is a model of the survey aeroplane made for the company by the Gloster Aircraft Company, the actual machine being on the latter's stand. This machine was fully described last week.

A special surveyor's wireless set is also shown, made by A. Graham and Co., a description of which appears elsewhere in this issue.

Other equipment shown is the well-known Williamson F.8 camera for air survey work.

ALUMINIUM (II) LTD., Bush House, Aldwych, W.C.2. Stand No. 174.

To overcome the difficulty of corrosion of alloys this firm has introduced a new process in which the alloy is coated with pure aluminium, thus forming a sort of 3-ply metal. The resultant alloy is "Alclad," specimens of which are to be seen on this stand.

Strips of this metal are shown after a sea-water test of two years' duration. Also "Alclad" 17 ST sheets to D.T.D. specification, No. 111, together with miscellaneous alloy forgings and castings are shown, including a 25 S alloy airscrew and 17 S spars.

Aluminium sheets, 17 ST alloy sheets and tubing, to B.E.S.A. specifications, together with corrugated "Alclad" sheets, contribute to this exhibit.

The production of "Alclad" 17 ST, a heat-treated aluminium-copper-manganese-magnesium alloy is an interesting development in corrosion-resistant aluminium, and is being manufactured under British Patent No. 271798.

AIRWORK, LTD., Heston Air Park, Hounslow, Middlesex. Stand No. 119.

The stand of Airwork, Ltd., contains a large-scale model of Heston Air Park, showing the buildings, hangars, and machines. The latter are shown on the ground and in the air, and are so infinitesimal that one felt that a blast from the loud-speaker might shiver them to fragments.

These models represent the three types of machine used at Heston Air Park for School and Taxi work—the D.H. Gipsy-Moth, Avro Avian, and the Blackburn Bluebird.

Round the walls of the stand are photographs of Heston Air Park, showing the Service facilities and accommodation offered.

The ambition of Mr. Nigel Norman and Mr. F. A. Muntz is to maintain a social centre at Heston for aircraft users. Visitors can be provided with private lock-ups (for their machines, *bien entendu*).

The "social centre" part of the scheme has been well to the fore during the Aero Show, as a number of exhibitors had machines stationed at Heston which were used for demonstration purposes. There was the successful Aerial Garden Party, held at Heston on the first Saturday of the Show, when 67 civilian machines turned up, and there was a big crowd of spectators.

The Park has been organised as a Club, where for an extremely low annual subscription those interested may become either flying or non-flying members. Members of private flying clubs can on application become honorary members of the Park, with the same privileges as members.

ALLEN-LIVERSIDGE LTD., Victoria Station House, Westminster, S.W.1. Stand No. 37.

In the early days of aviation Allen-Liversidge Ltd. were chiefly known as acetylene engineers and makers of searchlights and projectors. During and after the war very large numbers of these were purchased both for anti-aircraft work and for illuminating aerodromes. In recent years, however, the bulk of the trade which Allen-Liversidge have done with the Aircraft Industry has been concerned with oxy-acetylene welding equipment for use in construction of metal aircraft.

Aircraft welding demands the use of the purest possible gases if sound welds are to be obtained. The dissolved acetylene which is used in the Allen-Liversidge high-pressure portable welding equipment is dried and purified before it is compressed into the cylinders, and this purity and dryness, which are not obtained in other ways except on a very large scale, are important factors in the production of good welds.

The company also produces the Alda flare lights and tools which employ as fuel dissolved acetylene and atmospheric air. With a number of light blowpipes which are interchangeable a wide variety of different jobs, such as brazing, soldering, lead-burning, cable-jointing, etc., can be performed rapidly and efficiently.

Besides a comprehensive range of oxy-acetylene welding equipment Allen-Liversidge are showing their electric spot-welder, which is now coming rapidly into general use for aircraft work in America and will shortly be doing so in this country. It is very simple to operate and the welding successfully takes the place of rivets for a large number of the ordinary jobs. As yet it has not been found successful with aluminium.

Another application of the same principle is the electric seam-welder in this type. The welder is in the form of two copper rollers which rotate,—drawing the sheets to be welded through and completing the weld at the same time. It is in effect a continuous spot-welder.

For those interested in very fine work the new small 5-litre blow pipe should be of interest. It was really brought out for lead-burning, but is equally useful for fine aluminium work or strip steel.

Complete equipment is also shown for surface hardening, soldering, brazing and lead-burning.

AMALGAMATED CARBURETTERS LTD., Holford Works, Perry Bar, Birmingham. Stand No. 134.

The stand of Amalgamated Carburetters Ltd. shows a complete range of flow-meters, a few carburetters and a new type of Bowden wire.

Brown and Barlow Ltd., one of the associated companies, is the oldest British firm of carburetter manufacturers, and this company early in the War turned its attention to the development of accessories directly concerned with the petrol consumption of aero-engines.

When aero-engines began to be manufactured in large quantities serious trouble was experienced in obtaining the correct size of jet for the carburetter, and it was frequently found that the same diameter jets gave different discharges under the same conditions of working. The company thoroughly investigated the problem and as a result produced the Jet Calibrating Machine, which is now very largely in use.

On the successful conclusion of the tests on the apparatus the company was requested to produce a Flowmeter working on the same principle but so calibrated as to be suitable for indicating the rate of consumption, in pints per hour, of an aero-engine while on test. This was done successfully, and since then large numbers of instruments have been supplied to every country in the World where aero-engines are tested.

In this country the instruments have been installed in the test shops of practically every aero-engine manufacturer and are proving of utmost value not only for checking the petrol consumption but also in detecting many previously unsuspected troubles, among these being "hunting" of the float feed mechanism and partial air-locks in pipe lines. The latest model is known as the Flowmeter Mark IX.

This instrument is not restricted for use in testing engines on the test bench only but can be used in many other directions, such as testing the accuracy of setting of a carburetter where a variable jet is employed, such carburetters being outside the scope of the Jet Calibrating machine

Both calibrating machines and flow-meters of this type work on the same principle. They consist of a float chamber and a vertical glass tube. Obviously if the petrol is only allowed to pass from the float chamber to the glass tube, the petrol will rise to the same height in the glass tube as in the float chamber, but a venturi is introduced in which the jet to be tested is placed so that the height in the column will fall proportionately to the amount leaking through the jet. A similar sequence takes places in the flow-meter, except that the petrol passes through to the engine under test.

The new wire for Bowden cables introduced by the firm

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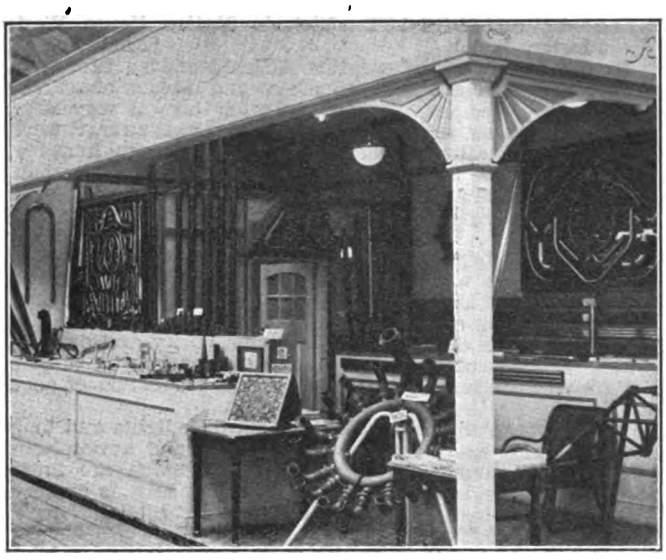

A. AND P. LTD.—Where Tubes Are Worked Like Wires.

has the great advantage of not unwinding when cut. All ardent amateur motor-cyclists know the job of replacing a broken wire and what a knack it takes to sweat the new wire so that it does not spread. This new wire can be cut anywhere with no sweating, and each individual wire stays put.

ACCLES AND POLLOCK, LTD., Oldbury, Birmingham. Stand No. 166.

During the War the Accles and Pollock works were entirely under Government control, and in addition to the production of Weldless Steel Tubes the firm carried out a tremendous amount of constructional work.

Many improved methods of Aircraft Construction have found birth in the Accles and Pollock workshops, and a section of the staff is continually employed in carrying out tests and experiments which decide the most suitable material and methods of production for every conceivable tubular part for aircraft. Particular care is exercised in analysing and testing the material, and fatigue tests are being carried out daily.

The result of all this work is that Accles and Pollock place at the disposal of aircraft designers and builders a comprehensive knowledge of all the possibilities of tubular construction. They are always prepared to make experiments, and to place their experience at the disposal of aircraft firms who consult them.

Their stand at Olympia reflects this policy and shows the large variety of work done by this firm. It also gives some idea of their experimental work.

Among all their other activities the firm find time to produce some really startling box-spanners in 80-ton chrome molybdenum steel. A much-patronised form of exercise at the Aero Show consists in screwing the head off a standard 9/16in. steel bolt with a suitable box spanner of this material. When the writer's turn came the testing stand was wrecked, but the spanner was not even out of shape.

To return to tubes, the firm show their latest in taper-gauge axles, in stainless tube, streamlined or otherwise, and all kinds of tube in all kinds of fancy section.

They also show the special drawn-steel spars of double eight section originally produced for the Fairey Company. They do work with both kinds of stainless steel, that is, Martensitic and Austenitic. The former behaves like ordinary steel as far as quenching goes, but the latter type is like copper and duralumin—to anneal, it is first made really hot and then dropped in cold water.

A great feature of the firm's activities is the production of all kinds of webbed structures, to the customer's requirements. There are one or two examples of this work on the stand.

AUSTER, LTD., Crown Works, Birmingham. Stand No. 74.

Auster, Ltd., specialise in the production of wind-shields for aircraft, and the stand exhibits a full range of their products. There is an interesting windscreen suitable for a Short Calcutta. The features of this screen, besides the opening panels, are the adjustable sun vizors for each pilot. These can be fixed in any position up and down the panel in front of either pilot, and can also be turned through any angle. Nitra glass shields, with which the firm have been experimenting, are shown; these are made of an anti-glaze material.

BRAY, GIBB AND CO., 166, Piccadilly, W.1. Stand No. 26.

This stand advertises the fact that Bray, Gibb and Co. were the pioneers in aviation insurance brokerage, and have been actively connected with this class of business for about 20 years.

An interesting exhibit is a letter from M. Bleriot, anent this business, dated 1911, and a similar one from Mr. Cody asking for quotations.

Bray, Gibb and Co. do not necessarily only deal with any one group of underwriters but place their business to the best advantage for each particular customer.

THE BROOKLANDS SCHOOL OF FLYING, Brooklands Aerodrome, Byfleet. Stand No. 180.

Up in a corner of the Main Hall gallery is the stand of the Brooklands School of Flying which demonstrates the actual methods of flying instruction they employ. There is a portion of a Mk. I Moth Fuselage installed complete with dual control, instruments, voice-pipe and the rest, so that visitors may sit inside and see the way the whole thing is done.

All day long there is quite a procession sitting at the controls and being told what and how to do it. As a result a number of pupils have gone down to Brooklands where a trial flight of instruction can be had for £1. Quite a feature of the Show from the School's point of view have been the inquiries from old pilots who want to know how long it will take to get their hand in again. And an even better feature is the number of pilots who have arranged to take "refresher" courses. After such a course the pilot need never again get out of touch as he can always hire a machine from the School.

The School being unsubsidised is quite able to instruct foreigners and indeed makes a feature of this side of the business.

Another branch of their activities is the sale of various makes of light aircraft. They are agents for the D.H. Moth. In this connection there is interest in noting that the School is prepared to sell on the Hire Purchase System and three machines have already been sold this way.

S. F. BOWSER AND CO. Stand No. 7.

An aircraft fuelling pit is shown by Bowser and Co., and illustrates the system very clearly. A clever background gives the impression of the aerodrome and shows in the distance several pit installations in use. The hose is coiled on an easily-operated drum and is long enough to be hauled up to the largest aeroplane. The fuel is stored in underground tanks and is delivered through suitable pipes to the pit by an electric motor which is started by a vapour-proof switch in the pit itself, where it is measured by an Xacto meter which is extremely accurate, as it is calibrated to one-tenth of a gallon.

Other ordinary types of fuel pumps are also shown, such as those so widely used for motor-car refuelling.

The firm is American and has a very large trade in aircraft fuelling-plants in that country.

Oil storage tanks of various types are to be seen on the stand, both of the portable trolley type and the stand type and all have very accurate measuring devices.

A map of the U.S.A. forms the background to the stand and serves to show the large number of aerodromes in that country which are already fitted with Bowser installations.

LOUIS BAMBERGER AND SONS, 27-28, Finsbury Square, E.C.2. Stand No. 118.

This is the smallest individual trade exhibit in the show, consisting solely of a few silver spruce spars, and a selection of spruce boards from Canadian forests.

BRITISH PETROLEUM CO. LTD., Britannic House, Moorgate, E.C.2. Stand No. 170.

A model of the Persian oil-fields in the neighbourhood of Masjid-i-Sulaiman is an interesting feature of this stand.

The model is on a scale of 6 inches to the mile, and covers an area of 98 square miles, and shows the position of wells and pipe lines.

A cinema showing the production of B.P. spirit is in operation on the stand.

A petrol truck, mounted on four aeroplane wheels, for aerodromes is also exhibited. The tank capacity is 50 gallons, and the truck can be handled easily by a boy.

Standard petrol filling pumps complete the exhibit.

E. P. BARRUS LTD., 35-37, Upper Thames Street, E.C.4. Stand No. 160.

A wide range of drills comprise this exhibit. Among these is a Valve Refacer, which will reface valves from 30 to 60 degrees, round the radii on the Rocker Arms, and square off the ends of the valve stems.

A feature of this apparatus is the Split-Double Grip Collet, capable of gripping valve stems from 5-16 inch to ½ inch diameter. The chuck is held entirely within the spindle, with no part overhanging.

Valve reseating cutters can be sharpened with this apparatus, and, with the special attachments provided, 15° and 75° cutters can be sharpened.

Other exhibits include a 2.3 amp. portable electric drill, 12 inches in length, and weighing 6½ lbs., designed for rapid drilling, and a number of wrenches and drills of various types.

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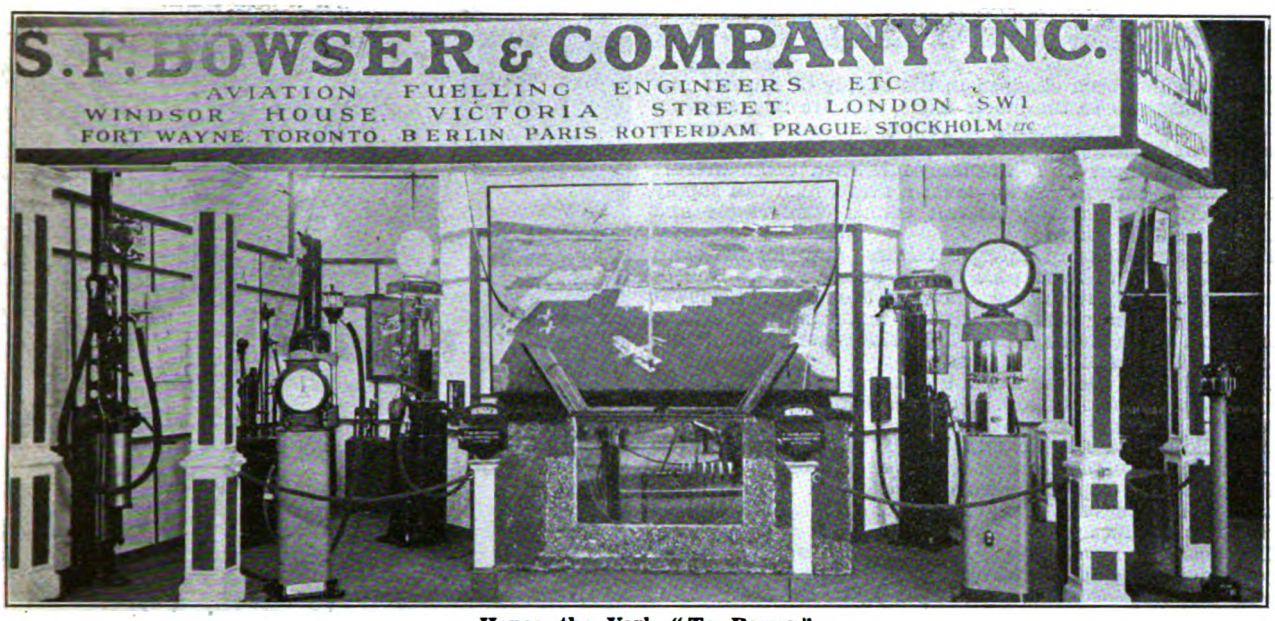


Hence the Verb "To Bowse."

JAMES BOOTH AND CO. (1915) LTD., Argyle Street, Nechells, Birmingham. Stand No. 165.

This stand is built up entirely with duralumin and aluminium, and contains a variety of specimens of these metals.

The rails in front of the stand are duralumin strips twisted spirally into tubing and rivetted. This tubing is being used on R.100.

A number of spar sections in duralumin are shown, as well as bars, strips, and rods in varying sizes and shapes.

Heat-treated duralumin sheets to B.E.S.A. specification, up to ten feet in length and four feet in width, are here shown.

Other duralumin exhibits are tubing from four inches diameter down to one-eighth inch, solid drawn, also screws and rivets, and drop forgings for Fairey airscrews. There are also some specimens of duralumin spinnings, and anodically-treated tubing.

Y alloy forgings, copper tubes, sheets, and extended rods, and cupro-nickel tubes for condensers are further exhibits on this stand.

THE BRITISH PISTON RING CO. LTD., Holbrook Lane, Coventry. Stand No. 137.

A range of Brico piston and scraper rings made from centrifugal castings are displayed by this firm. These rings are specially manufactured for aircraft. The metal has a high elastic value, and has a mirror-like flat surface on the periphery and sides.

The scraper rings are of the Scraypoil pattern, and of ground and drilled type.

Lapped gudgeon pins, and a number of centrifugal castings, are also shown.

THE BRITISH THOMSON HOUSTON CO. LTD., Alma Street, Coventry. Stand No. 173.

B.T.H. magnetos have a World-wide reputation, and are to be seen on many aero-engines and motor-cars.

On this stand are shown aero magnetos for every type of engine of from one to sixteen cylinders, of both Rotary Armature and Polar-Inductor types.

Hand and electric Inertia starters are also displayed.

The "Eclipse" Hand Inertia starter has been designed for large engines, and its essential principle is the storing of energy in a small fly-wheel by running it up to a high speed and using this energy in rotating the engine crankshaft, through a multiple gear reduction, torque overload release, and driving jaw.

This starter has a high initial engine cranking speed and about 80 r.p.m. is attained in from 15 to 30 seconds. It can be electrically driven by bolting an electrical attachment to the starter flywheel housing, which accelerates the flywheel to operating speed.

Also on this stand is a 24-inch revolving beacon, of 2,000 candle power, fitted with 1,000 watt interchangeable lamps, for aerodrome illumination.

BENDIX-PERROT BRAKES LTD., Westwood Road, Witton, Birmingham. Stand No. 131.

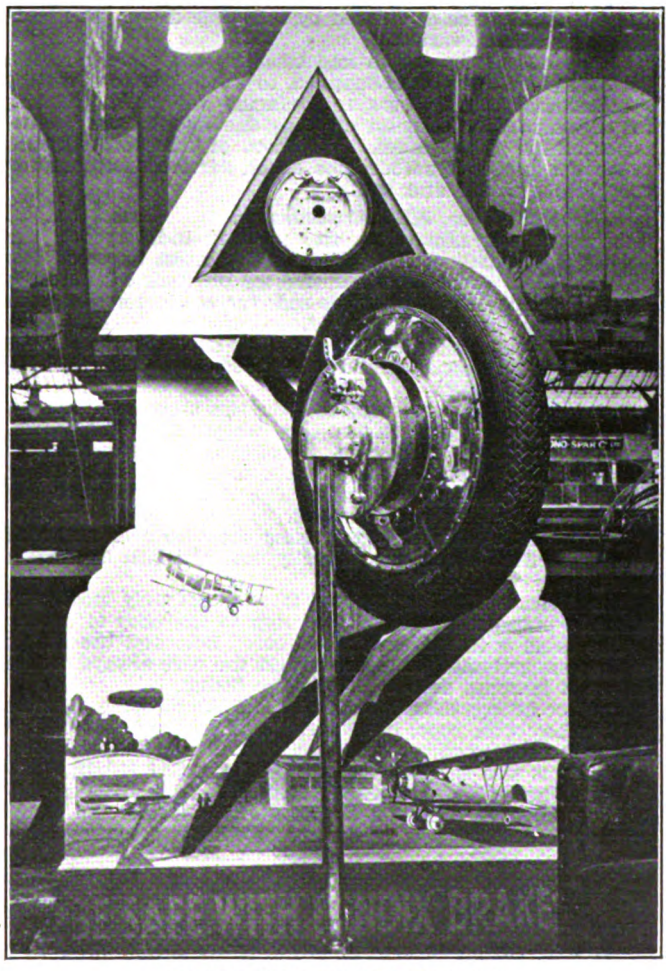
The exhibit of Bendix-Perrot Brakes Ltd. shows the latest type of wheel and incorporated brake made by the firm, together with an assembly of the detail parts.

The advantages claimed of these brakes are:—They reduce the run after landing to a minimum enabling safe landings to be made in small areas, they permit an aircraft engine to be warmed-up without the use of chocks, they provide perfect control on the ground when separately operated, and they permit of the use of a tail-wheel instead of a tail-skid, and thus avoid damage to aerodromes.

The wheel has an electron hub with self-lubricating bronze bushes. To this hub are attached light alloy side-plates carrying the rim. In one of these side-plates is the steel brake-drum.

The brake itself is of the two-shoe servo stype. There are two shoes made from light alloy forgings. These are hinged together and pivotted to a fulcrum only. The other free end has renewable rollers against which the cam works.

As the shoes are circular on their outside face a very even bearing is obtained on the drum, with a corresponding reduction of wear on the brake-lining. This type of brake is fitted by the De Havilland, Handley Page, Blackburn, Westland, Avro, and Bristol Companies.



Brakes That Do The Stopping.

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BOYRIVEN, LTD., 9, 10, and 11, Torrington Place, W.C.7. Stand No. 52.

This firm has been engaged in the supply of interior furnishing materials to the motor trade, and are now showing their initiative by preparing to supply the same market in the aircraft industry. One of the features of the Aero Show is the development of comfortably-furnished cabin-aircraft for passenger-carrying, so no doubt a firm which can supply the material for making aircraft cabins comfortable and attractive should do well.

Besides specimens of interior fabrics and leather-cloth which are used to form part of the decoration scheme of their stand, Boyrivens are showing their new Beclawat horizontally sliding window. This is made in two parts, a fixed panel and a sliding glass. The fittings are of duralumin and suit all types of safety glass.

The feature of the window is the ease of fixing. The fixed glass is simply held in rubber channels inserted in grooves cut in the fuselage framework.

The sliding glass is held in a light frame with rubber-lined channels. This frame slides over a U-section bottom rail, and at the top is guided by a channel. The top and bottom rails are very easily attached, as they are simply screwed to the fuselage.

The design is obviously good for rapid assembly in quantity production, and the method of attaching the rails to the framework ensures a water-tight joint.

BROWN BROTHERS, LTD., Great Eastern Street, E.C.2. Stand No. 70.

Brown Brothers are famous for supplying from stock any aircraft accessory that anybody can possibly want. On their stand can be seen in mild steel, stainless steel, high-tensile steel, and duralumin, all the miscellaneous parts to A.G.S. requirements and otherwise which Brown Brothers are ready to supply at any moment.

One cabinet contains a collection of pieces made to aircraft manufacturers' special requirements, ranging from engine parts to details for parachutes.

The firm have recently brought out a new form of copper ring or gasket for sparking plugs. These are generally made of copper, interlined with asbestos. The new type is also of copper, but is tubular in section. It is expected to be much in demand.

Neat equipments of Black and Decker valve-grinding machinery are to be seen on the stand. The valves are faced up by a small grinder attached to an electric motor, the valve meanwhile being rotated by a flexible drive. The seating-angle can be varied.

For grinding valve seats and cleaning out valve guides a portable electric motor is supplied, to which can be attached spindles carrying reamers for refacing the seat, grinding tools, and wire brushes for cleaning the sludge from the interior of the valve guides. Equipment of this kind appears to have a place at aerodromes which service machines for the private owner and the like.

BRUNTONS, Wire Mill, Musselburgh. Stand No. 47.

Bruntons are famous in the aircraft industry for the supply of streamline wires, and all the latest types of this form of their activities are illustrated on their stand. This firm, which began supplying tie-rods for use in aeroplanes in 1907, is now producing streamline wires in stainless steel, samples of these being exhibited on the stand. Bruntons are also showing stainless steel rope and stainless steel fittings, such as turnbuckles.

Exhibits of particular interest on the stand are Beacon Tru-Lay cable and Beacon Tru-Loc fittings. As is well known, wire rope or cable of any size, on being severed, immediately flies into its individual components, unless first sweated or sewed with twine or fine wire. The new Beacon Tru-Lay on being cut remains in position.

This result is obtained by passing the wire over a special former so that the wire is actually made in with its correct twist.

The Beacon Tru-Loc system is a remarkably neat and effective manner of attaching fittings to the ends of cable.

The cable is introduced into a bored hole and the fitting is then swaged onto the wire. In test the wire always breaks before it becomes detached from the fitting.

Tru-Loc fittings to the number of 11,500, and some 17 miles of Tru-Lay wire rope, have been used in the R.100, which shows the reliance that is being placed in these new devices.

Bruntons also specialise in the production of Bright Cold-Drawn Special Shaped Steel Sections. Such shapes frequently replace machined sections with considerable profit to the user, owing to the reduction or elimination of machining.

BRITISH CELANESE LTD., Celanese House, Hanover Square, W.1. Stand No. 152.

Various articles treated with this firm's cellulose acetate dopes and varnishes are displayed here, including a fine model of the Supermarine S.5 seaplane.

Specimens of Celastoid sheets for goggles, windscreens, and side windows are also shown. These sheets are made in 40th, 60th, and 80th inch thickness, and comply with Air Ministry specification. They are extremely pliable, are non-inflammable, and do not discolour.

"DECORATIONS WILL BE WORN."—The Birmingham Medal Co.

Another product of this firm shown is Celastine moulding powder for the making of dials, gauges, clocks, and numerous other accessories.

Celastine is also supplied in moulded sheets and rods.

BAKELITE LIMITED, 68, Victoria Street, S.W.1.

This exhibit shows the variety of materials which can be made from Bakelite Synthetic Resin. These include mouldings for aircraft instruments, laminated fabric for windmills, dashboard, panelling, link insulators, and other fittings and products.

Bakelite mouldings are used in the production of hundreds of every-day commodities, and it can also be supplied in liquid form for varnishing.

THE BRITISH ALUMINIUM CO. LTD., Adelaide House, King William Street, E.C.4. Stand No. 165.

Further examples of aluminium products can be seen on this stand, which adjoins that of James Booth and Co., and is similarly built up.

Here are shown aluminium ingots, and 2L5, 2L8, 3L11 alloys.

Plates and sheets in pure aluminium, and in silicon alloy, aluminium tubes, sections, rods, and rivets, and alloy L32 rods, are all contained in this exhibit.

THE BIRMINGHAM MEDAL CO LTD., Summerhill Terrace, Birmingham. Stand No. 184.

A very fine collection of model aircraft in silver and metal is a feature of this exhibit. The models are of various sizes, and are constructed to scale. Several types of light aeroplanes are included.

Other exhibits include trophies, plaques, mascots, advertising devices, and enamelled badges of every description, including those of some of the Flying Clubs.

D. H. BONNELLA AND SON LTD., 46-48, Osnaburgh Street, N.W.1. Stand No. 190.

Standard A.G.S. parts are the principal features of this exhibit, and include ignition fittings for gas starters, cable fittings for earth bonding system, lighting and wireless fittings, insulators and terminal blocks for high and low tension circuits.

A number of electric light bulbs and ceiling lights are also shown for the illumination of aircraft cabins and motor-cars.

There is also a dimmer cockpit lamp, made to Air Ministry design, which can be adjusted to any angle, and the lighting controlled by a rheostat. The lamp is fitted with a red glass giving a short actinic ray.

CELLON LTD., Kingston-on-Thames. Stand No. 23.

Cellon Ltd. are showing a wide range of cellulose finishes for all purposes.

Fabric panels and covered surfaces show the standard doping schemes for aeroplane wings and other fabric-covered surfaces, schemes which are suitable for either Service or civil aircraft.

Several new effects are also shown which should be particularly attractive to private owners, who wish to finish their machines in distinctive colours. The bronze metallic effect which is shown to so much advantage on the Hawker

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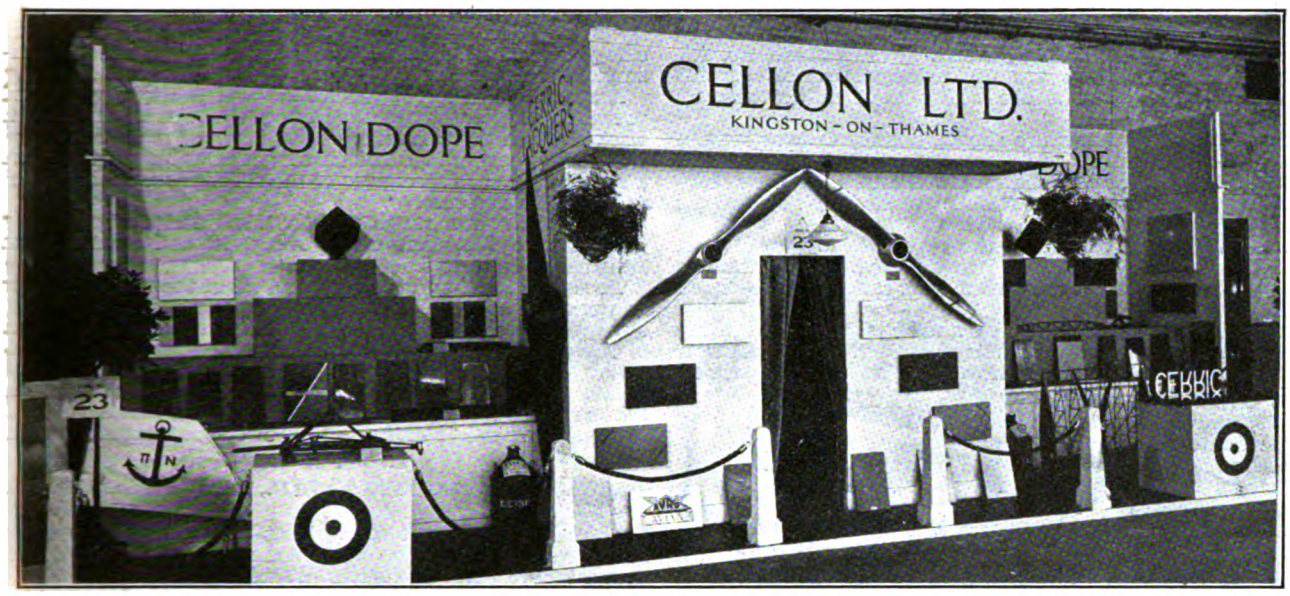

Where The Word "Dope" Was Invented.

Tom-Tit may be had in any colour, and gives a particularly luxurious-looking finish.

Specimen panels are also shown of another type of finish called the "crackle." This may also be had in any colours and gives the effect of artificial leather. It is formed by applying two colours the top one having the property of immediately contracting and drying with a network of cracks through which the under coat may be seen. The size of the cracks may be controlled by applying the top coat before or after the bottom coat is dry and also by varying the thickness of the top coat.

Other panels show the "Marbled" effect. Its name is self-explanatory and it is really surprising how the marbling appears to stand out raised above the surface when actually it is flat.

Besides dopes, a range of Cerric lacquers for all purposes is shown. This includes a pigmented cellulose lacquer for finishing wooden airscrews, and a transparent lacquer specially for duralumin airscrews. A Fairey-Reed screw is shown finished in this way. A black lacquer for all steel parts, which have until recently been stove-enamelled, and a grey lacquer for duralumin parts are also shown. A duralumin rudder is shown finished in this style.

For wood both pigmented and transparent lacquers are made and a range of specimen plywood and solid panels of all kinds show how attractive this type of finish can be. It has a great advantage over French or other polishes in that it is impervious to everything and when used for furniture a quick polish with a wax polish will invariably restore the surface to its original state. It should have plenty of scope for internal use on cabin furnishings and is easier for unskilled labour to obtain a good finish with than is the normal type of shellac polish.

Pigmented lacquers in all colours are also available for external use and many aircraft which are built of plywood are finished in this way. The result is far more durable than paint. The Saunders "Cutty Sark" is an example. Here the wing is plywood and the hull duralumin, and both are finished with the appropriate type of Cerric lacquer.

Masonite panels are one other line which Cellon are showing. These are panels made from compressed wood fibre and are said to be more durable than plywood. Their weight, however, would appear to preclude their use, at present, for aircraft construction, though they have, it is said, proved admirable for "Speed-boats" and stand up to the vibration where plywood has broken down.

ALAN COBHAM AVIATION LTD., 150, New Bond Street, W.1. Stand No. 140.

After flying to the four corners of the World in search of Empire air routes, Sir Alan Cobham is placing his experience at the disposal of any Government, or individual, requiring advice on air-ports, air-parks, or any commercial aviation enterprise.

At his stand at Olympia can be seen a map of the World showing the routes flown by Sir Alan Cobham, together with a map of Britain showing the centres now being visited by him to make the youth of this country air-minded.

Some excellent mosaics of New York and London are also displayed on the walls, as well as an oblique view of New York from 6,000 feet.

The originals of the two winning drawings in the air port design competition held by the Royal Institute of British Architects are here shown.

THE CHLORIDE ELECTRICAL STORAGE CO. LTD., Clifton Junction, near Manchester. Stand No. 196.

This company, famous for their "Exide" batteries, are showing some special aircraft batteries for high and low tension wireless use, and also for engine starting, and lighting.

Special 25 amp. cells have been evolved for aircraft. They have very thin plates, yet give a heavy discharge.

Batteries of this type were used by Sir Alan Cobham in his tour round Africa in the Short Singapore.

A demonstration of the new Keepalite emergency lighting system was given. This can be used on either A.C. or D.C. mains, and is instantly operated by a change-over switch.

This apparatus is a useful alternative lighting system in case of failure of the ordinary supply, and is invaluable for hospitals and other institutions, as well as aerodromes and factories.

CHANCE BROTHERS AND CO. LTD., Lighthouse Works, Smethwick, Birmingham. Stand No. 139.

Aerodrome floodlights and beacons are the specialities of this company, and their exhibits are both interesting and varied in character.

In the Main Hall Gallery is displayed a 16,000 c.p. floodlight, which can be either fixed in position, or mounted on a lorry or a hand-cart.

The lantern is fitted with lens of 500 m/m. focus, covering 180°, and is illuminated by a 10 k.w. gas-filled lamp with special filament. A ventilating fan is fitted in the roof, and the floodlight is mounted on three screw-jacks, to regulate the elevation of the beam.

An unattended beacon, giving a double flash every 7½ seconds, is also shown. The illuminant is acetylene, supplied from a cylinder of "dissolved" gas. A "Chance" light valve, automatically lighting and extinguishing the lamp night and morning, is fitted on top of the lantern. The intensity is 1,250 c.p., and the light can be left unattended during a period from 12 to 14 days for each cylinder.

Electric aerodrome boundary lights showing red flashes are also included in the exhibit, together with a portable light to mark danger points. This is also fitted with an automatic flasher. The illuminant is acetylene gas fed from a cylinder slung beneath the light.

Another interesting exhibit is a model of a lighted wind-indicator, which can be mounted on a hangar or mast. It consists of a revolving white T for day use, and is outlined by lights at night.

Samples of "Calorix" glass for hangar or workshop roofs in hot countries, which exclude 80 per cent. of the sun's heat, while transmitting about 65 per cent. of its light, conclude the exhibit.

On Short Bros.' stand is shown a Fourth Order flashing aerial lighthouse with a lens of 250 m/m. focus, consisting of three faces, each covering 120°, carried on a mercury float pedestal, and revolved by electricity.

The illuminant is a 1 k.w. gas-filled electric lamp, with an automatic lamp-charger. Also on this stand is an "Austinlite" automatic electric generating plant, which can be started or stopped either by a time-switch, or light-valve.

The apparatus consists of two generating plants, and is so arranged that either can be used to light the beacon, or they can be run alternately.

A system of signals is arranged to give warning of any failure.

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COOPER'S MECHANICAL JOINTS LTD., Manor Works, Lower Kennington Lane, S.E.11. Stand No. 145.

Cylinder-head gaskets are the principal exhibit of this firm, and their products are widely used in the aircraft industry.

Two types of packings are shown, namely Oakenstrong, a vegetable-fibre jointing, and Kentonite, laminated with cork.

Oakenstrong is petrol- and oil-proof, and although it contains no rubber it is very resilient, and does not lose its elasticity.

A third packing, combining the essential features of both Oakenstrong and Kentonite, has been produced. This is Tantonite, composed of laminated cork, sandwiched between Oakenstrong.

This firm also exhibits washers and shims, the latter being composed of laminated brass strips, each 2/1000 of an inch thick, soldered together, which can be peeled off as desired.

THE CAXTON NAMEPLATE MANUFACTURING CO., 11, 13, and 15, Rochester Row, S.W.1. Stand No. 79.

The Caxton Nameplate Manufacturing Co. make plates of various kinds, such as instruction plates or wiring diagrams for aircraft. The materials used are generally ivorine or metal. The company specialises in machine engraving and dividing for the faces of precision instruments and drawing office accessories.

ROBERT W. COAN LTD., The Aluminium Foundries, Coan House, Duncan Street, N.1. Stand No. 150.

It was in 1893 that Mr. Robert Coan first became interested in aluminium, and five years later he began to manufacture this metal. To-day his business has assumed gigantic proportions, and his products are now in universal use.

At Olympia are to be seen aluminium castings of every description for aircraft work, as well as samples of sand and die castings.

An interesting exhibit is a 36 inch diameter die cast Scarff Gun Ring. These rings were supplied to the Air Ministry during the War, and over 20,000 were delivered to entire satisfaction.

Various alloys are also shown, including "Coanalium," a special alloy for marine work. Specimens of this metal are exhibited after undergoing a six-months' sea test.

Castings for out-board motor-boat engines are also displayed. One wonders if these are intended for Short Bros.' floats, which ought to make excellent speed boats.

THE DUNLOP RUBBER CO. LTD. Stand No. 32.

Dunlops are keeping up with the latest developments, and more than 54% of the exhibits in the Show are fitted with their latest wired-type tyres.

The chief object of interest is their duralumin disc wheel, which may be supplied with or without brakes. The hub casting is either aluminium or electron.

For braking the electron hub with a cast-iron liner comes a trifle lighter than the aluminium hub with a thin steel liner. The rim is of special section extruded duralumin and the duralumin side-plates are arranged to butt up against a lip on the rim so that the loads are taken direct onto the side-plates and not through the rivets, which are countersunk on the inside of the rim.

A special form of rubber cap fits over the tyre valve and prevents any water from entering the wheel when it is washed down or in rain.

Special pneumatic cushions of generous proportions are also shown, as are specimens of the rubber hose made by the associated companies.

The tyres shown range from a tiny wheel designed as a tail-wheel to the giant wheel over 7 ft. dia. used for the Beardmore Inflexible.

The stand itself and the arrangement of the tyres on it are a work of art. In its massive proportions and rugged strength it recalls a Stroheim Kinematograph effect. There is something of the mechanical ruthlessness of "Metropolis" about it. And all this must have a psychological action on the possible or probable customer and inspire in the firm's products that confidence which they deserve. The designer of the stand is to be congratulated on his originality.

DESOUTTER BROTHERS LTD., The Hyde, Hendon, N.W.9. Stand No. 120.

The main feature of this exhibit is the Desoutter Pneumatic Drill, Screwdriver, and Spanner, a full description of which was recently published in THE AEROPLANE.

Briefly, the mechanism consists of a five-cylindered motor, driven by compressed air, with its cylinders disposed symmetrically around a central axis. Within each cylinder is a piston, which moves on a spiral-faced cam rotating about the central axis. There being five cylinders and pistons the cam is continually rotating, and there are always at least two pistons on the power stroke and two on the exhaust stroke.

The drill can cut holes up to 3-16 in. in mild steel, and up to ¼ in. in brass or aluminium. The air pressure required is from 80 to 100 lbs. per sq. in., and the air consumption is 4 cubic feet per minute. The speed of the drill can be controlled up to 2,400 r.p.m.

The dimensions are: Length, with quick detachable coupling, 7 3-8 in.; weight, 1 lb. 1½ oz.

There is also a geared model of this drill with ratios of 3½ to 1 and 6 to 1.

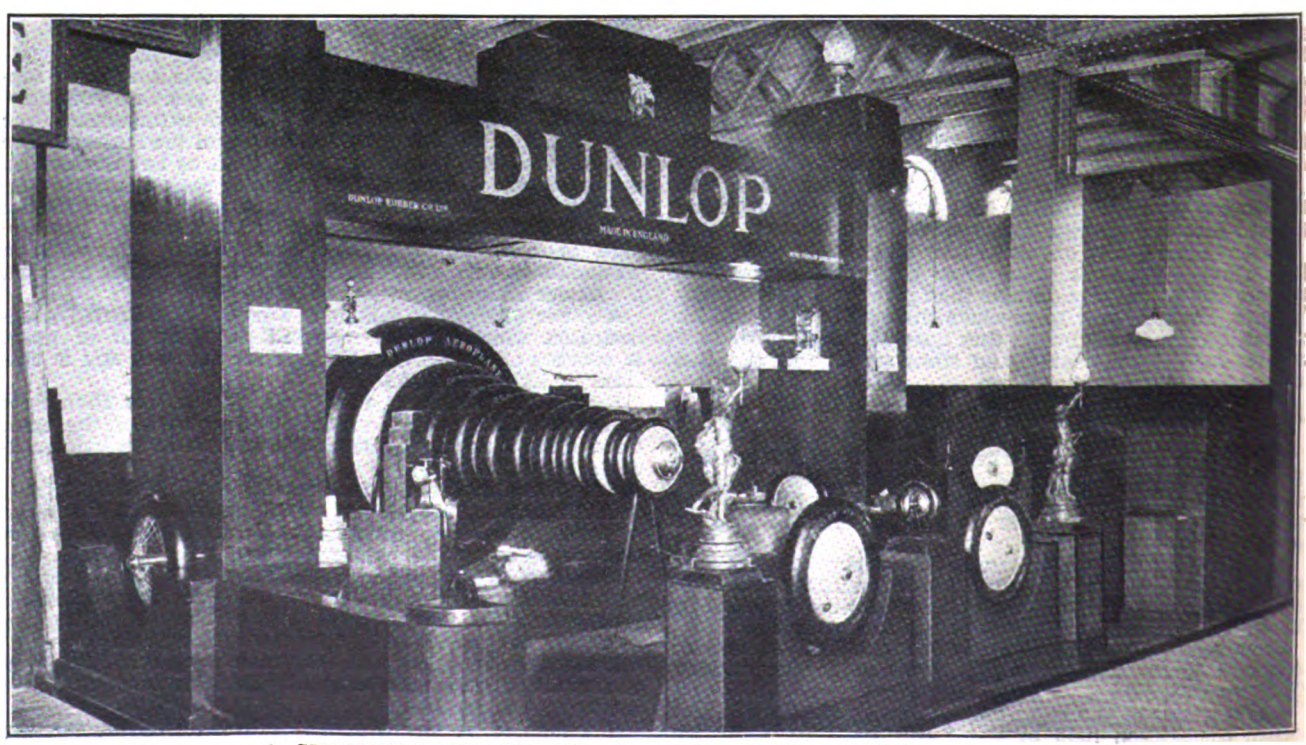
A number of standardised die sets are also shown on this stand.

ALEXANDER DUCKHAM AND CO. LTD., 6, Broad Street Place, E.C.2. Stand No. 181.

A striking demonstration of the low freezing-point of Adcol lubricating oil is shown here. This well-known lubricant is run through snow-covered pipes at a temperature of approximately 20° below freezing point.

This oil is now sold in special tins with a telescopic spout to facilitate the filling up of tanks.

A cleansing preparation for the hands is being produced by the company.



A STROHEIM EFFECT.—The impressive Dunlop exhibit.

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THE ENGLISH INSTRUMENT AND GAUGE CO., LTD., Aircraft Depot, Airport of London, Croydon.
Stand No. 176.

This company is connected with A.D.C. Aircraft, Ltd., and have the advantage of an approved inspection staff, so that all instruments can be despatched straight from the factory without undergoing inspection at Kidbrooke. This firm is specialising in the production of instrument panels for commercial aircraft, including light aeroplanes, and these panels certainly look attractive.

One of the ingenious devices incorporated is a flexible winder to the watch, which projects behind and parallel to the dashboard, extending into the cockpit. It has been made flexible to avoid breaking by the pilot's knees.

All types of aircraft instruments are shown by the firm, including air-speed indicators, revolution counters, pressure gauges, thermometers, cross levels, inclinometers, time of flight clocks, watches, compasses, and other navigating instruments.

THE ESSEX FIRE EXTINGUISHER CO., LTD., 20, Essex Street, Strand, W.C.2. Stand No. 177.

The Essex Fire Extinguisher can be operated with one hand, and will extinguish a petrol fire in a few seconds. The extinguishers have been adopted by the British Air Ministry, and are used by the British Air Lines. The stand of the company exhibits the various types of extinguisher produced by the firm, together with two other interesting pieces of machinery.

The first of these is the "Hancock" oxy-coal-gas steel-cutting and profiling machine, which is being demonstrated on the stand.

This machine, using ordinary coal-gas and oxygen, will cut 8in. thick metal at the rate of 3in. per minute, for a cost of 11d. per foot. The cut is extremely smooth and very narrow.

The 26 model has a cutting area of 60in. by 30in., and will operate over any area within these limits. The apparatus consists of a lower frame supporting the material to be cut and a system of levers supporting the torch. Over this is a table 60in. by 30in., where a pattern or blueprint of the required shape to be cut is placed. On this table is the tracer, which controls the movement of the torch.

Where the tracer moves, the torch follows. The tracer is driven by 1/50 h.p. motor to ensure a steady feed, the hand controlling the direction of travel, unless the automatic head is used, when the tracer will guide itself round a template time after time for repetition work.

The cutting burner has a patented remote control which governs the heating and cutting oxygen by a single lever. This arrangement eliminates the necessity for preheating for each individual cut, and ensures economy in the consumption of oxygen.

The machine will tackle any cutting job, and during the Show some tools were cut from tool steel in 3 minutes for the Hawker Company. Spanners can be speedily cut out, and rings of narrow gauge cut so truly, they appear to have been turned.

The second piece of machinery is a portable pneumatic power-shear, developed by Mr. Leigh Mossley and Mr. Hancock, for cutting away material in the event of a crash. The tool weighs fifty pounds, and can be carried by one man. It is designed to be carried on a fire-tender with 30ft. of hose, so that it can be rushed to the scene of the accident. The machine cuts through any material without sparking, so that there is no chance of igniting petrol fumes.

The cutter consists of a sturdy steel frame, which has a grip for the operator at one end and a fixed knife at the other. In between is the cylinder, which travels over the piston and along guides on the frame. The other knife is carried by this cylinder. The apparatus is being demonstrated all the time at Olympia. High-tensile steel spars 4in. deep are sheared through in a few seconds. After a hundred such cuts, the shear cut through a piece of paper as smoothly as would a razor-blade, a convincing demonstration of the cutting edges of the shear.

THE EDUCATIONAL SUPPLY ASSOCIATION LTD., Esavian House, 171-181, High Holborn, W.C.1.
Stand No. 148.

The "Esavian" principle of folding and sliding doors is demonstrated on this stand. These are designed for any type of building, and can be constructed to any size.

During the exhibition inquiries for 80 feet high doors were made.

The doors fold in leaf form, mounted on ball bearings, and are fitted with a winding gear, which can be operated by one man.

A number of these doors, 32 feet high, and with a span of 70 feet, have been installed at Halton aerodrome. The door being demonstrated on the stand is of four leaves standing 19 feet high.

The firm has been constructing hangar doors for aerodromes since 1918. Its title suggests a book-shop rather than an engineering shop. But when one looks at an aeroplane hangar one realises that it is merely a very large version of a book-case with sliding or folding doors. And the development of the book-case door is precisely what brought about this curious addition to the firm's original occupation, which was the manufacture of furniture for schools and colleges.

THE UNITED STEEL COMPANIES, LTD., 17, Westbourne Road, Sheffield, and
SAMUEL FOX AND CO., LTD., Stocksbridge Works, Sheffield. Stand No. 75A.

These two firms content themselves with two cabinets, in which are displayed steels of all kinds, in all shapes, for aircraft purposes. There are raw materials such as alloy steels, stainless wire and strip, and high-tensile steel in wire and strip. There are also forgings for crankshafts and connecting rods. The cabinets are designed to indicate the type of work undertaken by these firms.

HARVEY FROST AND CO. LTD., 148-150, Gt. Portland Street, W.1. Stand No. 141.

This firm is well known in the motor industry for its garage equipment, and its activities have been extended to the aircraft side. On their stand are two exhibits of interest to the aviation community.

One is an aero-engine clamp for any type of engine. The engine can be turned to any angle, and can be worked on without having to overhang gears.

The other exhibit is a bomb-jack with a capacity of 3½ tons, operated by a powerful screw gear.

Another accessory is a skate for either wheels or tail-skid, to facilitate the movement of aircraft in confined spaces.

A wide range of garage equipment is included in the exhibit.

THOS. FIRTH AND SONS, LTD., Norfolk Works, Sheffield.
Stand No. 78.

Thomas Firth and Sons, Ltd., are well known as steel-makers to the aircraft industry, and especially famous are their rust- and corrosion-resisting steels. On their stand are specimens of special steels in the form of finished components such as engine parts, gears, stainless streamline struts, and other parts.

The firm feel that the Aero Show offers a very good opportunity for a real discussion between the aircraft industry and its suppliers as to how they can best work together. The firm have therefore endeavoured during the past ten days to find from their various clients what are their views and requirements.

No doubt the results of this co-operation will be evident before long, when the firm will perhaps produce a high-tensile stainless steel with the virtues, as far as the shops are concerned, of mild steel!

GRANT AND WEST, LTD., 17, South Street. E.C.2.
Stand No. 192.

Demonstrations are here given of "Flinso" aluminium soldering. This preparation is supplied in powder form for sheet work, or in stick form for cast work.

The soldering process is extremely simple, the powder being placed on the metal, heated to boiling point, after which the compound vapourises, and the operation is complete, resulting in a strong joint.

Specimens of "Flinso" tinning compound, which cleans and tins all metals in one operation, Selck metal cementing powders, and rust removers, are also shown, together with Klincha patent belt-fasteners.

THE GLACIER METAL CO., LTD., Ealing Road, Alperton, Middlesex. Stand No. 50.

This company was founded in 1899, and to-day is one of the largest makers of bearing metals in England. Their works are devoted exclusively to the manufacture of *Glacier* bearing metals and finished bearings.

ALFRED GRAHAM AND CO. LTD., St. Andrews Works, Slough. Stand No. 130.

It seems a far cry from totalisators to wireless equipment, yet the makers of the famous Amplion wireless components have recently secured £100,000 contract for totalisators. Alfred Graham show on their stand at Olympia the public speech and band repeater equipment which produces the musical and other noises that are heard all over Olympia during the day.

Apart from this and of great interest to the Aircraft Industry are four sets of wireless equipment. The first of these is a small receiving set for installation in a light aeroplane. This type is known as G.A.6 and is very compact.—weighing 3½ lbs. The design has been produced to aid the pupil during his early solo stage, the idea being that the instructor can still send winged words of wisdom to the pupil alone in the air.

The next set on the stand is the G.A.3, which has been specially designed to meet the requirements of the Aircraft Operating Co. Ltd., and weighs 120 lbs. The set has been designed for the short wave transmission and reception of telegraphy only. Great care has been taken to keep all

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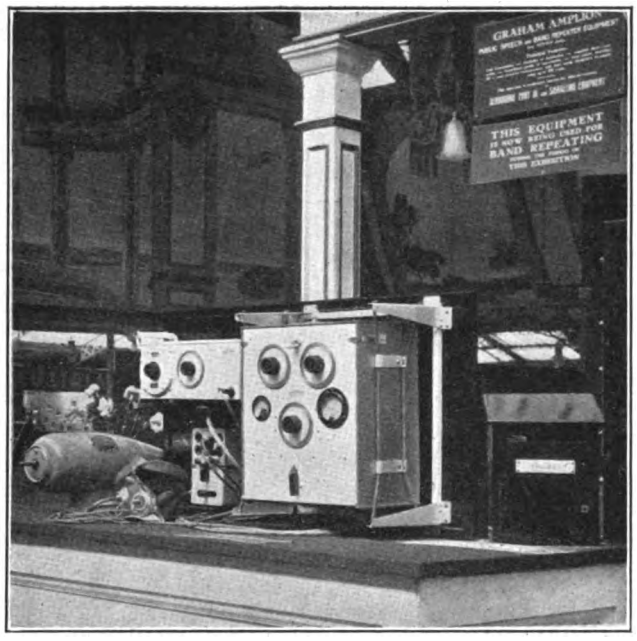

The Graham G.A.1 Aircraft Wireless and Direction Finding Set.

units down to a "one-boy" load (about 60 lbs.). The set is not for use in the air but has been designed for transport by aeroplane and use at outlying bases and advance posts.

There are seven parts,—the receiver and transmitter, the main generator, the accumulator, the charging generator, the bicycle, the aerial and earth system and a box of spares. The "bicycle" is really a misnomer as it has no wheels. The whole set is driven off an alkali-type accumulator which is charged from the charging generator driven from the "bicycle." The idea being that a "boy" (or coolie) is mounted on the saddle and told to paddle like blazes. For every hour's working two hours of pedalling are necessary,—and what will the boy do when after two hours of pedalling he finds himself at the same spot?

The firm show a medium wave equipment for aircraft which is attractive both because of its low weight and compact size.

The receiver unit weighs 6 lbs. ½ oz., and this includes complete direction-finding gear. The transmitter is very robust, the front panel opens downward and comes away with the base-board, permitting attention to the interior in the air should this be necessary. The control unit is very neat, and is arranged to permit the reception of in-coming signals by pilot and observer, who can also converse with each other.

In this conection it is worth noting that the microphones are sewn in the flying helmets just over the cheek. All the condenser dials and the like are fitted with a locking device so that they remain set and do not shake off a setting because of vibration.

Finally the central feature of the stand is a ½ k.w. Air Port equipment which will be installed at Heston Air Park.

The set can be used for telephony, or continuous and interrupted continuous wave for telegraphy. The whole outfit is driven off the mains and there is no moving machinery. The weight is so low that the equipment is quite within requirements for the latest type of large rigid passenger-carrying airships. Direction-finding is incorporated in the receiver.

ALFRED HERBERT, LTD., Coventry. Stand No. 58.

Alfred Herbert, well-known tool-makers of Coventry, show on their stand a range of tools of interest to the Aircraft Industry and also examples of the Parker Kalon Hardened Metallic Drive Screws. These are a special form of screw which is suitable for making fastenings to cast-iron, steel, aluminium, bakelite, and similar material, without the necessity for first tapping the hole.

One of the features of the stand is the collection of Coventry collapsing taps and Coventry self-opening die-heads. These tools are widely used in the quantity-production of nuts and bolts for the aircraft industry. To gauge such work accurately the Wickman Thread Calliper Gauges are used, and there are a representative range of these gauges on the stand.

THE HOFFMANN MANUFACTURING CO. LTD., Chelmsford, Essex. Stand No. 179.

On this stand are some interesting exhibits showing the uses in aircraft-production of Hoffmann bearings. Among these is a Napier Lion crankshaft and airscrew shaft. Reduction gears for the Bristol Jupiter and Rolls-Royce Condor engines, all fitted with Hoffmann bearings, are shown.

Here also can be seen steel balls of every conceivable size, including the smallest ever made. These are 1-32-inch in diameter, and a small glass tube on the stand contains 5,760 of them. These balls are turned out to within 1-10,000 of an inch of standard size.

Roller gauges to N.P.L. certificate of accuracy are also included in this display.

HENRY HUGHES AND SON LTD., 59, Fenchurch Street, E.C.3. Stand No. 84.

The range of instruments for air navigation shown on the stand of Henry Hughes and Son is extremely large. It comprises compasses of all kinds, such as the latest military patterns for pilot or observer, an airship compass, a special type developed for the Marchese de Pinedo, one of the type used by Sir Alan Cobham, compasses for light aeroplanes, air sextants, windgauge bearing-plates, navigating bomb-sights, chart holders and height computers. There are also numerous other instruments for allied purposes, such as the Schilovsky-Cooke turn-indicator.

Mr. Hughes is very definitely of the opinion that no compass is really safe unless it has an aperiodicity of 70%, and in developing compasses for the light aeroplane this point is always borne in mind.

The latest compass for the private owner and amateur pilot is a very neat device known as the 7/29. The scale is vertical and clearly visible a yard or more away. The card is horizontal but is read by means of a periscopic device or magnifying prism which only shows the portion of the card which is adjacent to the actual bearing. The instrument may be illuminated either by daylight or electrically.

Perhaps the most interesting exhibit on the stand is the Holmes Master Compass. As shown this compass is arranged for use at sea and is designed to operate a number of distant compass cards from the one master compass. The interest lies in the fact that next year Henry Hughes and Son will produce a course indicator working on the same principle for use in light aircraft and also a similar device for large aircraft.

In the first place the pilot sets the compass to a definite bearing and then concentrates on the indicator dial which consists of a pointer placed in the centre of a quadrant. Should the pilot deviate from the course the pointer will swing from the central position an amount approximately proportioned to the deviation from the course.

The same applies to the arrangement for large aircraft. In the latter case however the navigator has the compass from which he can obtain actual bearings which saves him from having to memorise a bearing, his concern will be only to keep the indicator needle central.

The electrical mechanism is particularly robust. There are no brushes, the system working by resistance variations in two circuits inside the compass-bowl.

HUGHES JOHNSON STAMPINGS LTD., Mill Lane, Langley Green, Birmingham. Stand No. 199.

This firm are showing a number of drop-forged castings in magnesium and aluminium alloys. The most interesting of these is a drop-forged airscrew-blade in duralumin.

The blades are forged separately, the original dies being sunk from steel blocks weighing about two tons, and measuring 66 inches by 24 inches.

The blocks are shaped and planed for the removal of the outer rough forged surface, and the production on the face of the block of the contour of the blade. Next follows the die-sinking process. The roughly forged piece of duralumin is then placed in the drop hammer between the dies, after being heated to forging temperature.

Also on this stand can be seen a number of valves made of "cobalterom" steel, to DTD6 specification, for aircraft engines.

A number of duralumin castings used to support the cross-section spars in the frame girders of H.M. Airship R.101, are also included in the exhibit.

THE HOYT METAL CO. OF GREAT BRITAIN, LTD., Deodar Road, Putney, S.W.15. Stand No. 68.

When one thinks of bearings, one thinks of Hoyt. This company's stand shows samples of their famous *Number Eleven* grade of antifriction metal for aircraft engine bearings, together with connecting rods of famous makes fitted with this metal. There is a D.H. Gipsy engine on the stand as the latest engine to use this metal.

There is a historic collection of war-time engine parts using Number Eleven, contrasted with modern connecting rods, such as those from the Armstrong-Siddeley Jaguar, the De Havilland Gipsy, the Cirrus, and the Cirrus Hermes.

Round the walls are photos of famous types of engines using this metal, these including all the well-known British makes, and abroad the metal is used by Isotta-Fraschini in Italy, by Argus in Germany, by Hispano-Suiza, Lorraine and Salmson in France.

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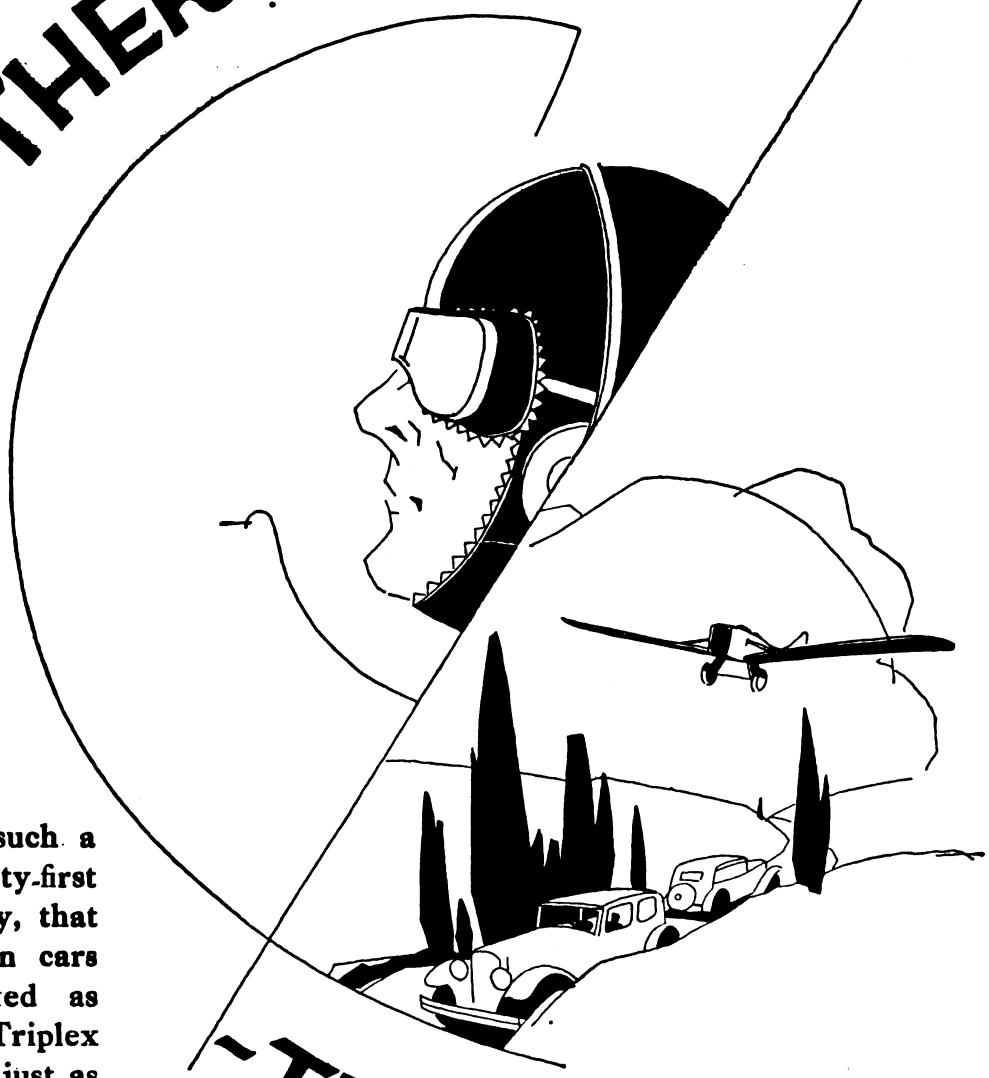
WHERE THERE'S TRIPLEX—



—THERE'S SAFETY!

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Fit "TripleX" Regd. —and be safe!

Regd. Trade Mark.

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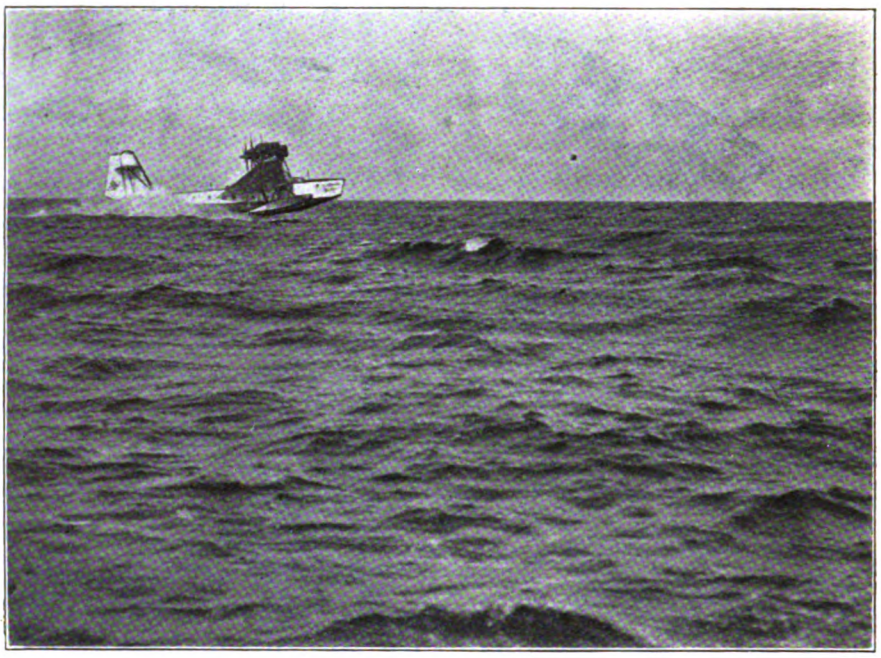

SEAWORTHINESS TEST OF "ROHRBACH-ROMAR."

SEAWORTHINESS !

Seaworthiness will always be one of the most difficult conditions to be met by flying-boat constructors.

For quite a couple of years the Aircraft Industry has been unable to guarantee their Customers any reasonable figures of seaworthiness for flying-boats.

The Rohrbach Metall-Flugzeugbau G.m.b.H. was the first firm, ever since the construction of flying-boats was started by the industry all over the world, to guarantee, for the three "Rohrbach-Romar" ships then under construction seaworthiness in a sea up to force 5 (Beaufort).

On December 12th and 13th, 1928, the "Rohrbach-Romar" underwent her seaworthiness trials, under supervision and to the entire satisfaction of the "Deutsche Versuchsanstalt für Luftfahrt and Deutsche Lufthansa A.G.," who satisfied themselves of the excellent manœuvrability of the ship in rough waves.

ROHRBACH METALL-FLUGZEUGBAU, G.m.b.H.,
BERLIN, N. 65.

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AIRCRAFT COMPANY, LTD.,

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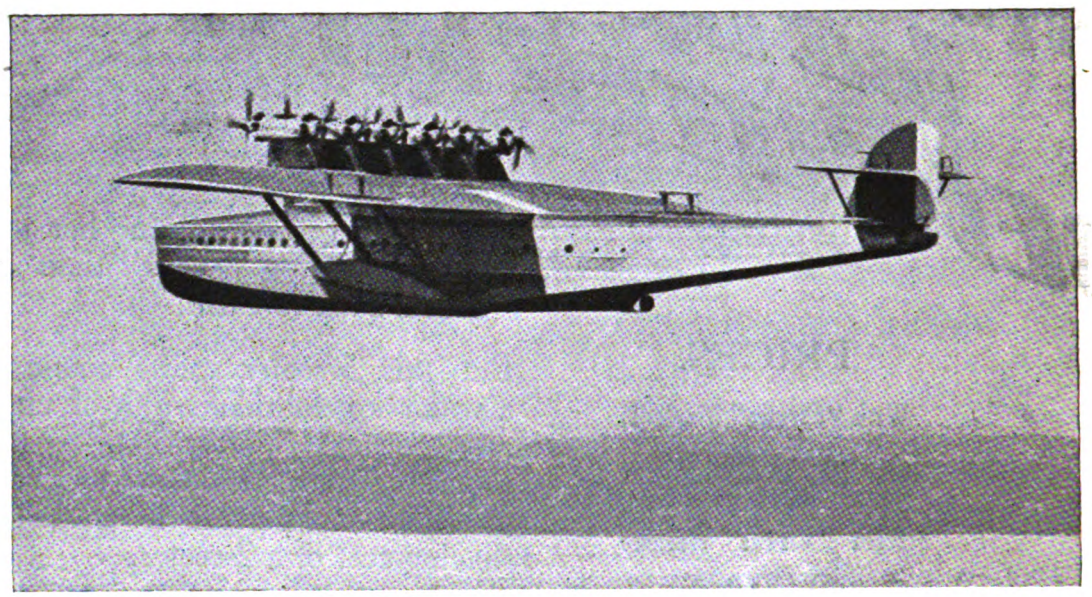
THE WORLD'S LARGEST FLYING SHIP

(The Dornier Wal Do. X)



HAS 12 SIEMENS JUPITER ENGINES LUBRICATED WITH

WAKEFIELD

CASTROL

MOTOR OIL

The first direct Atlantic Flight was accomplished on Castrol—the All-British Oil which has been the chosen oil in most of the world's great flights.

C. C. Wakefield & Co., Ltd. (All-British Firm), Wakefield House, Cheapside, London, E.C.2.

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To find a British product of this kind in such widespread demand over the world is a great consolation to our national pride.

HUMFREY-SANDBERG (SALES), LTD., Transport House, Smith Square, S.W.1. Stand No. 197.

The outstanding feature of this stand is the Humfrey-Sandberg Unidirectional Clutch, a working model of which is demonstrated.

This apparatus is the modern counterpart of the old ratchet and pawl mechanism, and performs the same function without the backlash or shock associated with the older method.

The clutch is silent in operation, and is totally enclosed, and thus is unaffected by corrosive or abrasive atmospheres. It is also extremely light and compact, and at the same time has a high torque-carrying capacity.

Invented in 1924 by Mr. J. C. W. Humfrey, this gear has been extensively used as a free-wheel drive for motor-cars, as a simple friction clutch, and for many other purposes. The gear consists of a roller bearing, with the rollers set at an angle instead of lying parallel to the axis of the shaft. The rollers are held in position by a cage, which is free to rotate, without any load.

Pressure applied axially from left to right causes the rollers to rise and jam, thus locking the gear. Rotation in a reverse direction releases the rollers, which then act as an ordinary roller bearing.

The apparatus can be used as a ratchet reducing gear, with ratios varying from 10 to 1, 600 to 1, and even infinity to 1.

It suffers very little wear and tear, and what there is, is self-compensating.

As a slipping clutch for unidirectional torque, it lends itself to exceptionally delicate control. It also provides an automatic differential coupling clutch, which can be operated at any desired speed.

H. M. HOBSON LTD., Acton. Stand No. 17.

Claudel-Hobson carburetters as used on sundry aircraft engines are shown on this stand. They have been used since the early days of aviation, and little has been radically changed in the more recent designs.

The Telegage, shown on this stand, a new form of fuel contents gauge, is made in this country under licence from American patentees.

J. J. HABERSON AND SONS LTD., Rotherham. Stand No. 38.

This firm exhibits steel strip of various specifications which they have turned to producing for the aircraft trade. Samples of the strips are on the stand and are numbered so that those interested may see the specification by referring to the index which can be obtained on the stand.

IMPERIAL AIRWAYS LTD. Stand No. 43.

Imperial Airways was unfortunate in its choice of location under the arch connecting the Main and New Halls and it was also unfortunate in its choice of exhibits.

The backside of the stand was intended to illustrate a section of the cabin of an Argosy, the back wall representing one side of the cabin with seats, windows and cuspidors. According to Imperial Airways publicity the public were invited to test for themselves the "comfort" (?) of the cabin.

Through the windows was shown a moving panorama of the England—Egypt—India air route. On several occasions one glanced through the cabin, without going through the contortions of introducing one's medium length legs between the cramped seats of the mock cabin, but the illusion of actual flight was sadly lacking and the scenes behind represented successively a waterspout in mid-Channel, a view of the Blackpool amusement park and a retrospective impression of Wembley.

The cabin was nearly always dirty, the tin receptacles invariably out of place and on one day the foreground leading to the cabin was one vast pool of water. If anything was likely to choke people off air travel it was an attempt to screw themselves into these singularly uncomfortable chairs.

On the front of the stand were various maps, diagrams and charts illustrating the European air connections, the growth of the number of passengers and the amount of freight carried over these routes, etc.

One ingenious map showed the positions of the various cities in Europe indicated by a circle on an otherwise blank sheet of glass. In the margins of the map were the names of roughly 100 cities each with an individual push button. By depressing a button a line of light flashed up on the map showing the air connection between London and the city whose button was pushed. Simultaneously an illuminated sign gave the times of departure and arrival, the single and return fares, the rates for excess baggage and other useful information.

Besides this an inquiry office and booking bureau formed part of the stand and selections of postcards, photographs, jig-saw puzzles and cardboard models were on sale.

For any people who cared to linger on the stand a few of Imperial Airways' standard type of uncomfortable aircraft seats were sprinkled about.

On the whole the exhibit was so poor that Brig.-Gen. Groves would have been fully justified in using it as an exhibition of the poverty of British Civil Aviation. But happily those who know how the practical side of Imperial Airways is run will realise that it is merely another example of our salesmanship being unworthy of our workmen.

INDUSTRIAL RUBBER MANUFACTURERS, LTD., 191-2, Tottenham Court Road, London W.1. Stand No. 81.

This firm supply manufactured rubber components of all kinds to the aircraft industry, and on their stand are samples of their big range of products. Petrol-resisting rubber tubing, water joints, petrol-resisting rubber sheeting, sponge rubber in all shapes and types, rubber matting, hoses of all kinds, Pitot tubing, Turner rings, Ferrolatex wheels and mallets.

The Turner ring is a braided rubber shock-absorber used in many different ways, though the common feature to all the systems is that the ring is in tension.

GEORGE JOHNSTON LTD., 173-7, Shaftesbury Avenue, London, W.C.2. Stand No. 35.

George Johnston are one of the largest accessory and internal fitting suppliers in the motor-car trade and are now, with the coming popularity of cabin machines, turning their attention to aircraft.

Large panels around their stand show a wide selection of fittings, such as ash-holders, lamps, and so forth, and also samples of various upholstery materials.

Duratex leather cloth is one of these materials and, as tests have shown it to be impervious to the action of sea-water, it is peculiarly suitable for flying-boats.

The Indian State Railways are among those who have found this material the best for their purpose.

Various forms of window-guttering, and frames for sliding windows are shown.

A neat form of air exhauster for cabin ventilation is the Ashanco, aluminium model.

George Johnston are already supplying many aircraft firms with their goods and are making a special point of catering for their especial needs. The whole exhibit is singularly interesting and attractive.

K.L.G. SPARKING PLUGS LTD., Robinhood Engineering Works, Putney Vale, E.W.15. Stand No. 157.

An assorted array of the plugs which we are told to fit and forget are to be seen on this stand. A representative selection to suit practically every known make of engine is displayed in a variety of sizes and shapes from the elongated Gipsy type to the short and fat specimen fitted to the Napier Racing Engine.

A vast amount of experimental work is being done by this firm in the production of plugs for high-speed flying.

KELVIN, BOTTOMLEY AND BAIRD, LTD., Imperial House, 11-15, Air Street, W.1. Stand No. 154.

Kelvin, Bottomley and Baird, Ltd., are well-known scientific instrument makers, who made the first compensated compass to be fitted to an aeroplane. Their stand shows a historic range of compasses from the first compass mounted in fibre in a wooden box used by S. F. Cody in 1909, to the compasses used by John Alcock and Arthur Whitten Brown for the first Atlantic flight. The compass used by the R.34 is also on the stand.

The modern range of compasses made by the firm are shown on the stand, including the P.4, which is a quick dead-beat compass.

The company are also showing a range of instrument panels made by the Pioneer Instrument Company, and widely used in America.

A peculiarly interesting feature of the stand is the Behm Echo Altimeter, which has been recently used on the *Graf Zeppelin*. The principle of the instrument is the measurement of the interval of time that elapses between the making of a sound (by gun-fire) and the return of the echo.

A demonstration model is fitted up in the stand, and works quite satisfactorily over the very short distance available.

The main parts of the apparatus are a gun for producing the sound, a microphone for picking up the echo, and a glass scale over which a spot of light swings. On firing the gun, the spot of light moves upwards, and the echo is arranged to make the spot deviate from its straight path. The distance from the start of the spot's path to the deviation is read directly off on the scale, and gives the height. Microphones may be used to pick up the echo, and by their use a skilled observer can discover the type of territory over which the craft is passing in foggy weather, or in cases of bad visibility.

Another neat instrument on the stand is the K.B.B. Vibro-

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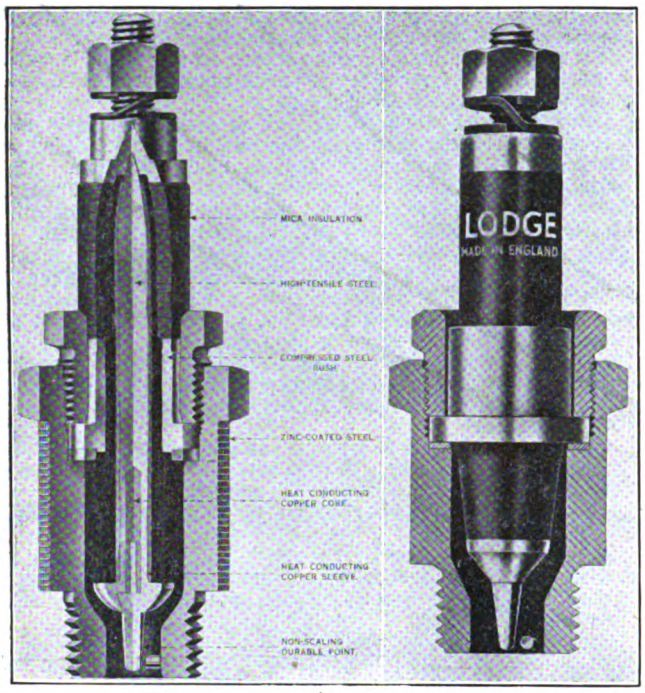

How The Lodge Works.

meter, which provides a ready means for the detection and investigation of vibrations, especially in connection with running machinery. The instrument indicates the definite amount of vibration and its direction. The design is based on the timed vibrating reed principle, and the complete instrument weighs 2lb.

LEATHERCRAFT OF MALVERN (J. H. Stephens, Ltd.), 42, Berkeley Street, W.1. Stand No. 188.

Further examples of flying clothing are exhibited on this stand in various styles and patterns, for both sexes. "Camstex," a pure camel-hair pile, is a material shown for golfing jackets, and similar uses. Also numerous leather and suede garments for adults and children are displayed.

LODGE PLUGS LTD., Rugby. Stand No. 18.

Lodge sparking plugs are displayed in attractive glass-cases surrounded by luxurious tapestry curtains and furnitures.

A very comprehensive range of plugs is shown and every type of engine is catered for. They are widely used, and, among others, are standardised on Rolls-Royce engines.

In the newest form special care has been taken to ensure adequate cooling of the central electrode. This is arranged by having a copper sleeve on the outside of the electrode and next to the mica insulation, and also the sparking-point of the electrode is separate and is forced into it with a piece of pure copper at its upper end.

A large transparency of a sectioned plug illustrates these and other points better than a description can do.

Lodge plugs are widely used abroad on the Continent and in the Southern Hemisphere.

G. AND M. LANE AND CO., 26, Ludgate Hill, E.C.4. Stand No. 164.

Designed specially to meet the needs of the Aircraft Industry, Lane's aircraft watches are a scientific development of chronography.

The watches are non-magnetic, and are dirt and shock-proof. Made with 15 or 17-jewelled movements, they are obtainable in both pocket and wrist models, with 12 or 24-hour figuring, and in larger sizes for mounting on the dash-board.

A number of these have been supplied to Imperial Airways, and the Flying Clubs.

C. LINDLEY AND CO. LTD., 34, Englefield Road, N.1. Stand No. 133.

Here are shown a selection of A.G.S. parts, including duralumin bolts and other fittings for airships.

Stainless and Nickel-chrome steels, cables, shackles, petrol and oil-filters, streamlined wires, and swaged rods, make up the exhibit.

THE LONDON ELECTRIC FIRM, Brighton Road, South Croydon, Surrey. Stand No. 116.

Examples of aerodrome lighting equipment are exhibited by this firm, and include boundary lights, Aldis signalling lamps, money flares, and beacons. Among the latter is a 24-inch rotating beacon with a silvered glass mirror for air-way work. Two 1,000-watt lamps, with automatic changing mechanism, form the illuminant. The lantern rotates at about 6 r.p.m., and is operated by electric gear.

Contact suspension gears and winches for raising or lowering aerodrome lights are also shown.

There is also a photograph of what is claimed to be the largest searchlight in the world, which was designed and made by the firm for a Continental Power for frontier defence. This searchlight is nearly 7 feet in diameter, with a candle-power of approximately 3,500,000. This light was recently described in THE AEROPLANE.

THE LIGHT PRODUCTION CO. LTD., 60/66, Rochester Row, S.W.1. Stand No. 149.

The two outstanding features of this exhibit are the company's Cygnet piston and scraper rings, and the Aerolite Mark IV compensating piston.

The former are made of centrifugally cast iron to 4K6 specification, in the form of hollow cylinders.

The rings are hammered (by a special patent process) and then surface ground on both sides, after which they are externally ground with the joint closed. The outside is then finish-ground to a tolerance of plus or minus a half-thousandth of an inch.

The Aerolite Mk. IV Compensating Piston is an interesting development. The skirt of the piston is divided into four grooves, making two thrust faces, and two gudgeon faces. The gudgeon pin faces are machined to a greater clearance than the thrust faces, which are insulated away from the main piston body.

The heat from the combustion chamber causes a greater expansion of the gudgeon pin plane, and the thrust faces being in close contact with the water jacketed cylinder wall maintain a lower temperature than the rest of the skirt.

This produces a slight change of shape, which increases the clearance of the thrust faces, and reduces that of the gudgeon pin faces.

The final result is a constant clearance of the thrust faces of the cold piston throughout all ranges of temperature working conditions.

This piston was primarily designed for motor-car engines, but it can be utilised for aero-engines equally well.

MARCONI'S WIRELESS TELEGRAPH CO. LTD., Marconi House, Strand, W.C.2. Stand No. 29.

Every type of wireless gear suitable for use in aircraft or at aerodromes is to be found on the Marconi Stand.

Transmitting sets of from 75 watts to 500 watts for telegraph or telephony, for commercial or Service use, are exhibited.

Direction-finding equipment is shown of various types for use with a radiogoniometer or an automatic visual signal whereby the pilot is warned whether he is on his course or to port or starboard of it.

The actual set installed in Mr. Frank Courtney's Dornier Wal," which probably saved his life, is shown. And in

"Sparks."

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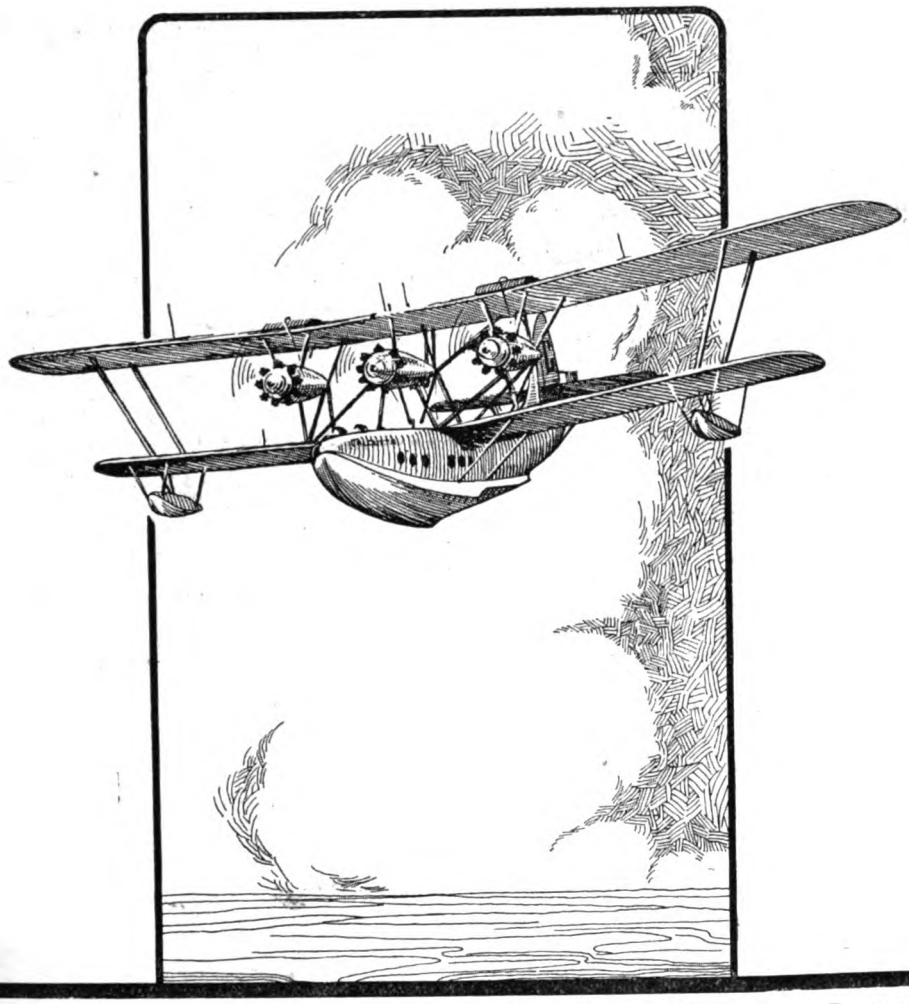
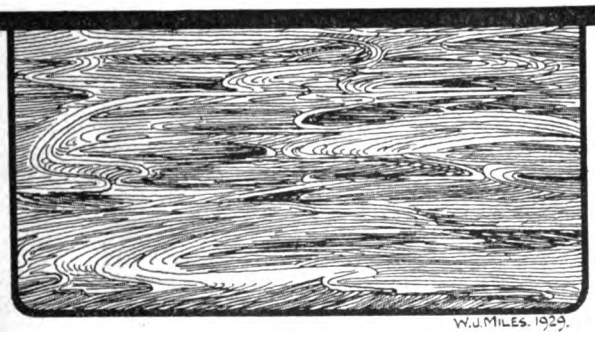
"Bristol"



THE BRISTOL JUPITER IS USED OVER 4,000 MILES ON THE AIR ROUTE TO INDIA. THE JUPITER AIRCOOLED AERO ENGINE IS DESIGNED AND MANUFACTURED BY

THE BRISTOL AEROPLANE Co. LTD.
FILTON - BRISTOL.



Telegrams—"AVIATION, BRISTOL."

Telephone—3906 BRISTOL.

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contrast to it is the new A.D.22 light aeroplane set which is suitable for the private owner to have installed in his own machine.

An equally comprehensive range of ground equipment is to be seen and in this case no effort need be made to save weight, consequently all ground apparatus looks much more bulky.

A particularly interesting exhibit is the Beacon Transmitter, which is in effect a Radio Lighthouse. It operates at about 1,000 metres wave-length and is provided with an automatic code-sender which enables a predetermined code of Interrupted Continuous Wave Signals of any frequency between 800-1,200 cycles per second to be transmitted either at definite intervals or continuously during foggy weather.

The complete apparatus is in working order and by means of a buzzer the signal transmitter can be heard. Every essential part of the whole is duplicated, and automatic signals warn the operator, should, say, a valve burn out.

It is now widely used around our coast for directing ships and will now be used for aircraft; the aircraft itself using one of the forms of direction-finding apparatus previously mentioned to keep course on the "Beacon."

A useful extra which might pay for its keep, in, say, flying-flying-boats, or similar aircraft, or more certainly on aerodromes, is a 1 h.p. portable generating set. This dual-purpose generator has a small two-stroke motor in which Electron has been used where possible, thus greatly reducing its weight.

All generators for use on aircraft are fitted with the Marconi-Newton Constant-speed Windmill, which automatically keeps the speed of the generator constant.

The Aerial Winch is also interesting, it is very light, and the speed of "let out" is automatically kept at 2 feet per second.

Models of aircraft show the various forms of aerial equipment used.

F. J. MEE, 137a, Greenwich Road, S.E.10. Stand No. 185.

One of the brightest attractions at the exhibition, particularly among the small boys, to say nothing of the big ones, was the frequent demonstrations of model aeroplanes from this stand. The performance of some of these aircraft was remarkable, and would have caused quite a sensation at Martlesham Heath.

A large selection of models was displayed, some of them winners in sundry competitions, including the Sir Charles Wakefield International Cup. Incidentally this is an excellent form of propaganda for air-mindedness among the young.

DAVID MOSELEY AND SONS LTD., Chapel Field Works, Ardwick, Manchester. Stand No. 117.

Shock-absorbers for pilots and passengers are a feature of this exhibit. These take the form of various kinds of air-cushion seats of the "Float-on-Air" type. This is a patent pneumatic tubular system of construction with a low air pressure.

"Float-on-Air" cushions are being provided for the passengers and crew of the Blackburn Nile flying-boat. Other features include inner tubes for aeroplane wheels, petrol piping, and a pneumatic bed.

THE MONO-SPAR CO. LTD., 4, Broad Street Place, London, E.C.2. Stand No. 121.

One of the most significant exhibits to be seen at Olympia is the wing on the stand of the Mono-Spar Co. Ltd.

The test section shown represents about one-third of an existing metal-covered full cantilever wing. The test piece weighed complete 265 lbs., and the equivalent section of the wing which was reproduced weighed 610 lbs., thus showing a saving on this part of the wing alone of 345 lbs. On a machine such as the Beardmore Inflexible it is estimated that the Mono-Spar wing system, if used, would give a total saving of approximately 5,000 lbs. It will thus be seen that the Stieger Mono-Spar wing reduces the structure weight in an unmistakable manner. In fact, it is claimed that it brings the aerodynamically clean cantilever monoplane structure actually below that of the corresponding biplane structure. There are fewer main structural members, the secondary structure, i.e., ribs, etc., are supported at three points instead of two, and can, therefore, be lightened and, finally, when the structure has to carry engines or other fitments, there are always three points of concentrated load which can be employed.

The structure and method of bracing as illustrated at Olympia can be adapted to fuselage structure, and the Mono-Spar Company taking a hint from the Motor Industry have already produced designs for a standard "chassis" of 200 h.p. to which a number of different type bodies may be fitted. This chassis would be a low-wing monoplane wing of typical mono-spar construction built into a fuselage fashioned in the same way.

One of the features of the wing at Olympia is the fact that the top flange of the spar is considerably stronger than the bottom one. This is one of the places where weight-saving has been introduced. This saving is made possible by the fact that the upper flange has to take the heavier compression loads.

A criticism of the system is that it places a heavy responsibility on the wire bracing. But tests with various wires cut have shown that the spar can be made strong enough to resist loads imposed by such means. A failure of a wire only affects one bay and not the entire system.

The wing at Olympia is not the final type of construction to be used for this system, it is merely shown to exemplify the system of bracing one spar against torsion and other loads.

METAL PROPELLERS LTD. Stand No. 9.

Metal Propellers are showing as their chief exhibit the hollow steel airscrew which they manufacture under Leitner-Watts patents.

These range from small airscrews of 6 ft. 6 ins. in diameter for light aircraft engines up to those 16 ft. in diameter for Heavy Oil aircraft engines.

They are made up from steel sheet. The blades are laminated internally and welded along the leading and trailing edges. Each blade is carried on a collared sleeve at its inner end and this collar fits into a special steel hub. It is free to rotate unless locked; and this provides a means of adjusting or varying the pitch of the blades.

Various hubs are shown for all sizes of engine, but in each case the design is approximately the same.

The blades are finished either by cadmium plating or else by coating with a cellulose lacquer. Both forms are shown.

The weight of this type of airscrew has proved very satisfactory. For the small sizes the makers claim that they come out about three-quarters the weight of the solid duralumin type, and for the large sizes the weight is said to be considerably less than the duralumin and almost the same as the wooden type.

The firm also make various aircraft parts in high tensile steel strip and a specimen length of a wing spar and some interplane struts are shown.

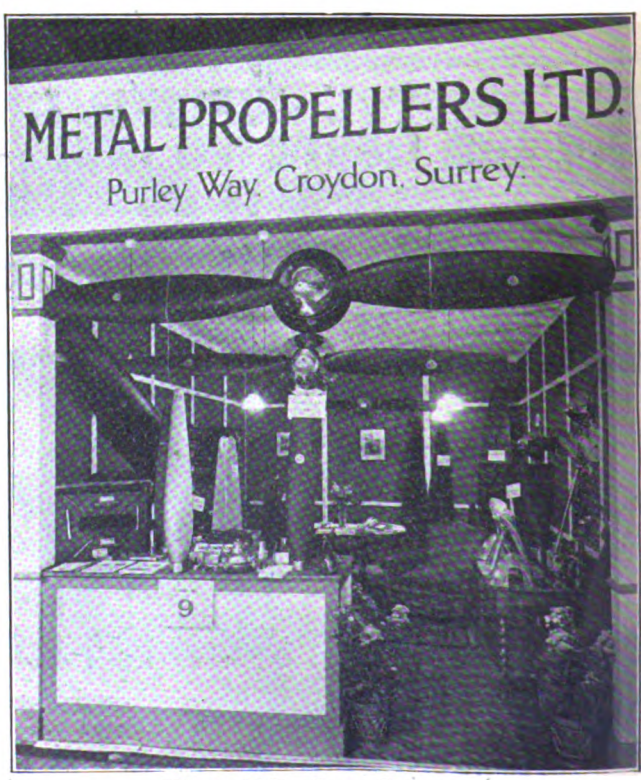
Pressings of all kinds, such as aileron ribs, aluminium spinners, etc., are also shown as some of their products.

Large numbers of their airscrews have been supplied to the Air Ministry and amongst many other uses they were used on the Southampton flying-boats during the Far East Flight. Mr. Harold Balfour, M.P., is the business manager.

FREDK. MOUNTFORD (BIRMINGHAM) LTD., Fremo Works, Moseley Street, Birmingham. Stand No. 135.

A wide range of A.G.S. parts are on view on this stand, including Fremo taper pins, both solid and split, in stainless steel, duralumin, silver steel, and copper, and to A.G.S. 167 and 213 specification. Also a number of washers in aluminium, copper, and stainless steel, brass holding-down bolts, split cotters, pins, and turn-buckles taking stresses of from 5 to 30 cwt. are shown.

Ratchet braces, die stocks, and machine vices are also included in the exhibit.



Where M.P.s Come From.

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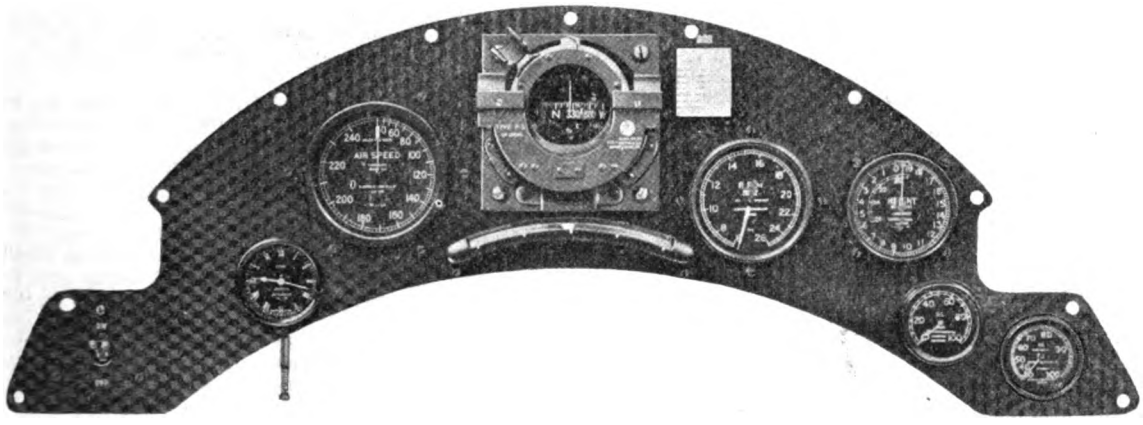
Instrument Panel



The latest Instrument Panel, which includes a full range of Dashboard Instruments, Ignition Switch and Aperiodic Compass.

All Instruments and the Aperiodic Compass are radiumised for night flying.

AS FITTED TO THE BLACKBURN "LINCOCK."

S. SMITH & SONS (M.A.) LTD.,

Aviation Instrument Specialists,

SOLE EXPORT DISTRIBUTORS FOR K.L.G. SPARKING PLUGS.

CRICKLEWOOD WORKS, LONDON, N.W.2.

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MARABINI AVIATION, 9, Avenue de Suffren, Paris. Stand No. 127.

A great variety of aircraft materials are displayed on this stand. It includes samples of plywood, steel tension wires, aeroplane wheels and tyres, bolts, nuts, and screws, as well as a number of instruments. Apart from these, M. Marabini is ready to supply anything and everything for aviation, from the complete equipment of a whole Air Line, down to a pair of goggles for a would-be aviator.

Among the exhibits is a novel and ingenious compass known as the Vion type. This compass was used by M. Lefevre and his companions (including the stowaway) in their recent trans-North Atlantic flight. The actual model was on the stand. The compass is constructed in the form of a cylindrical bowl, hermetically sealed, and filled with a non-freezing liquid, in which floats the "rose." The reading is reflected in a prism at the back of the compass.

A striking feature of this compass is the compensator for semi-circular deviation, consisting of four pairs of thumb-screws, one for each of the cardinal points. Each of these pairs carries an equal number of small magnets, and all exactly similar. The compensator can be so adjusted in respect to the position of these magnets that any desired intermediary strength may be exerted on the compass.

Another compensation for quadrant deviations is mounted in the case, and consists of two plates, which can be rotated in reverse directions, but through the same angle, by means of an aluminium knob. A second knob locks the plates in any desired position.

Another interesting exhibit is the gyro-clinometer. A circular dial marked in degrees is mounted on a base. Above the dial is a light which shines on the centre of the dial when the aircraft is in normal flight. Any deviation from the correct course causes, by gyroscopic action, the beam to travel up or down, left or right, as the case may be. The amount of deviation can thus be read, and checked accordingly.

Yet another feature of this exhibit is a combined air-speed indicator, inclinometer, and turn indicator, which can be mounted on any dashboard.

The agency for Great Britain of this company is in the hands of Flight Lieut. L. J. Riordan, A.F.C., F.R.Met.S., of Takeley, Essex, who has recently resigned from the R.A.F. on account of ill-health.

E. B. MEYROWITZ, LTD., 1a, Old Bond Street, 199, Regent Street, W.1. Stand No. 66.

E. B. Meyrowitz, Ltd., a firm of American origin, are the patentees and manufacturers of the Meyrowitz Luxor goggle, which has been designed in co-operation with well-known pilots.

They were adopted by the Royal Air Force for pilots of the High-Speed Flying Section, and were actually used by the British competitors. They have been adopted again this year by the Schneider Team, now training at Calshot. They are also used by the pilots of the Fairey Long-Range Monoplane, which flew from Cranwell to Karachi.

Two types of Luxor goggle were shown on the stand. No. 4 employs non-shatterable lenses with Triplex glass, which may be either white or tinted. For an extra of 30s. these lenses may be ground to suit any prescription, which solves the problem of those who wear glasses and want to wear goggles as well.

No. 6 is a different type of glass, with bent lenses, and is more expensive.

These are fitted with Acetex non-shatterable glass, and can also have these safety lenses ground to any prescription, the glass being white or tinted.

The making of the lenses is a tedious business, each lense taking fourteen hours of grinding, exclusive of the time taken to grind the edges for fitting in the frames, and there are 20 per cent. of breakages. All of which makes one wonder why the goggles are not more expensive.

NEGRETTI AND ZAMBRA, 38, Holborn Viaduct, E.C.1. Stand No. 195.

This well-known firm of meteorological instrument manufacturers are here showing a number of aircraft instruments, including oil pressure gauges of the transmitting type (which eliminate loss of oil through a broken connecting pipe), oil and air temperature thermometers, and a pressure gauge for airships.

Boost gauges, indicating absolute pressure in the induction pipe of an engine, and giving a range of from —6 to +8 lbs. per sq. in., are also shown.

This instrument consists of an exhausted diaphragm mounted in an air-tight case, and working on a gear. On connecting the air-tight case to the induction pipe absolute pressure is indicated on the dial. The weight of the instrument is 1 lb. 9 ozs.

Other exhibits include barographs for survey work, and other instruments.

THE NATIONAL BENZOLE CO. LTD., Wellington House, Buckingham Gate, S.W.1. Stand No. 6.

The National Benzole Co. are showing various forms of pumps for handling their products, the chief of which is their National Benzole Mixture.

They were the pioneers in introducing Benzole mixture in this country and have adhered to their original purpose of keeping it an all-British product.

They are also marketing a lubricating oil, as are most other motor-spirit distributors. This oil is a medium-priced high-grade oil which is guaranteed to pass all tests for ordinary lubricating oils.

Benzole mixtures are widely used for aviation engines as they prevent knocking.

The National Benzole Co. have an aviation department and are making arrangements for supplies to be available at most principal aerodromes.

NATIONAL FLYING SERVICES, LTD., Grand Buildings, Trafalgar Square, W.C.2. Stand No. 75.

The stand of National Flying Services was in use chiefly as an information bureau and as a booking office. Pupils for the London centre at Hanworth and the various provincial schools could sign on for anything from an hour's trial lesson to a complete course for an A or B licence.

A number of people booked trial lessons for two guineas, and some of these people have, as the result, decided to take further lessons.

Those who booked a trial lesson were taken to Hanworth Park aerodrome which is to be the London aerodrome of the company. With one of the instructors they were then given "dual" in a Simmonds Spartan (Cirrus III) and were, if complete novices, just allowed to feel the controls, or if old pilots who were completely out of practice, were allowed to handle the controls and get back their "feel."

At present the landing area of Hanworth is small and is surrounded by tall trees. In the fall these are to be cut down but at the present season, when the sap is still rising, this is impossible.

The club-house is an old mansion standing among trees in the middle of the aerodrome and when it is complete there will be ample landing space in any direction of the wind all round.

Members of N.F.S. will be able to hire aircraft at the rate of about £1 1s. per hour. The instructional machines will be Spartans (Cirrus engines), single-seat hire machines will be A.B.C. Robins (Scorpion engines), two-seat hire machines will be Blackburn Bluebirds (Cirrus engines), and air taxis will be Desoutter three-seat cabin monoplanes (Cirrus Hermes engines).

The uniforms of the N.F.S. pilots caused considerable comment at the Show. Opinions were sharply divided as to whether uniforms are desirable, or dignified, and as to whether these particular uniforms are becoming or suitable for their job.

NORTH AND SONS LTD., Whippendell Road, Watford, Herts. Stand No. 82.

North and Sons Ltd. originally made high-grade watches, and in the early days of the automobile industry began the manufacture of speed indicators.

Within a few days of the outbreak of the war 1914-18 the work of designing a magneto was begun, and the magneto produced was so successful that the whole output was commandeered for use by the Royal Naval Air Service. In order to keep pace with the increasing demands of the Admiralty, and subsequently the Air Ministry, the works were more than once considerably enlarged.

Large sums have been spent every year on experimental and development work to ensure that the Watford magneto may be more than equal to the increasing demands of the modern aero-engine both with regard to speed and endurance. The present works are equipped with the most modern plant for the manufacture of magnetos.

These types are shown on the stand, together with examples of a light alloy impulse starter and a flexible coupling of neat design.

The Watford Magneto is of the inductor type which gives four sparks per revolution. The body is a light alloy casting incorporating six sets of steel laminæ. Four of these are energised by four bar-type permanent magnets screwed to the block, and the remaining two are connected through the stationary armature fixed on top of the alloy casting. These latter two are energised through the rotating inductor from the remaining four laminæ and their attached bar magnets.

This arrangement means that it is possible to waterproof the winding and have a minimum of moving parts. These magnetos have been rotated at 8,000 revs. per minute, resulting in the production of 32,000 sparks in the same time quite satisfactorily during some tests. The bearing for the contact breaker is renewable and made of bronze. The plate on which the breaker is rocked for advancing and retarding the spark is of high-tensile steel.

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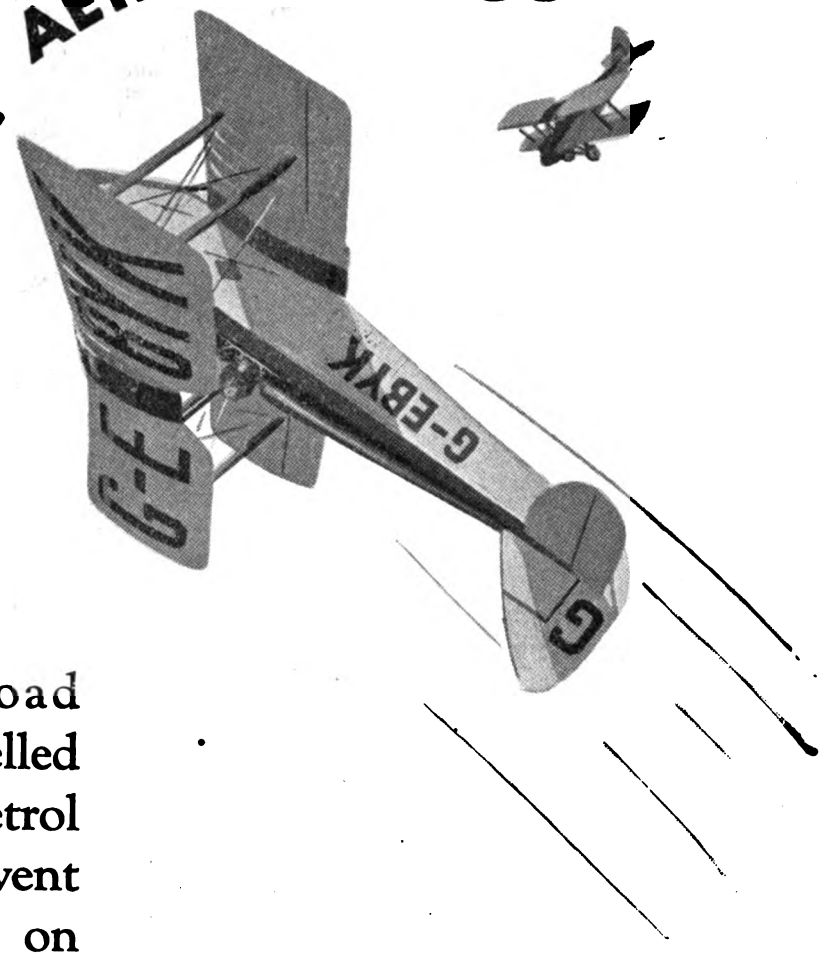
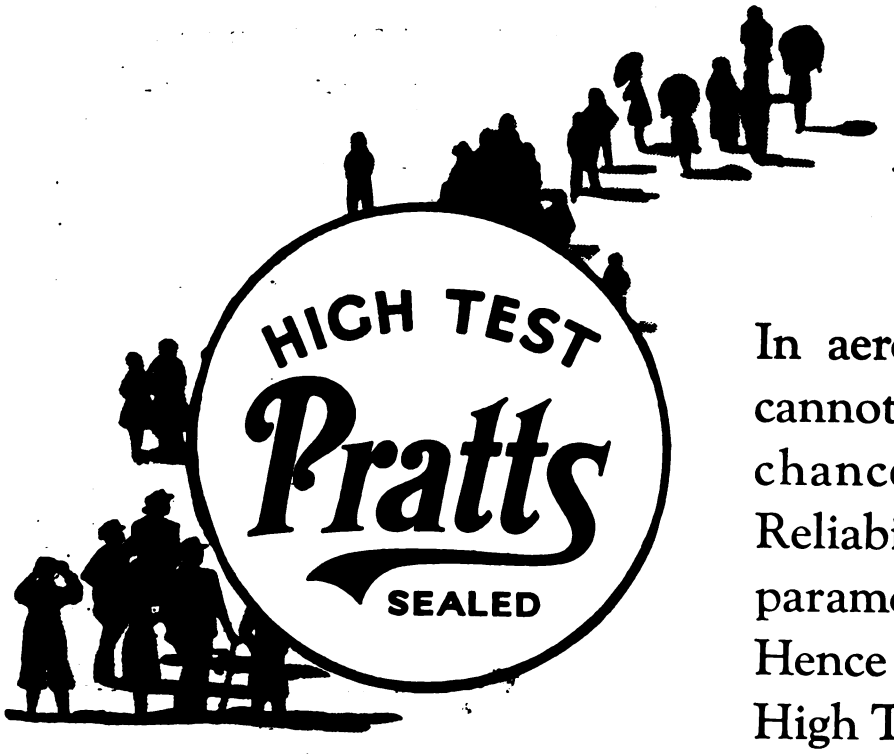
INTERNATIONAL AEROBATIC CONTEST



Captain Hubert Broad flying a Gipsy Moth fuelled with Pratts High Test Petrol won this sensational event at Heston Aerodrome on July 20.



In aerobatic work, pilots cannot afford to take chances with petrol. Reliability of fuel is of paramount importance. Hence the choice of Pratts High Test.

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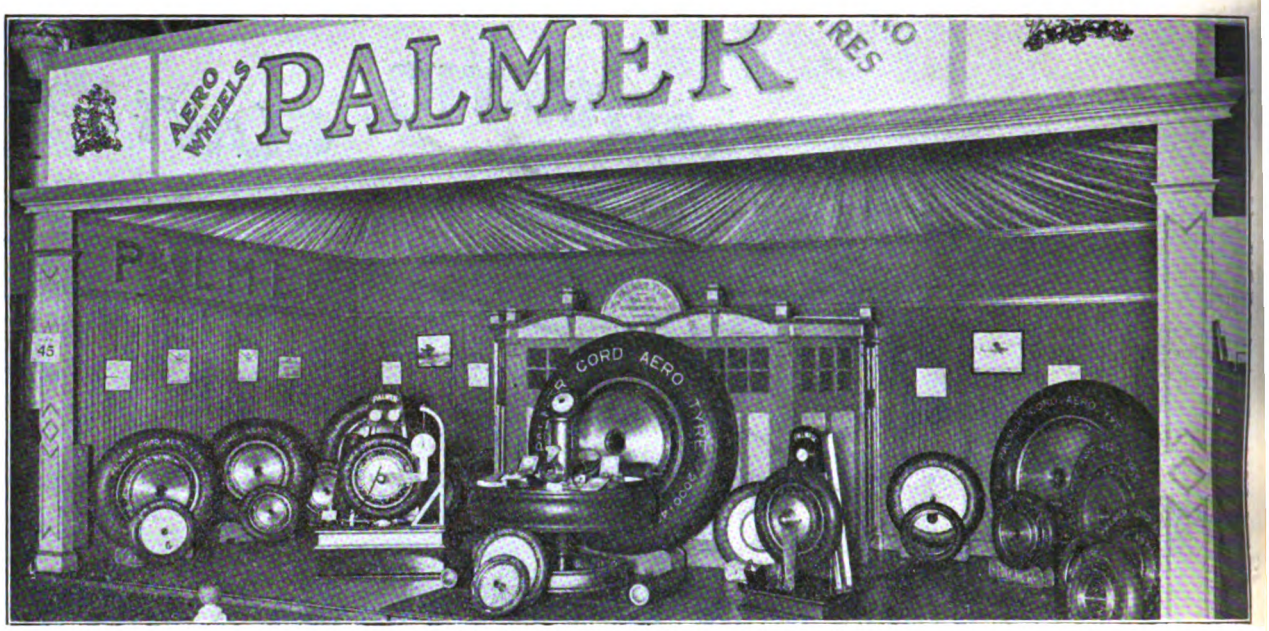

The Original Makers of Aircraft Tyres.

Watford magnetos of this type were fitted to the Napier Lion in the Supermarine S.5 at Venice in 1927.

The flexible coupling developed by the firm is very neat and does away with any end load. Essentially it consists of two gears, one of 18 and the other of 19 teeth, which fit a splined rubber brush contained inside a light alloy drum. This rubber bush also serves to absorb vibration.

NOBEL CHEMICAL FINISHES, LTD., Slough, Bucks. Stand No. 44.

Various panels round the stand of Nobel Chemical Finishes, Ltd., show the results to be obtained from the use of the various dopes, enamels, and paints made by the firm.

To illustrate the resistance of their acid-resisting enamels, a number of rods covered with enamels of this class, in varying colours, have been having a bath in accumulator acid since the opening of the Show. At the time of writing there were no signs of deterioration.

The firm produces both nitro-cellulose and cellulose acetate doping schemes for aircraft. They supply enamels for airscrews. They make a special grey-green enamel for cockpits. With the introduction of all-metal fuselage and wing structures, Belco and Necol enamels made by the firm are being increasingly used, an example being the Fairey Long-Range Monoplane.

The firm publish an attractive booklet called "Modern Spray Practice," which is a good handbook, giving a detailed account of the best way to produce satisfactory sprayed surfaces, and is very instructive. Copies may be had by applying to Nobel Chemical Finishes, Milbank, London, and mentioning THE AEROPLANE.

THE PALMER TYRE LTD., 100/106, Cannon Street, E.C.4. Stand No. 45.

The stand of the Palmer Tyre Ltd. shows a varied range of their well-known products, including a very large wheel with brake and tyre 2,000 × 450.

In the early days of aviation most aircraft were fitted with bicycle or small size motor-car wheels and tyres, and it was not until 1913 that the problem of aircraft wheels and tyres was tackled seriously by Palmer Tyre, Ltd. With the assistance of the Royal Aircraft Factory the research and experimental department of the Company designed and constructed an entirely new type of aeroplane wheel and tyre, together with the necessary plant for making them, and within six months the first pair of wheels were produced and submitted for official test. These wheels were so successful that a small contract was placed with the firm by the Government. In 1914, Palmer aero wheels and tyres were available in small sizes for the types of aircraft then in use. From this small beginning grew the comprehensive Palmer organisation which provided wheels for practically every aircraft produced in this country during 1914-18.

That these wheels and tyres were evolved on correct principles is demonstrated by the fact that, apart from several minor improvements that have been made from time to time, the present Palmer aero wheel and tyre is still fundamentally the same.

The Palmer brake consists of an inflatable tube which forces a number of shoes against the brake drum. On the stand is a demonstration exhibit showing the way the brak is operated. There is also a table laid out with all the com ponent parts so that one may see the care exercised i detail design.

THE PYRENE CO. LTD., 9, Grosvenor Gardens, London S.W.1. Stand No. 67

The Pyrene Company's stand shows the wide selection o equipment which has been developed to meet the fire-fight ing requirements of Aeroplanes, Airships and Aerodromes.

The latest improved model of the "Pyrene" Fire Extin guisher for aircraft use will project a powerful continuous jet of fire-fighting fluid in any required direction, and i will operate at any angle and with any side up. The specia fluid used remains effective indefinitely, it will not freeze and contains neither acid, alkali salts, nor moisture.

The "Phomene" fire extinguisher is of the foam type and is recommended as first-aid protection for hangar an petrol and oil stores fire risks. It is of two gallons capacity and generates about 16 gallons of foam. A "Phomene" fire-engine acts on the same principle as the hand extin guisher, but are of 10, 34, and even larger capacities.

A two-gallon "Conquest" soda-acid type fire extinguishe affords protection for all the more ordinary fire risks o aerodrome buildings.

Hose and general fire appliances are also shown fo dealing with large outbreaks.

PHYLAX FEUERLOSCH - AUTOMATEN - BAUGESSEL SCHAFT m.b.H., Fehrbellinerstrasse 47/48, Berlin, N.54 Germany. Stand No. 162

Portable and suspensory fire-extinguishers are here being demonstrated. Of special interest is the "Phylax" auto matic fire-extinguishers.

The apparatus consists of a metal cylinder containing th chemical fluid, from which syringe pipes are led to variou parts of the engine. A length of copper piping is als carried to the engine, and is fitted with percussion caps a the extremities. In the event of fire the percussion caps ex plode a cartridge, which releases a valve, thus causing th fluid to spray over the engine.

The apparatus can also be used as a hand extinguisher b disconnecting the fuse, and removing the cylinder from th bracket. By striking a knob the fluid is released through a nozzle.

The weight of the apparatus, without piping, is 3.050 kg.

POWERPLUS (1927) LTD., 329, High Holborn, London W.C.1. Stand No.

Powerplus (1927) Ltd. manufacture the Powerplus positiv displacement blower or supercharger for aircraft engines It consists essentially of a number of vanes driven by a roto in a casing whose centre is eccentric from that of the roto The makers claim that this blower will furnish enough ai for the requirements of the largest aero-engine in use at th present moment at a maximum pressure of approximatel two atmospheres.

The Powerplus blower compresses its air to discharge pres sure while still in the casing. It is fitted with a variabl port control, operated from the cockpit of an aeroplane

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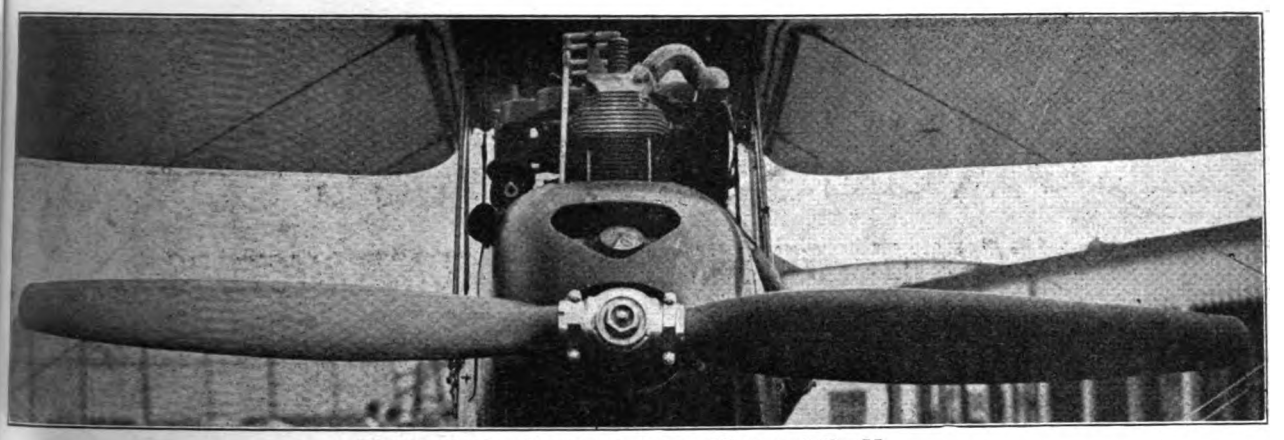

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AERO ENGINES

Specially designed for Light Aeroplanes. Type tested and approved by the British Air Ministry. Perfect balance, efficient cooling, economical running and interchangeability of units and parts between both engines are leading features.

"Scorpion II."

2-Cylinder Horizontally Opposed.

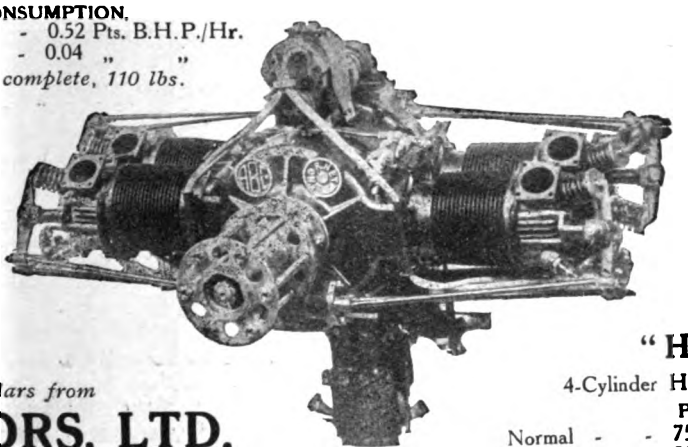
POWER

Normal - 35 B.H.P. at 2,300 R.P.M.
Maximum 40 „ „ 2,750 „

CONSUMPTION.

Petrol - - 0.52 Pts. B.H.P./Hr.
Oil - - - 0.04 „ „

Weight complete, 110 lbs.



"Hornet"

4-Cylinder Horizontally Opposed

POWER

Normal - - 75 B.H.P. at 1,875 R.P.M.
Maximum - 82 „ „ 2,175 „

CONSUMPTION

Petrol - - - 0.53 Pts. B.H.P./Hr.
Oil - - - 0.035 „ „

Weight complete, 225 lbs.

Further particulars from

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Walton-on-Thames, Surrey, England

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Telephone: Walton-on-Thames 774/775

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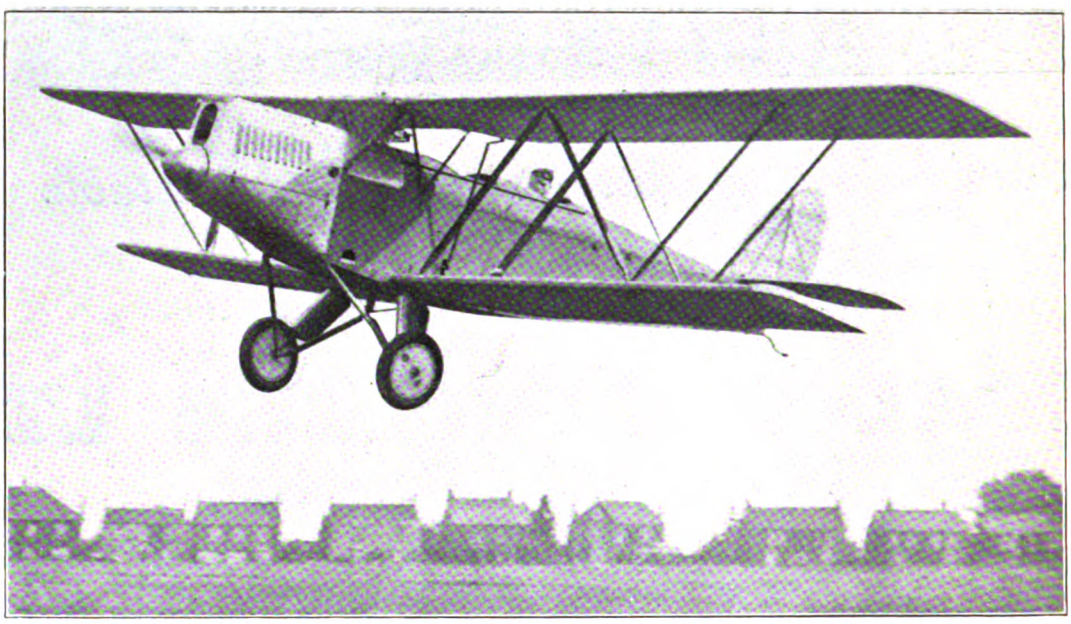
AIRCRAFT DESIGNERS & CONSTRUCTORS.



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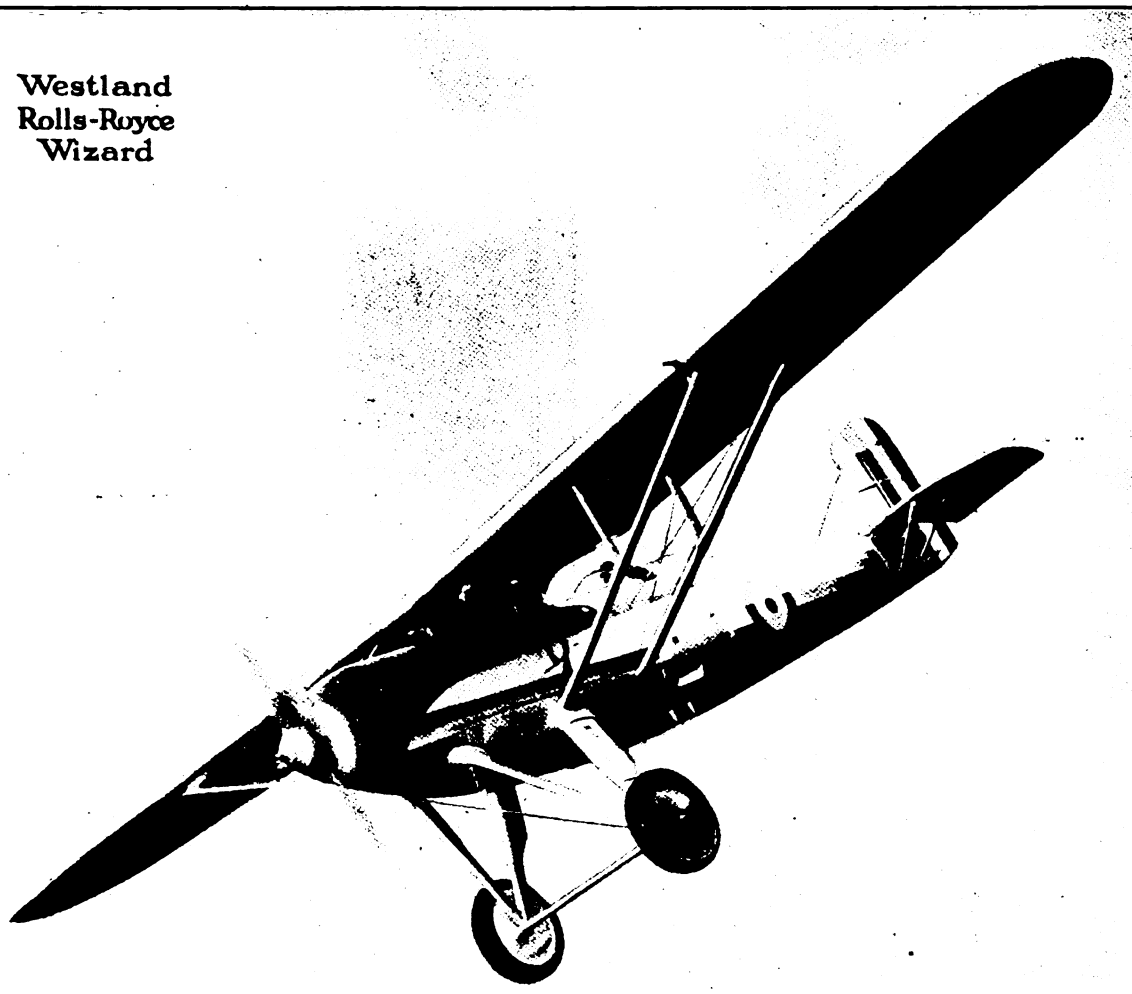

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AERO ENGINES

ROLLS-ROYCE LTD. 14-15 CONDUIT ST. LONDON, W.1.

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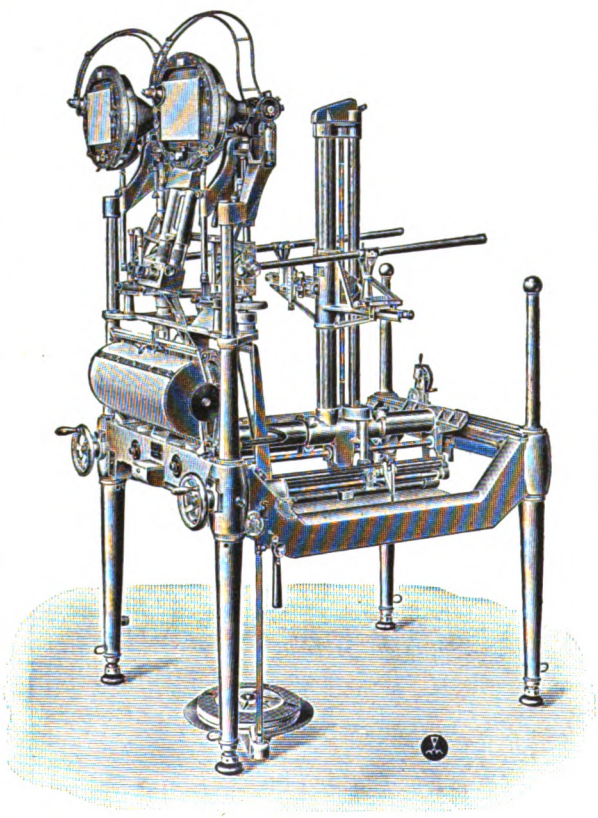

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which either allows the blower to run light at ground level or to deliver whatever boost pressure is required up to the maximum output. Two types of blowers suitable for aircraft engines are made, one for large and the other for medium-sized aero-engines.

With a Powerplus Blower weighing approximately 75 lbs. complete with by-pass control it is possible to obtain sufficient output to maintain ground-level power on a 500 h.p. engine up to 16,000 ft., the blower absorbing less than 50 b.h.p. at full load. By means of the by-pass it is possible to reduce the h.p. absorbed to approximately 7 when supercharging is not required.

The overall dimensions of the larger blower are 17 in. by 12½ in., but variations may be made, as, owing to the design, great elasticity is permissible in external dimensions.

The machines are readily adaptable to be designed as part of the crankcase of an engine or may be mounted separately.

A third blower is available for use as a high-pressure scavenger-blower suitable for high-speed compression-ignition engines.

ROTHERHAM AND SONS, LTD., Coventry. Stand No. 144.

A selection of accessories for aero-engines comprises the exhibit of this firm. It includes petrol cocks, filters, unions, and numerous A.G.S. parts.

An hour-meter for recording the running time of an engine is of interest. The meter is governed by a balance and escapement, and only records time while the engine is running. The dial shows time up to 1,000 hours, and can be sealed if required.

THE RIPON STEEL CO. LTD., Ripon, Yorkshire. Stand No. 114.

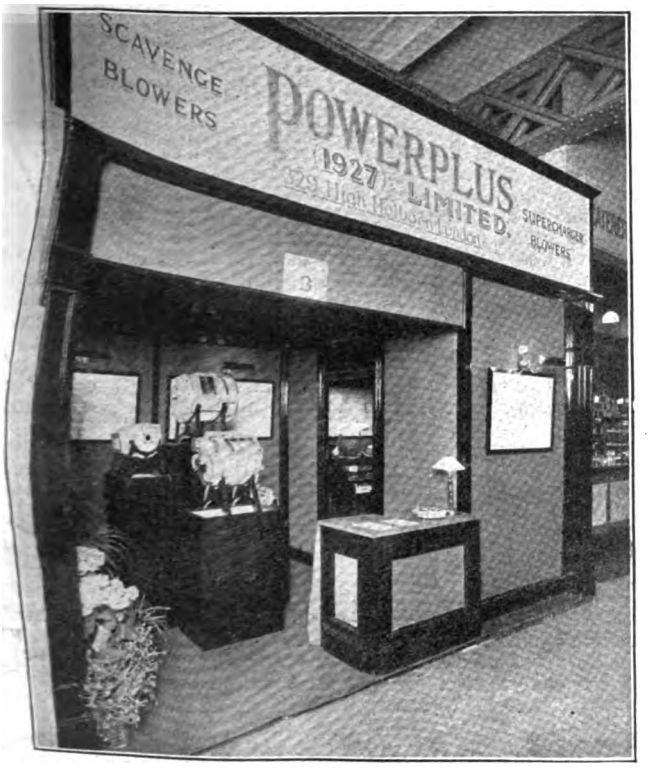
"Standard" steel-framed buildings of the pitched roof type, suitable for hangars, aerodrome buildings, and lock-up garages are shown by this firm.

The stand itself is a miniature of one of these buildings, and is fitted with a "Frontoside" door, also made by the Ripon Steel Co. These sliding doors travel across one end, and along one side, in a groove, and are designed for cubicles. A number of these cubicles and doors have been erected for the use of private owners at Heston Air Park.

Other exhibits include models of the "Omega" design of buildings, which are constructed of independent iron arched sheets. One of these sheds has been constructed for the Singapore Flying Club, and another, with over 400,000 feet of floor measurement, for the 1930 Antwerp exhibition.

Also on this stand is a "Fast Grip" Parallel Fitters' vice, a special feature of which is the provision of a secondary screw-thread of half the pitch of the main screw, giving a four times greater purchase. A portable stand is provided for wheeling the stand about the workshop.

Illustrations and photographs of various steel buildings complete this exhibit.



Boosters.

THE REYNOLDS TUBE CO. LTD., Hay Hall Works, Tyseley, Birmingham. Stand No. 163.

At the end of the Reynolds stand—or, rather, office-building—is a window through which a vista of their works with the staff hard at work may be obtained. The perspective of the enlargement is nearly symmetrical, which enables the photograph to be mounted on a curve. This curve assists the illusion considerably. The effect is practically stereoscopic.

A complete range of tubes is shown, including tapered axles, which are 9 S.W.G. at the bend and only 17 S.W.G. thick at the top end.

The Reynolds Tube Company are very keen that aircraft people, and especially drawing offices, should understand the technique of tube manufacture and production, because only by this means can the two industries work together for good. As a result of this policy much talking has been done on this stand long after Olympia has gone to bed for the night.

The tube-makers and the tube-users are really getting down to brass tacks—or, in this case, chrome-molybdenum.

At the moment the production of tube for the aircraft industry is no light job—there are four stages to be gone through and repeated three times before a tube is ready. Annealing, pickling, washing and rolling all take time, with the result that it takes probably 14 days to get a batch of tube put through.

No doubt standardisation of the diameters—that is, to standardise the diameters employed—and to standardise materials, would considerably facilitate the work of the tube-manufacturer.

LLEWELLYN RYLAND LTD., Balsall Heath Works, Birmingham. Stand No. 69.

The stand of Llewellyn Ryland shows a number of plates finished with "Rylard" varnishes and enamels, but the exhibits shown by this firm were really to be seen all over the Show in that nearly every aircraft manufacturer uses this product.

The development of "Rylard" was an achievement of which its producers may be justifiably proud.

It was the consummation of a long series of experiments, made with materials new to the trade, in an endeavour to produce a really satisfactory waterproof varnish.

Early in 1913 the sponsors of "Rylard" decided to place this unique product on the market. An exhaustive series of tests, carried out under many and varied climatic conditions, had confirmed the vastly superior waterproof and weather-resisting qualities of the varnish over the older types then in use.

It was upon the outbreak of the war, 1914-18, when the Air Ministry was seeking a suitable protective aircraft coating that the supremacy of "Rylard" was established. After most exacting tests had eliminated all other varnishes, "Rylard" was adopted by the Air Ministry.

The whole of the output of "Rylard" was taken by the Air Ministry, and during 1918 the production reached enormous figures.

The rapid drying qualities of the varnish enables production of aircraft to be speeded up, and the extreme hardness of the film permitted the safe handling of machines and parts in the minimum time. Its durability in all climates and its resistance to water, oil and petrol makes it outstandingly serviceable.

"Rylard" has been used on all the recent notable performances put up by British aircraft, including the Supermarine S.5, the Supermarine Southampton which flew to the Far East, the Short Singapore in which Sir Alan Cobham flew round Africa, the Fairey Long-Range Monoplane and on all D.H. Moths.

Referring to the last mentioned, Llewellyn Ryland in conjunction with the De Havilland Company have produced a very neat booklet of colour schemes. This booklet is so arranged that would-be owners of D.H. Moths can see what their machine would be like in any combination of colours by arranging pages of various colours behind a stencilled picture of a D.H. Moth,—a clever idea.

This firm have recently produced a pigmented Nitro Cellulose Lacquer which they call "Zilak." They supply it in all colours. There are some panels finished with this on the stand which have very attractive surfaces indeed.

THE RED LINE MOTOR SPIRIT CO. LTD., 16, Charles Street, Haymarket, S.W.1. Stand No. 39.

Various forms of the ubiquitous fuel pump are shown on this stand. A touch of originality is the model and pictures of suggested layouts for an aerodrome with a landing-place for seaplanes.

This make of spirit is well known for motor-cars, but their entry into the aviation field is quite recent.

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AUSTIN REED LTD., 103-113, Regent Street, W.1. Stand No. 153.

This stand caters for the sartorial needs of flying men,—and women,—and a variety of garments are displayed.

A very practical two-piece flying suit is shown, made of flame-proof gabardine. The trousers are fitted with knee pockets and lightning fasteners, and the jacket also serves as a useful motoring coat.

A one-piece suit, with lightning fasteners at ankles and front opening, is likewise shown.

There are also flying garments for "the ladies" in suede leather, as well as silk undergloves and helmet linings.

Goggles, helmets, leather coats, and flying boots complete the display.

This firm's interest in aviation is not confined to clothing, as they are also agents for an air-taxi concern.

RUBERY OWEN AND CO., Darlaston. Stand No. 5.

Rubery Owen and Co. are large manufacturers of aeroplane components, and their show-cases display a varied assortment of Bolts, Nuts, Turnbuckles, Eyebolts, Shackles, Shackle Pins, Washers, Studs, Thimbles, Fork Ends, etc.

They are shown in various materials such as High Tensile Steel, Staybrite, Duralumin and Mild Steel. All are A.G.S. parts.

Rubery Owen and Co. are among the approved firms on the Air Ministry list and as such supply large quantities of these articles to the Aircraft manufacturing firms.

All the normal steel parts can be supplied Cadmium-plated if required; a form of protection which is rapidly coming into general use. Or if preferred they may be galvanised as is done for some flying-boat work.

During the war their output of aircraft accessories and steel components reached a huge figure, and although the present-day demand does not equal that of the war, the Company employs to-day several hundred men on aircraft work alone and are at the moment increasing their plant to cope with the constantly increasing demand.

Rubery Owen components have been used on all the prominent British post-war flights, notably the England-Australia-England flight of Sir Alan Cobham, the England-Australia flight of Mr. Bert Hinkler, the England-India non-stop flight of the Fairey Long Range Monoplane, etc., etc.

Many early pilots will remember the Rubery, Owen patent Anchor Slip, which was a quick-release device primarily intended to hold an aeroplane to a peg in the ground, or a fence or other suitable anchorage, while the engine was being run up, thus eliminating chocks or any outside help, particularly when making cross-country flights. In the early days of the war it was adopted by the British Government as a temporary bomb release gear and was then the only suitable article in existence for this purpose.

J. RICHARDS AND SONS LTD., Wellesley Road, Croydon. Stand No. 146.

This exhibit comprises radiators for various types of aero engines, honeycomb-tubes, copper pipes and joints.

Induction and exhaust manifolds are likewise shown.

RANSOME AND MARLES BEARING CO. LTD., Stanley Works, Newark-on-Trent. Stand No. 40.

Ransome & Marles Bearing Co., Ltd., began the manufacture of ball-bearings in 1906 and their output since that date has been one of continual growth. They first became identified with the aircraft industry at the outbreak of the war. During the war their entire output was taken over by the Ministry of Munitions and practically every bearing manufactured by them during that period was used in aircraft. The knowledge thus gained in the manufacture of bearings suitable for aero-engines and the like has been used to the full advantage in the bearings now supplied by the company to the leading aircraft and aero-engine manufacturers all over the world.

The supreme accuracy of R. & M. Bearings is well known, but it may be of interest to note that in their products the balls in any one bearing do not vary by more than 1/50,000 in., while the concentricity of the tracks with the bore and outside diameter in no case exceeds .0001 in. The Company is making bearings for the highest speeds of any spindle used in aircraft construction, and it is daily supplying bearings which have to run at a speed of 24.000 r.p.m., and this speed is occasionally exceeded up to a maximum of 30.000 r.p.m.

Two large show-cases exhibit the wide and varied range of bearing that are suitable for this purpose and all types are to be seen.

One particularly interesting bearing is the high-speed type. In this the cage is made of duralumin and thus decreases the loads due to centrifugal action to such an extent that speeds in excess of 24,000 r.p.m. and up to 30,000 r.p.m. may be safely used.

Another new type is the duplex double-purpose type. Here the outer race has two distinct tracks, and the inner race, which is in halves, also has two tracks. Under load the balls track on one of the inner races and on the track on the opposite side of the bearing in the outer race. The bearing is intended to resist thrust loads in either direction, and a reversal of load causes the balls to track on the opposite sides to those described above. This bearing, the makers claim, solves the problems of high-speed shafts where heavy thrust loads are encountered.

A bearing of this type, some 4 feet in diameter, carries the revolving top of the airships' masts which are now being erected for the operation of the new airships, R.100 and R.101.

Various applications of the bearings are shown in aircraft engines and parts of controls, etc., and serve to show the confidence that manufacturers have in their products.

EDWARD STANFORD LTD., 29 and 30, Charling Cross, S.W.1. Stand No. 198.

After over 70 years' experience of map production this firm has now turned its attention to aeronautics, and at Olympia a variety of maps for the air traveller are displayed.

A special feature of these maps is their lightness and durability, and the prices are not excessive.

The maps are mounted on thin aluminium sheets each 10 inches square, eyeletted round the four edges, and clipped together, with a cover, by split rings, the whole resembling a loose-leaf book.

The sheets are rendered impervious to oil, petrol, and water by being treated with a preparation known as "Lutra." With this preparation notes on routes, distances, and courses of any flight can be written on the map, and can easily be wiped off with the finger, or a damp rag, without damage to the map.

A special sliding aluminium carrier has been designed for light aeroplanes to fit into a recess over the dashboard in the cockpit. When flying on a marked route, and one side of the sheet is finished, it can be removed and reversed end-for-end. When both sides are completed, the sheet can be removed and stored out of the way in a pocket in the side of the cockpit, and the next is then exposed for use.

Among the air maps already produced are quarter-inch Ordnance Survey maps of Britain, a ten-mile aviation map of Great Britain, and a number of Continental maps, with routes, distances, and courses, and positions of aerodromes inserted on loose-leaf sheets.

Other exhibits include wall maps treated with the "Lutra" process.

J. A. STEVENS LTD., Upper Rathbone Place, W.1. Stand No. 73.

J. A. Stevens Ltd. represent the famous firm of Robert Bosch A.G. in this country and their stand shows all the latest Bosch products.

The Bosch magnetos are of the inductor type and give four sparks per revolution. This allows the magneto to be run at a lower speed than would otherwise be the case. This, in conjunction with the robustness of the moving part (the inductor) and the fact that the contact breaker, the condenser and armature are all stationary, makes the magneto especially suitable for aero-engines.

One of the most interesting exhibits on this Stand is the new Bosch Magneto with electrical control advance and retard ignition, suitable for aircraft engines. In this magneto the change-over from fully advanced to the fully retarded position and *vice versa* is made electrically without the aid of control gear or centrifugal governors. There are two contact breakers at different angles on each side of the cam on the steel shaft through the rotor. One of the contact breakers is set at the advanced and the other at the retarded position, and as long as the engine is running both contact breakers are operated mechanically by the cam. One or other may be brought into operation by means of a simple change-over switch, which opens or closes the contact-breaker circuit operating the retarded ignition.

By this means a much lighter magneto is obtained, the additional contact-breaker and switch being lighter than the park of an automatic device, and there are no control rods and no movable parts on the rotor. The possibility of damage to the change-over switch or cables is very remote, but should damage occur, the magneto continues to work on advanced ignition.

A sign of the times is to be noticed on the stand in that the firm, though magneto manufacturers, are making oil-injector pumps and nozzles for Compression-Ignition (or any form of pressure injection) engines. After all, if we all use compression-ignition what would the poor magneto manufacturer do then?

There is a fuel pump on the stand working 6 nozzles of varying types. To reduce the smell of the crude oil a certain amount of Eau de Cologne had been introduced to the fuel with the result that the spray smelt almost attractive!

There is a sectional model three times full size on the

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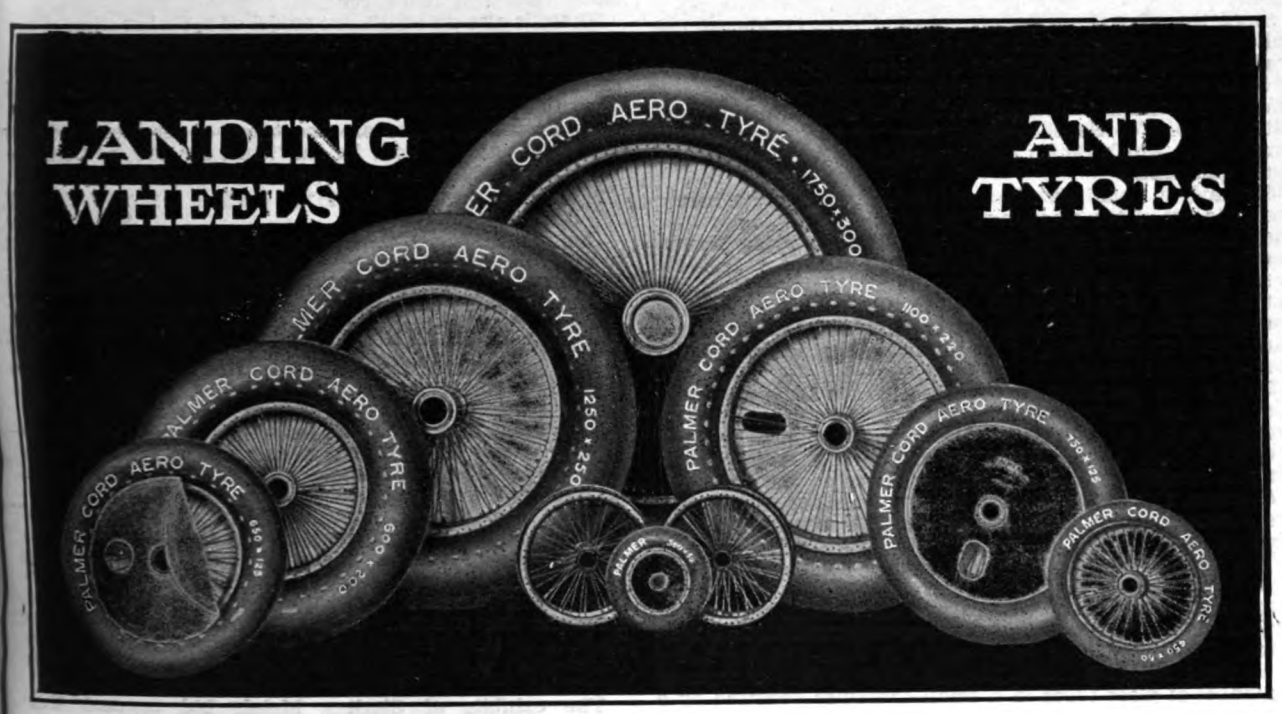
PALMER



STANDARD SIZES.

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m			m/m	m/m	m/m			m/m	m/m	m/m
575 × 55	168	111·12	25·4	Central	700 × 100	176	178·	44·45	Central	1000 × 180	148	220·	80·	Central
"	185	130·	38·09	Central	"	179	178·	55·	132/46	"	149	185·	55·	Central
										"	155	220·	66·67	Central
500 × 60	16	111·12	25·4	Central	650 × 125	119	178·	55·	132/46	"	166	185·	55·	125/60
450 × 60	50	89·	31·75	Central	"	147	178·	55·	Central					
"	172	130·	38·09	Central	"	188	120·	34·92	Central	900 × 200	107	185·	55·	Central
					"	336	178·	44·45	132/46	"	108	185·	55·	125/60
575 × 80	21	160·	28·	Central						"	128	220·	66·67	Central
"	180	150·	38·09	104/46	750 × 125	77	178·	44·45	132/46	"	137	250·	80·	Central
"	186	120·	34·92	Central	"	92	185·	55·	135/50	"	157	185·	80·	Central
"	190	150·	38·09	Central	"	95	185·	55·	Central	"	202	185·	60·32	Central
					"	99	178·	38·89	132/46	1100 × 220	134	220·	66·67	Central
600 × 75	21	160·	28·	Central	"	112	150·	38·09	Central	"	136	250·	80·	Central
"	180	150·	38·09	104/46	"	176	178·	44·45	Central					
"	186	120·	34·92	Central	"	179	178·	55·	132/46	975 × 225	192	185·	60·32	Central
"	190	150·	38·09	Central						"	194	185·	55·	125/60
					800 × 150	161*	185·	55·	135/50					
700 × 75	78	178·	44·45	132/46		162*	185·	55·	Central	1250 × 250	314	250·	80·	Central
"	79	178·	44·45	Central	"	163*	185·	66·67	135/50	"	154	304·8	101·6	Central
"	100	178·	38·09	132/46	"	169†	185·	55·	135/50					
"	101	178·	31·75	132/46	"	177	185·	55·	135/50	1500 × 300	305	304·8	152·4	Central
"	196	178·	55·	Central	"	183	185·	55·	Central	"	306	304·8	101·6	Central
600 × 100	188	120·	34·92	Central	"	211*	185·	60·32	135/50					
"	304	150·	38·09	104/46						1525 × 325	197	304·8	101·6	Central
"	333	120·	34·92	Central	1000 × 150	167	185·	55·	125/60					
700 × 100	77	178·	44·45	132/46	"	174	250·	80·	Central	1750 × 300	139	400·	152·4	Central
"	92	185·	55·	135/50	"	182	185·	55·	Central	"	191	350·	150·3	Central
"	95	185·	55·	Central	"	187	220·	66·67	Central					
"	99	178·	38·89	132/46	"	201	185·	60·32	125/60					
"	112	150·	38·09	Central	"	210	185·	60·32	Central	1750 × 350	193	400·	125·	Central

Wheels Nos. 161, 162, 163, and 211 are of stronger type than the other wheels for 800 × 150 tyres. †*Wheel No. 169 is fitted with Ball Bearings*
Grease gun equipment is now a standard fitting on all wheels. (L/NB)

THE PALMER TYRE LIMITED,

Contractors to the Admiralty, the War Office, and the Air Ministry.

Telegrams:— "Tyricord, Cannon, London."

100-106, CANNON STREET, LONDON, E.C.4.

Telephone:— City 1477 (Two Lines).

(578

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stand which illustrates very clearly the action of the pump and the ingenious method employed to vary the quantity of fuel delivered per stroke without varying the volume or stroke of the pump.

S. SMITH AND SONS (M.A.) LTD., Cricklewood Works London, N.W.2. Stand No. 143.

This company has specialised in the production of aircraft instruments and accessories since its inception in 1914, but even before this the parent company, S. Smith and Son, Ltd., handled aircraft instruments in a small way. With their pre-war experience the company was thus able to co-operate with the British and Allied Governments in producing large numbers of accurate and trustworthy instruments.

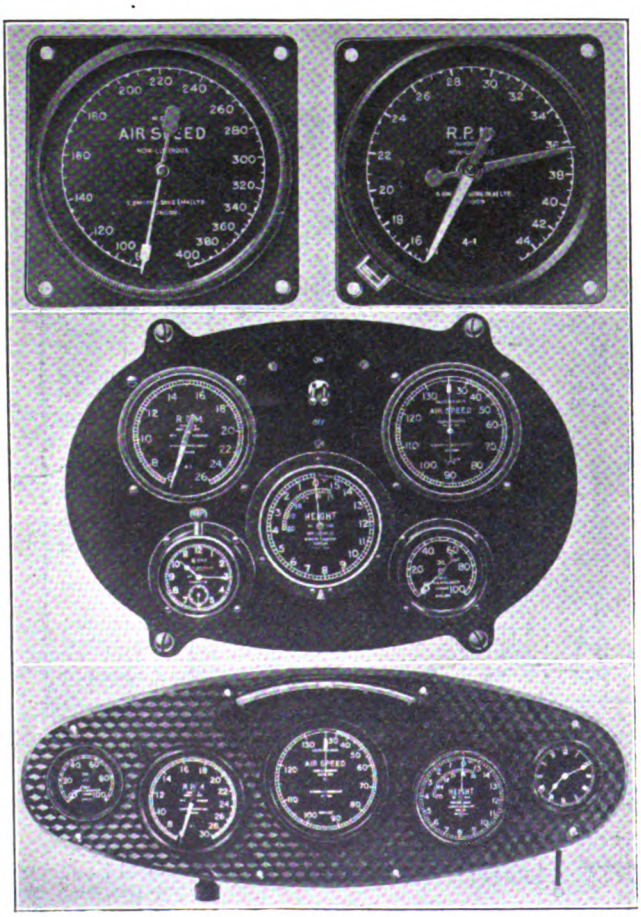
Since the War the company may claim to be almost the only instrument firm that has maintained a separate Aircraft Section. In the limited space available it is impossible to enumerate all the noteworthy performances of aircraft and airships that have been successfully accomplished with the aid of Smith instruments, or to give a list of countries to which Smith instruments have been supplied in large quantities.

Similarly it would absorb considerable space to give here a complete list of the company's products. Suffice to say that they manufacture practically every type of flying instrument and a large number of accessories, that practically every British, and many foreign, flights of note from the first crossing of the Atlantic to the present day have been done with the aid of Smith instruments, and that the company has supplied some of its products to practically every country in the world.

During the past few years the Aircraft Department of the company has developed very considerably, and their progressive policy and enterprise is amply shown by their present output of practically every type of aircraft instrument, a complete range of which is shown on their stand.

Amongst this range a number of interesting components are outstanding either by reason of their novelty or practical value.

The first of these is the Armour wheel entrenching tool. This is a device for digging a small pit for each wheel of the machine to enable it to stand up to heavy winds when left out all night. The next is the Armour wind-direction indicator. This should be very useful in cross-country flying or in the event of a forced landing. The gadget consists of a number of glass tubes in a small container operated by a lever placed close to the pilot. On pressing the lever a tube is released and falls to earth, where it shatters. The contents, which are harmless and quite non-incendiary, produce a smoke-effect which blows away clinging close to the ground, thus indicating immediately the down wind direction.



Top, the Schneider Instruments reading up to 400 m.p.h. and 4,400 r.p.m. Below, dashboards for the Bluebird and the Robin.

There is also a demonstration of a Carter oil cleaner and cooler as mentioned in Mr. Foord's lecture on lubrication.

There is an extremely neat modification of the D.H. Moth air-speed indicator. This device is really an aerial taximeter. As soon as the indicator reaches flying speed a clock starts work and continues to do so until the indicator ceases to work, when the clock stops. As a result one has an automatic record of flying time.

There is also an exhibition model of a Vortex silencer, now being tried out to silence engines on light aeroplanes.

Round the walls of the stand are a number of nicely-finished instrument panels for various makes of commercial aircraft, incorporating a complete range of instruments.

As a contrast there are the types of air-speed indicator and rev-counter as used for the Schneider Trophy Contest,—going up to 400 m.p.h. and 4,000 r.p.m. respectively!

STERLING METALS LTD., Northey Road, Foleshill, Coventry. Stand No. 142.

Sterling Metals Ltd. was formed twenty-five years ago to specialise in the production of castings for the automobile industry. This company rapidly developed and expanded by reason of its close association with, and intimate knowledge of, the ever-increasing demand for higher grade alloys and close limits.

This particularly applied to the aluminium alloy productions, and the outbreak of war in 1914 found their plant and staff peculiarly equipped and qualified to meet the urgent needs of the Aircraft industry. This branch of their industry was, of necessity, developed to such an extent that to-day Sterling Metals Ltd. is in the forefront of casting production as applied to the Aircraft Industry.

They have devoted their attention to the question of weight reduction. Magnesium has so far offered the greater possibilities in this direction with its advantage of being approximately 40 per cent. lighter than the standard aluminium alloys. As the result of its enterprise and foresight the company has, after several years of experiment and research, a large department engaged in the commercial production of magnesium alloy castings under the trade name of "Electron."

The exhibits of Sterling Metals Ltd. represent their various activities in the production of light alloy castings. The largest part of these exhibits are devoted to "Electron" products. This material is the lightest commercial metal. It has a specific gravity of 1.82 and can be supplied in the form of castings, extensions, forgings and sheet.

There is a nose cowling on the stand made from electron sheet. The material casts well and the introduction of manganese to the magnesium alloys has done much to minimise the troubles experienced from corrosion.

The material has been used on the Continent for some time and is much favoured by Continental manufacturers, as could be seen at the Berlin Aero Show last year.

The material is now being taken up by the Aviation Industry in this country and this company is hard at work meeting their requirements.

A very interesting book, "Magnesium Alloys," is produced by the company for 7s. 6d. It is full of valuable information. It is also the only text-book available in this country at the moment.

SHELL-MEX LTD., Shell Corner, Kingsway, W.C.2. Stand No. 1

"A modern stand, intended to symbolise the modernity of the subject of the Exhibition," is the way Shell describe their stand. It does not follow the modern school of so called art so far as to make one think of Underground Railways! but it remains a distinctly attractive symphony in silver-grey and red.

The business side is kept in mind by a large window exposing an office desk with its usual litter of papers, and the aeronautical side by models of some of the more notable aircraft which have used Shell.

A daylight cinematograph display of aviation interest serves to keep the attracted crowd interested.

The duralumin tube stools are, one supposes, meant to symbolise aircraft construction, but are their raw-hide seats symbolisation of the Mexican side of the firm? No doubt the glass table and white carnations illustrate the clarity and purity of their product.

Altogether the stand is very pleasing.

SIMMS MOTOR UNITS, LTD., Percy Buildings, Greek Street, London, W. Stand No. 1

This firm showed a range of magnetic petrol gauges for aircraft tanks of various sizes, from the light aeroplane type to those suitable for multi-engined machines. These gauges are also being supplied for H.M. Airship R.100.

They are constructed almost entirely of duralumin, and

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CELLON

THE DOPE OF PROVED EFFICIENCY

At the recent International Aero Exhibition at Olympia, all the most important exhibits were machines doped with Cellon. Cellon products are used by the majority of the leading aircraft constructors.

Cerric Cellulose Lacquers comply with D.T.D. Specifications for metal parts, cockpits, propellers. Particulars on application.

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Telephone: Kingston 6061 (5 lines). *Telegrams: "AJAWB Phone Kingston-on-Thames."*

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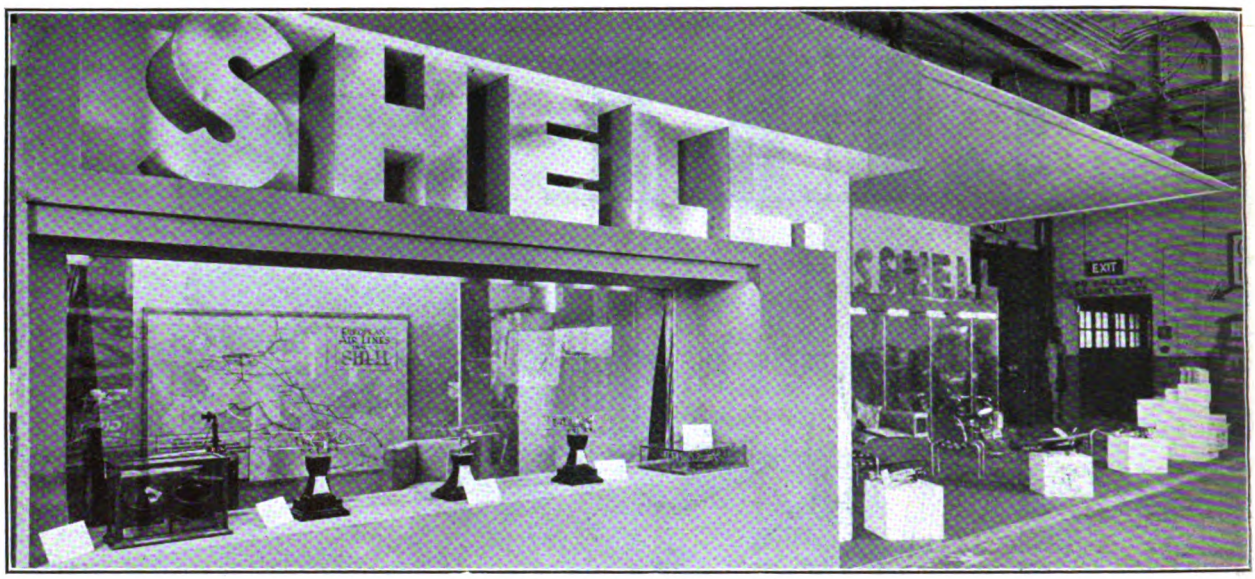

What Makes the Air-Lines Go.

their operation is extremely simple. Behind the dial, to which is fitted a floating needle, is a permanent magnet to which is attached a brass rod of varying length according to the capacity of the tank.

At the other end of this rod is a wood float, which rises and falls with the amount of petrol in the tank, thus rotating the magnet, which in turn moves the pointer on the dial.

Another type of gauge is also shown in which a long duralumin tube is connected to the gauge head. Along the whole length of this tube is a spiral slot making one complete turn.

A brass rod runs through the tube, and is connected to a magnet at the top. A float travels along the spiral slot, either up or down according to the level of the petrol in the tank, and rotates the magnet.

This firm are also showing magnetos for four-cylinder engines, including a new type, cast in aluminium, with impulse starter couplings, the whole weighing only 11lb. The couplings are wired with oil-proof high-tension cables. The distributor is mounted on roller bearings. Special high-speed contact-breakers with non-seizing bushes are fitted, and the rocker arm is made of duralumin.

Another interesting exhibit is the "Vortex" air cleaner. This is also cast in duralumin, and consists of a hollow semi-circular tube open at both ends. One end is attached, by means of a tubular adapter, to the carburetter intake. Underneath is a glass container, which is filled one-third full with engine oil. Dust and dirt is then sucked in through the cleaner and into the glass container.

The cleaner can be adjusted to suit any type of engine.

Other exhibits on this stand include a range of Vernier couplings in duralumin and stainless steel.

SOCIETA ANONIMA RILEVAMENTI AEROFOTOGRAMMETRICI, 11, Via Francesco Negri, Rome, Italy.
Stand No. 178.

Among the exhibits included on this stand is the famous Salvator parachute, two of Sq. Ldr. Waxy's brothers being employed to demonstrate its efficiency. A display of air survey apparatus is another feature of this stand.

A mosaic of Lundy Island, together with maps and charts made from it, is displayed on the wall.

A number of Nistri air cameras of various types is included in the exhibit. These are of all-metal construction and are fitted with automatic releases.

Other exhibits include gun-cameras, also of Nistri design, and an auto-stabilising periscopic bomb-sight.

On the Italian Air Ministry stand, No. 62, is shown a Nistri plotting machine for air survey work.

SUPERFLEXIT LTD., 110, Cannon Street, E.C.4.
Stand No. 183.

Flexible tubing for every purpose has been the speciality of this firm for a number of years, and its products are widely used in the aircraft industry, both here and abroad. At the Paris Aero Show last year Superflexit Ltd. were awarded first prize.

At their stand at Olympia a fuselage, with a very realistic dummy engine, was used to demonstrate the uses of flexible tubing on aircraft.

One was informed that the "engine" created a certain amount of interest among the foreign visitors, who were greatly intrigued by the carved wood cylinders!

A variety of tubing was shown, ranging from 3-16 of an inch to twelve inches in diameter. The latter is special tubing for oil distribution.

The core of Superflexit tubing is made of cellulose, which covers a spiral coil of wire. It is exceedingly flexible and very light.

Included in the exhibit is a special type of union for such piping, consisting of a tapered brass threaded tube. A brass collar is fitted on one end of the tubing. Into this is threaded the tapered tube, which has been previously treated with hermetic glue. The whole is then placed in a vice and screwed tightly home, leaving about an inch of threaded brass tube for screwing into another length of tubing. The process is very simple, and can be performed by unskilled labour.

Another interesting exhibit is a patent bullet- fire- and crash-proof petrol-tank. Although this tank is being used by the French and United States Governments, no details are available, as it is now being tested by the Air Ministry.

All that one is able to say is that it appears to be covered with some sort of padded rubber, encased in a fine-mesh wire netting.

SOZOL (1924) LTD., 20, Copthall Avenue, E.C.2.
Stand No. 128

This stand is showing patent Sozol preparations for the preservation and lubrication of metal, as well as paints for structural metal work. Safety razor blades treated with Sozol rust-preventatives are also shown, together with special blended Copto lubricating oils, claimed to give the greatest lubrication with the lowest consumption.

THE SKEFKO BALL BEARING CO. LTD., Leagrave Road Luton, Beds. **Stand No. 159**

Here are shown examples of the firm's ball and roller bearings used in the various branches of aircraft construction.

Among the exhibits is an airscrew thrust bearing for the Bristol Jupiter engine, allowing of a reduction in the length of the propeller shaft and nose piece, with a consequent saving in weight. The bearing is of the self-aligning spherical roller type.

A Fairey control column fitted with Skefko bearings is also shown.

An interesting collection of photographs and drawings of aero engines using the company's bearings are displayed and include the Pratt and Whitney Wasp, Gipsy, Walter and Lorraine engines.

SPECIALLOID LTD., Friern Park, N. Finchley, London N.12. **Stand No.**

In 1914 a light-weight cool running piston for aero engines became imperative, and engineers turned their attention to its production. It was recognised that light weight alone would not constitute a satisfactory piston. Heat dissipation, distribution of weight and piston clearance were all problems which presented themselves in an exaggerated form in the design of an aluminium piston as compared with one of cast iron.

The question has been adequately solved by Specialloid Ltd., who now supply large quantities of their special pistons to British aero-engine manufacturers.

On this stand they show pistons for all types of engines both in aluminium alloy and in their own special alloy, some of which are sectioned, thus showing clearly the method of finning to dissipate the heat adequately.

They also show a form of cylinder gauge which should prove useful for grinding or reboring cylinders.

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A trial flight with the N.F.S. is available to everyone; not a mere joy-ride, but an instructive trip during which you share with your instructor the control of the machine. Taxying, climbing, gliding, landing.....in all these evolutions you "feel" the response of the machine to your slightest touch It is an experience you will wish to repeat often. The charge of two guineas includes free transport by car both ways between Trafalgar Square and the London Air Park at Hanworth, where the trial flights are made.

The Club members of National Flying Services join not one club but actually a group of clubs, of which the Country Club at Hanworth (30 mins. from the West End) is the first of the chain. The organisation, when completed, will embrace 71 flying stations.

A limited number of members are now being admitted to the Hanworth Club at the following rates: Flying members, 5 gns. entrance fee, and 5gns. annual subscription; Non-Flying members, 3gns. in each case For this year, two-thirds of the annual subscription is being rebated. It is estimated that for the average member the cost of learning to fly will be under £25. And after learning, flying charges scale down to £1.1.0 per hour.

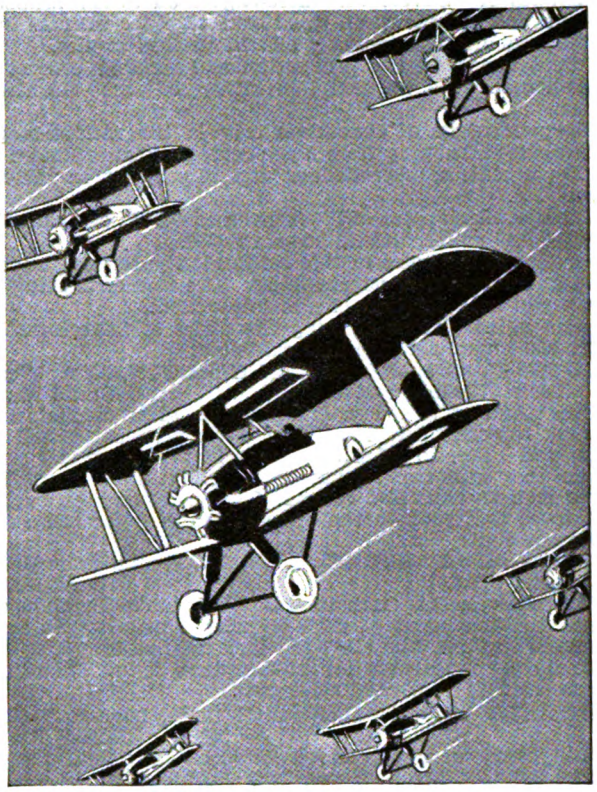
Write for our booklet giving full details of the services offered by National Flying Services to those who wish to fly.

NATIONAL FLYING SERVICES LTD.

GRAND BUILDINGS, TRAFALGAR SQUARE, LONDON. W.C.2.
Phone: Gerrard 9316 (4 lines)
Telegrams: "Natflying, Westrand, London."

LONDON AIR PARK, HANWORTH, MIDDX.
(30 mins. from the West End)
Phone: Feltham 236.
Station: Feltham, Southern Rly.

Air Press Agency.



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SILVERTOWN LUBRICANTS LTD., 11, Norway House, Cockspur Street, S.W.1. Stand No. 175.

Samples of "Silvertown" aero-engine oil to Air Ministry specification are shown on this stand, together with a range of "Speedoline" lubricating oils in various grades. The different stages in the production and refining process of "Silvertown" P.4 mineral lubricating oil are effectively shown.

The percentage of Conradson coke in the various stages is also shown ranging from 2 per cent. in steam-cylinder oil to .75 per cent. in "Speedoline," and .27 per cent. in "Silvertown" P.4.

The open flash-point of P.4 is given as 440°F., and viscosity at 100°, 2.45 poises, and .19 poises at 200°.

An interesting point in this exhibit is the seeming superiority of mineral over vegetable oil. The former is being increasingly used for aero-engine lubrication.

Aero-engine pistons showing the effect of Silvertown P.4 after 100 hours' run are also exhibited.

THE STEEL NUT AND JOSEPH HAMPTON, LTD., Woden Works, Wednesbury. Stand No. 80.

The stand of this firm is filled with glass cabinets containing representative samples of their products, which are nuts and bolts, to all aircraft specifications, special parts made to customers' requirements, bright steel bars, and tools such as vices and clamps. The firm has been supplying these materials to the aircraft industry for some considerable time.

SIEBE, GORMAN AND CO., LTD., 187, Westminster Bridge Road, S.E.1. Stand No. 48.

The firm of Siebe, Gorman & Co., Ltd., make diving equipment, and as a result of their experience with oxygen apparatus during the War (1914-18), they were requested to produce oxygen apparatus for high-altitude flying. They still do so. And so do several other firms.

SCINTILLA LTD., 14, Clerkenwell Close, London, E.C.1. Stand No. 46.

A big range of magnetos are shown on the Scintilla stand.

The Scintilla Magneto was first manufactured in 1919 at Soleure, Switzerland, after it had gone through an experimental stage of a number of years.

The Scintilla Magneto has, on its merits, become known all over the world, and it is now being used extensively as standard on some of the world's best cars, commercial vehicles and foremost aircraft engines. For a number of years the American Army and Navy Air Services have been using the Scintilla Magneto as standard. Furthermore, practically all important aircraft manufacturers in America, France, Czecho-Slovakia, etc., are using this magneto, which has proved its unfailing reliability in the Trans-Atlantic, Trans-Pacific and Trans-Continental flights of Lindbergh, Chamberlin, Byrd, Costes and Le Brix, Wilkins, Smith and Ulm, Jimenez and Iglesias, Kohl and FitzMaurice, and Miss Earhart, Assolant and Lefevre. The two recent refuelling records of the *Question Mark* and the *Fort Worth* were also successfully completed with the aid of Scintilla Magnetos.

An interesting exhibit is an 18-cylinder magneto sectionalised and still working. This has a four pole rotating magnet. There is also an exhibit showing the arrangement of a booster, or starting magneto, in conjunction with an existing ignition system. One can operate the booster and see the spark at any specific plug by rotating the distributor.

A neat feature of the Scintilla magneto is the variable coupling, which is flexible, does not transmit vibration, has no end load, and can be varied without uncoupling. The device consists of a dog type clutch, the teeth of which do not engage but are bedded in a rubber block. One set of teeth are keyed to the magneto spindle and the other contains a special sleeve. This sleeve is keyed to the driving shaft and is locked by two bolts to its own half of the clutch. These two bolts are also used as worms operating a thread cut in the sleeve, and by slackening them off and turning the bolts the sleeve may be set to any desired position without uncoupling any part.

TITANINE-EMAILLITE, LTD., 175, Piccadilly, W.1. Stand No. 49.

Titanine-Emaillite, Ltd., who as the British Aeroplane Varnish Co. supplied enormous quantities of dope to the Allied Flying Services, have arranged their stand to illustrate the world-wide use of their products and the application of it to present-day machines. Round the stand are a large number of testimonials from clients of the firm, foreign and British. There are also a large number of panels on the walls doped with the various colours employed on the exhibits at Olympia using Titanine schemes.

Mounted on a number of dummy wings, covered with one of the firm's doping schemes, is a small glass tank full of water. Inside this is a fabric-covered panel doped with Titanine which has been immersed since the opening of the Show. At the time of writing the fabric has been under water for eight days, and was still as tight as a drum. Titanine schemes were used on the Gloster Racers built for the 1927 Schneider Trophy competition and stood up extremely well to the arduous conditions of the race and of the training flights for which they have since been used.

One of the deteriorating influences that must be kept away from fabric are the usually beneficent ultra-violet rays, and to accomplish this the surfaces are first covered with a red dope. Over this is put a dope coloured with aluminium. The aluminium used for this purpose is produced by stamping, with the result that the aluminium is produced in the form of innumerable small plates, or laminæ. When spread over the surface these plates form a reflecting medium that keeps out heat. So much so that a test with internal and external thermometers will show a very considerable temperature drop between the inside and outside of the wing.

Titanine was used on Sir Alan Cobham's London-Capetown, London-Rangoon, and London-Australia-London flights, and in every case very successfully withstood the extremes of temperature and weather through which it passed.

Titanine was used by the Marchese de Pinedo on his Rome-Tokio-Rome flight, by Commandante Franco for his flight across the South Atlantic in a Dornier Wal, by Commander Byrd in his flight over the North Pole, by Charles Lindbergh when he crossed the Atlantic, by Mr. C. Chamberlin when he flew from New York to Germany. Mr. Bert Hinkler used it when he flew to Australia in an Avian in the record time of sixteen days. Lieut. Bentley, who has made quite a habit of flying to Capetown and back to London, also used this dope on these flights.

After these accomplishments it is not surprising to find that Titanine-Emaillite have factories at New Jersey, Milan and Bremen, besides their English factory at Hendon; nor is it surprising to find that big airlines like Imperial Airways and K.L.M. also use Titanine.

TECALEMIT LTD., 117, Scrubbs Lane, Willesden, London, N.W.10. Stand No. 76.

The Tecalemit grease gun system, which incorporates grease nipples on all points requiring lubrication, through which oil or grease are forced by a portable grease gun, is well known. The Aircraft Industry was one of the first to realise the advantages of the Tecalemit grease-gun system of lubrication as applied to landing-gear, controls, etc., and the advantage of this system was demonstrated many years ago, particularly in connection with tail plane mechanism of seaplanes, where the mechanism is frequently in contact with sea-water.

For the past two or three years the Tecalemit system has been successfully employed for the lubrication of rocker arms on the overhead camshafts of aero-engines.

Tecalemit equipment is standard on all service aircraft in this country, and the Tecalemit Lubricant has been approved by the Air Ministry for use on these aircraft.

Tecalemit have organised their exhibit with a view to showing the application of the system to aircraft. A Cirrus engine is shown with the Tecalemit system for greasing the rocker gear. There is also a number of parts from Fairey aircraft showing the way the system is used.

The next application to the system is a greaser for Bowden cables, which in the ordinary way are a bit unhandy to grease. The new device is a brass barrel fitted with a greaser nipple. The inner wire passes through the barrel and the outer casing is severed and then introduced at either end of the barrel, which has screw glands. On tightening the latter a lead coil is forced round the Bowden casing and a perfectly grease-tight joint results.

The group system of Tecalemit greasing is becoming fashionable. And the greaser nipples for a variety of parts are located on one panel with pipes running to the moving parts; a good example of this is to be seen on the Bristol machines.

This firm also markets a new electric rev. counter, which works on a pressure of 6 or 12 volts. The special feature is the absence of the usual long rotating flexible shaft.

ERNEST TURNER, Chiltern Works, 55-73, Totteridge Ave., High Wycombe. Stand No. 182.

Electrical measuring instruments are shown here, and include single and multi-range microammeters, milliammeters, millivoltmeters, for aircraft and wireless work.

THE TRIPLEX SAFETY GLASS CO. LTD. Stand No. 24.

Triplex Safety Glass is almost too well known to need any description, but, as its use in aircraft is now growing so rapidly owing to the use of cabin-machines, the makers have taken the wise step of taking a stand at the Show.

Various forms of windscreens are shown in a shattered state, illustrating the non-splinterable qualities of this glass.

Flying goggles made with Triplex lenses are also shown.

The Air Ministry specifiy Triplex for many Service aircraft, and in the airship R.101 it is used exclusively.

THOMPSON BROS. (BILSTON), LTD., Aldwych House, Aldwych, W.C.2. Stand No. 77.

Thompson Brothers began manufacturing exhaust manifolds for Bristol Jupiter engines in 1922. They are now turning out the latest type at the rate of 15 per week. There are various specimens of this type of work on their stand,

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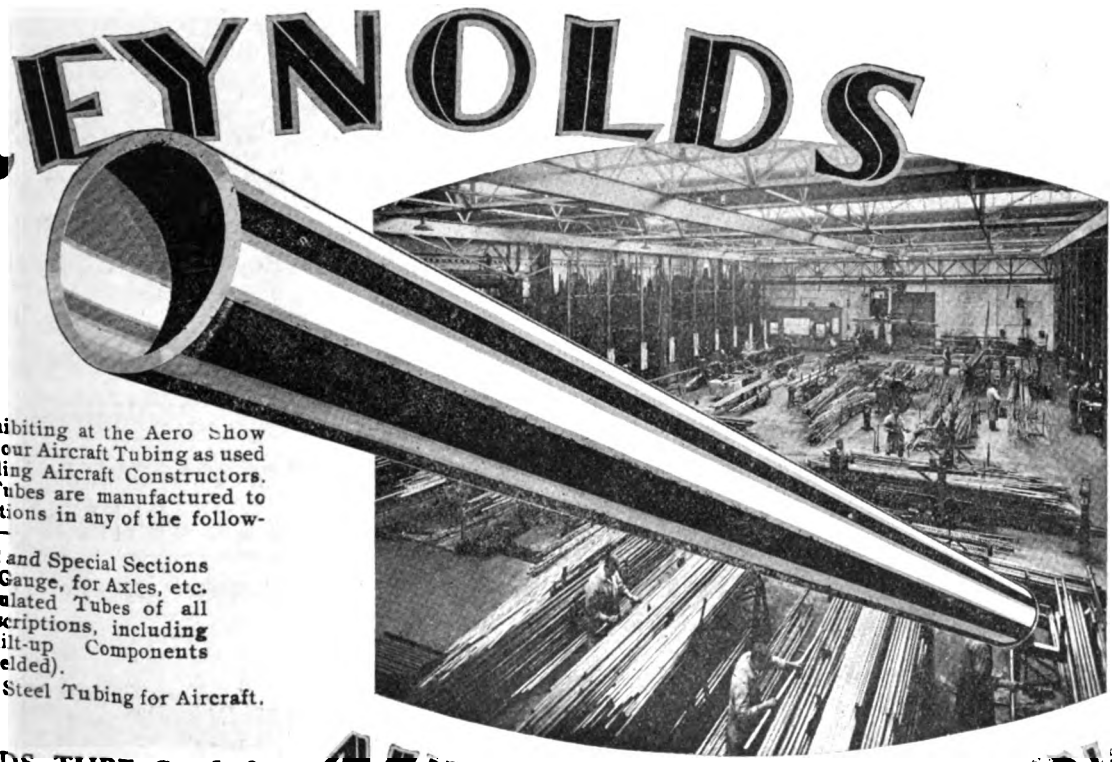

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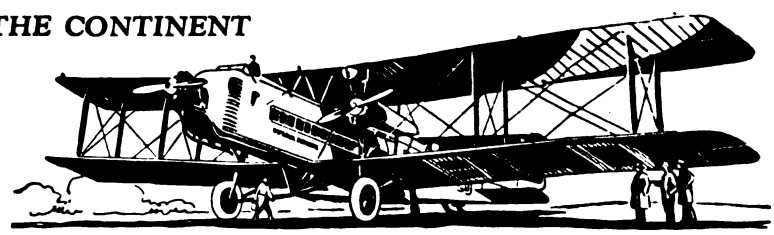

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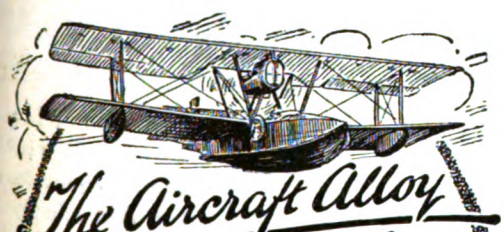

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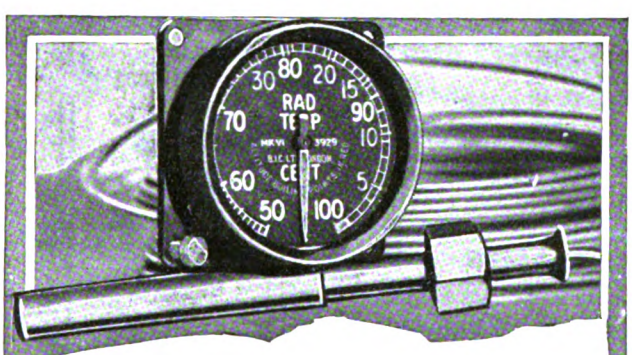

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This is designed to fit into the recess over the instrument facia board in the cockpit. The maps are carried on hooks fixed to a sliding carrier so arranged that when it is necessary to refer to them they may be pulled out of the recess quite easily and pushed back out of the way when not actually required. They are always handy but not in the way.

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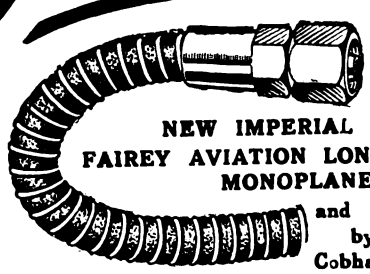

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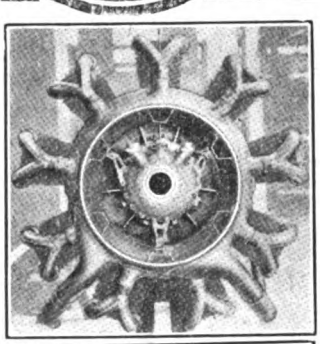

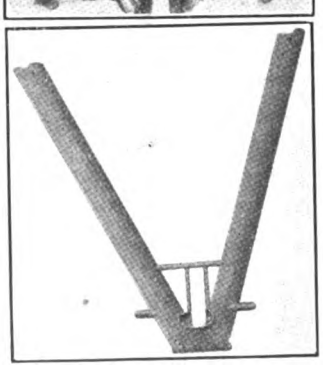

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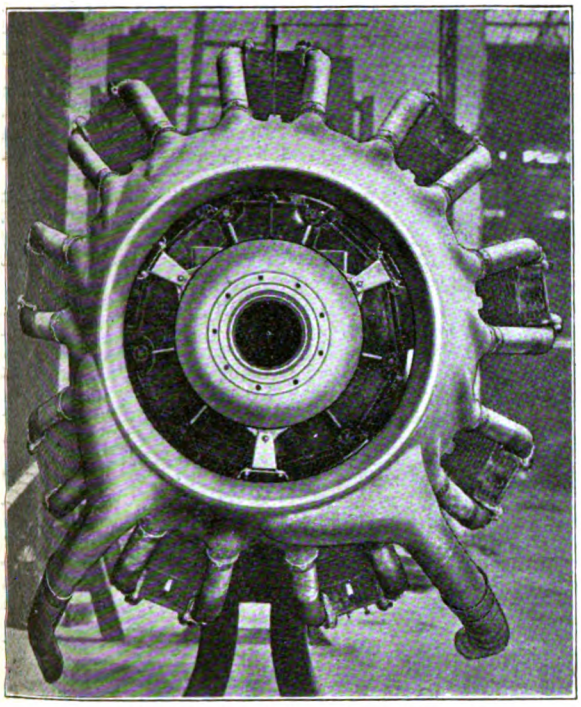

To Silence The Voice of Jupiter.

together with manifolds for in-line engines. The precision of the work is amazing when one realises the thin gauges employed and the complication of the whole component.

The spherical seatings to the joints at the cylinders are very neat. The company have been experimenting with various stainless steels for this job.

Thompson Brothers have a big equipment of presses and similar machinery for the manipulation of light-gauge steels, and are prepared to do any class of aircraft work in this category to manufacturers' specifications.

TENSOMETER HUGGENBERGER, Zurich 3, Switzerland. Stand No. 51.

Dr. Huggenberger has a stand entirely devoted to the exhibition of his "Tensometer," which is a neat instrument designed to give exact readings of the elongation or deformation of test specimens under load, either in compression or tension.

The instrument consists of two points or knife-edges, depending on the type of material to be tested, which are a known distance apart. These points are pressed into the test specimen, and when the load is applied, the distance between these points increases as the specimen stretches. The amount of travel is registered by a needle passing over a scale. The movement is very much magnified, in one type of instrument, 1,500 times.

A feature of the stand is the large number of different clamps used to attach the instrument to any type of material, the means which have to be employed for this purpose obviously varying with the class of material.

For the English market the instruments are made to measure the elongation over 1in. or ½in., but by adding extension bars the distance may be increased to 40in. To get the elongation it is only necessary to divide the scale reading which is marked off in decimals of an inch by the magnification.

Three types of instrument are marketed, types A, B, and C, with magnifications of 1,000, 1,500, and 300 respectively. The low magnification being useful for soft materials, like wood.

The instrument is not large, and is supplied in a neat case, and clamps may be obtained to fasten the instrument for tests on any kind of material from wood or concrete to a thin gauge-steel sheet.

VACUUM OIL COMPANY, LTD., Caxton House, Westminster, S.W.1. Stand No. 72.

One of the features of the Vacuum Oil Company's stand is a portable truck for aerodrome use. The truck has two pumps, each of which delivers from a standard 10-gallon drum. This arrangement ensures easy replacements and security from contamination

Now that mineral oil has been approved by the British Air Ministry for radial engines, the Vacuum organisation ensures satisfactory service for any pilot on any type of machine. The great feature of Mobiloil is the fact that there is a recommended grade for every engine, and this recommended oil can be obtained all over the world, which is a point of appeal to the private owner who suddenly wishes to fly half across the world for a holiday.

One of the first aviation pioneers to use Mobiloil was S. F. Cody. The round-the-world flight of the American Army was done on Mobiloil; Lindbergh and Amelia Earhart both flew the Atlantic using the same lubricant.

HENRY WILD SURVEYING INSTRUMENTS SUPPLY CO. LTD., Heerbrugg, Switzerland. Stand No. 200.

A remarkably ingenious plotting machine for air survey work is a noteworthy feature of this exhibit. The method employed is simple, and absolute accuracy is claimed.

It is operated on a stereoscopic principle. Two plates from the air camera are put in the machine. The operator views these plates through a stereoscope, on the lens of which is a pointer. On either side of the operator are two handles, which by turning, and following the ground with the pointer, transcribe the contours on a glass plate by means of a steel point working on a differential gear.

The resultant map is then transferred to a zinc plate, from which the finished maps are lithographed.

The machine is made throughout of tempered steel.

An air survey camera is also shown, taking vertical or oblique photographs. Ten exposures can be made.

C. C. WAKEFIELD AND CO., LTD., Wakefield House, Cheapside, E.C.2. Stand No. 71.

The Castrol stand is decorated with a sign of changing colours, which are obtained from Castrol oil and coloured water being pumped through glass tubes. At each side of this are two globes of the world being turned by a stream of lubricant falling over them The walls are covered with a fine series of photographs illustrating the history of aviation from the year 1910—for the history of Castrol is the history of Aviation.

This firm have recently produced a quick service of trolley tails and pumps for use on aerodromes.

Castrol oils have so long been used for aviation and are so much a feature of aeronautical activity that they have become part and parcel of the atmosphere of flying. In the same way the munificence of Sir Charles Wakefield so permeates aviation that one finds it hard to imagine what would have happened without him. How many big flights which demonstrated the superiority of British aircraft products would have been possible without his aid?

WELLWORTHY LTD., Lymington. Stand No. 126.

Wellworthy piston rings manufactured under Gray and Howlett Patent No. 151898/20 are shown here, together with scraper and oil-control rings.

A convincing light test is demonstrated on this stand. The piston ring is placed on a frame, behind which is a light shining through a small aperture. The ring is slowly turned to show that it is absolutely true, and that no light shows.

A hair inserted between the ring and frame exposes the light.

Other exhibits on this stand are piston-ring castings in various forms of machining, and petrol priming pumps for aero engines.

For Troubled Waters—or Air.

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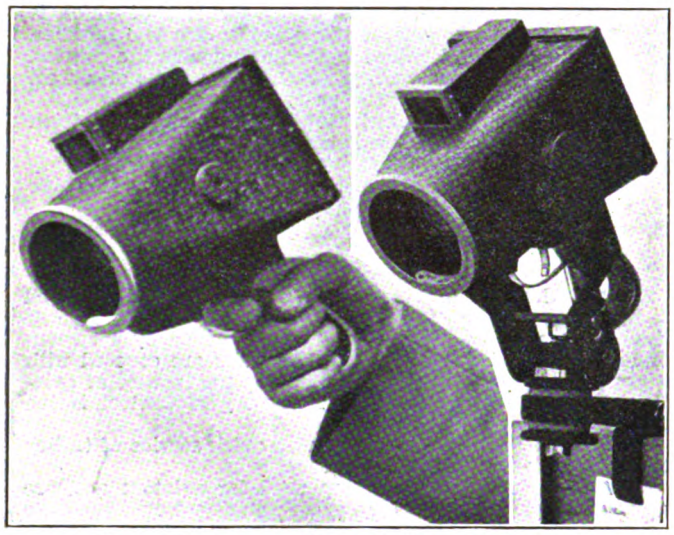
WILLIAMSON MANUFACTURING COMPANY, LTD., Willesden Green, N.W.10. Stand No. 186.

The makers of the famous "Eagle" aircraft camera have now produced an exceedingly interesting camera for the owner-pilot. It is called the "Pistol" aircraft camera, and takes its name from the pistol grip by which the apparatus is held.

This camera weighs 3lb. 5oz., and can be held quite easily with one hand. The exposures are made by pressing a trigger.

The size of the picture taken is 3¼in. by 2¼in., a familiar size to amateur photographers. The cost of films and plates is therefore low. One also has the advantage of being able



The Williamson "Pistol" Aircraft Camera.

to use any make of film-pack or plate, with either orthocromatic or pancromatic emulsion.

The body of the camera, with the grip, is constructed throughout of aluminium. The trigger is of stainless steel, treated with a hard, durable kryslac enamel.

A Ross Xpress lens of 5in. focus with an aperture of F/4.5 is supplied, and the shutter, of sector type, has time, bulb, and instantaneous speeds up to 1-100th of a second.

The back of the camera is fitted with runners to take either plate-holders, film pack adapter, or a focussing screen. The camera will not take roll films.

The price of the complete equipment, that is, camera with Ross F/4.5 lens, one book-form D.D. slide, film pack adapter, focussing screen, and leather carrying case, is £20 10s.

This camera should enjoy wide popularity with private owners, and several orders have already been placed.

This firm show also a model of their "Eagle" aircraft camera, R.A.F. Service Type F.8, which is now extensively used by British air survey companies and foreign Governments.

Another interesting feature of this exhibit is the new roll-film developing apparatus. This has been designed to supersede the old method, which necessitated the use of large and unwieldy tanks. The outfit consists of a spool winder, developing tank, and fixing tank, which fit one within the other for transport purposes, a soaking and washing tank, and a storage case.

The developing and fixing tanks are made of nickel, and the others of sheet brass, nickel plated, with beaded edges and rolled joints. The spool centres are made of hard wood impregnated with cellulose lacquer. The complete outfit, packed in the storage case, weighs 44 lb. The price is £28 10s.

Other exhibits include an all-metal contact printer, and an auto-focussing enlarger with a 500-watt half-watt lamp, or mercury vapour lamp, giving an enlargement of 1 to 3, and a reduction of 3 to 1.

ZENITH CARBURETTER CO. LTD., 40-44, Newman Street, London, W.1. Stand No. 136.

A full range of carburetters are shown by this well-known firm, including the 48 R.B. type for the De Havilland Gipsy engine. There is also a carburetter for the new Sunbeam Sikh, Mark II and III, engine.

Another interesting carburetter has been produced for the Beardmore Typhoon engine, of the floatless, or Weir type. A feature of this carburetter is the petrol-cock, which is interconnected with the throttle control.

On the same stand is shown the new Zenith petrol-filter, which has been specially constructed for aero-engines.

The filter, which can be adapted to suit any type of engine, consists of three parts, the frame, the filter unit, and a detachable glass bowl, held by a metal stirrup. The filter-unit consists of a series of non-corrosive brass rings with a number of small ridges on one side. The rings are clamped tightly together, and there is only a few thousandths of an inch clearance between them.

The fuel is fed through the rings upwards, and all foreign matter sinks into the glass bowl. The filtration surface is so arranged that there is no restriction of fuel even with the largest engine, and 150 gallons per hour can pass through.

The filter unit is self-cleaning. All impurities deposited on the ring edges are continuously removed by the constant swirling motion of the fuel. It can be dismantled quickly and easily without the use of tools. The weight complete is only 27 ounces.

CARL ZEISS (LONDON) LTD., Winsley House, Wells Street, Oxford Street, W.1. Stand No. 115.

This well-known optical firm are showing a number of interesting things for the lighting of aerodromes. The first is the Aeroplane Landing Search-light with a swivelling mirror. The searchlight is rigidly mounted in a streamlined aluminium case with a strong glass cover, and is fixed relative to the fuselage, or it can be built into the wings.

The mirror can be swung up to 30° in any direction, and the spread of the beam is about 12°. The lamp can be focussed, and has a 100-watt bulb with an intensity of 35,000-candle power. The total weight of the searchlight is 13 lbs.

Aerodrome searchlights of 14-inch diameter, giving 130,000-candle power with 500-watt lamps, are also shown. These are mounted on hinged supports, and can be sunk flush with the ground when not required.

A number of these are placed in a circle round certain German aerodromes throwing converging beams on the centre of the ground.

Beacon lights for marking air routes are yet another enterprise of this firm. The lights, which can be arranged for flashing, are mounted on masts at intervals of from 3 to 6 miles. A horizontal beam is thrown of about 3,000 c.p. intensity with a 500-watt lamp.

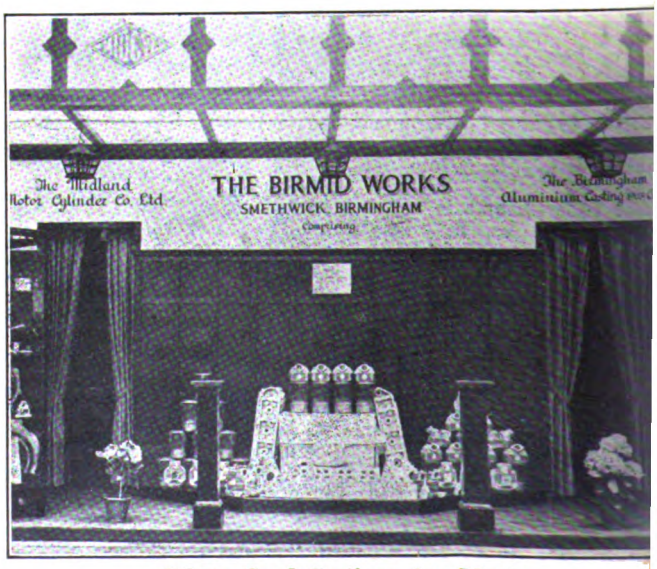
Another very interesting exhibit is a combined drift and ground-speed indicator, which can also be used as a bomb sight.

The indicator is fixed outside the fuselage on the right-hand side, and consists of a metal cylinder with a glass window at each end. The bottom glass has a wire cross, and the top a small ring for sighting. At the side is a gear-wheel, and a dial showing the amount of drift, and a clock for timing the ground speed. When the instrument is set at zero it inclines at an angle of about 30°.

The operation is simple. The altitude is first read, and a dial on the instrument set accordingly. An object on the ground is then sighted, and followed by turning the gear wheel until it is vertically beneath the machine, when a pointer springs out on the glass sight.

A glance at the dial gives the amount of drift, if any, and the time taken for the sighted object to get vertically beneath the machine, which gives the ground speed of the machine.

A means of determining the height of clouds is another exhibit of interest. This consists of focussing a searchlight beam on a cloud. At a prescribed distance apart is a telescope attached to a scale marked in degrees. The telescope is focussed on the point where the beam hits the cloud and by reading the angle obtained, the base length of the triangle being known, the height of the cloud can then be calculated.



Where Good Castings Are Made.

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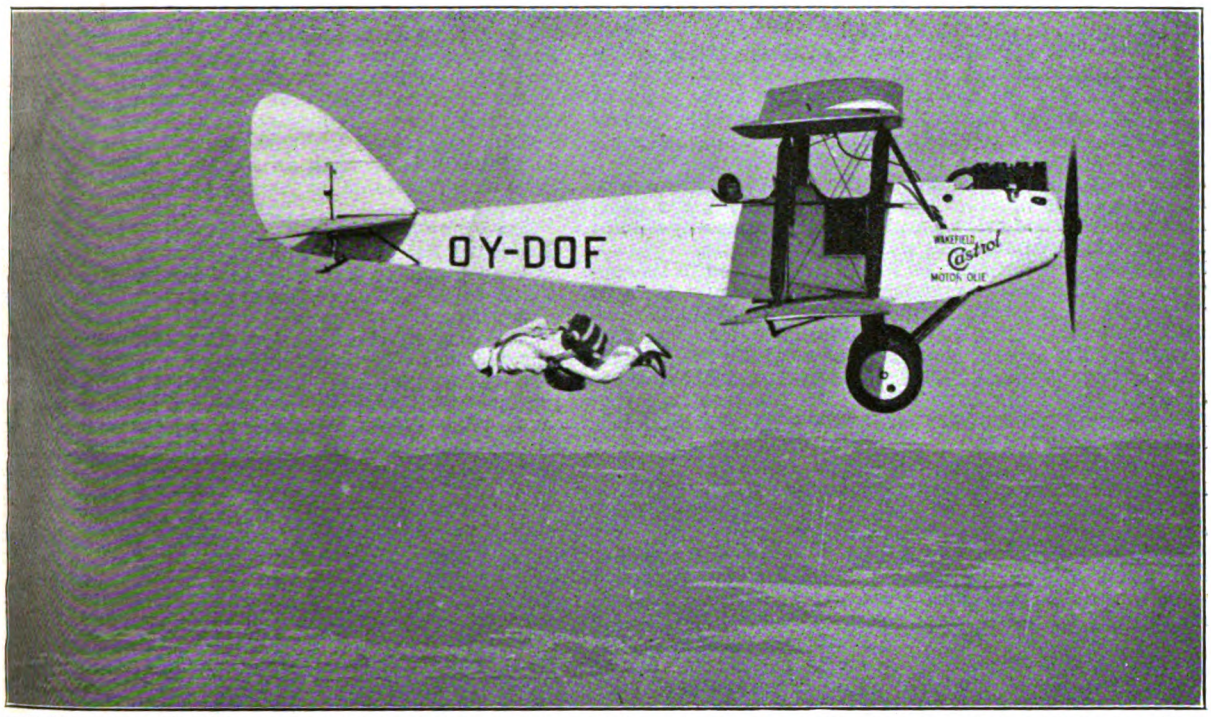
PARACHUTES AT OLYMPIA.



"IT IS MORE WORTHY TO LEAP WITHIN OURSELVES——"—Mr. John Tranum, complete with seat and lap type British Russell parachutes, leaving a D.H. Moth, piloted by Mr. M. E. J. Jensen, over the Kastrup Airport, Copenhagen.

THE IRVING.

Five different types of parachutes were shown at the International Aero Show at Olympia. That, by the time that the next Aero Show is held at Olympia, aircraft will be considered so safe and reliable that parachutes will not be included among the exhibits seems within the bounds of possibility. Applications for stand space for them may even be dismissed by the promotors with a contemptuous smile. But in the meantime,—apparently on the principle of the old lady who always curtsied in Church when the Devil was mentioned because, as she explained, "a little politeness cost nothing, and you never know,"—parachutes hold an honourable position at any exhibition of aircraft.

The exhibitors do not disclose the number of visitors to the Show who have applied to them for an active demonstration of the infallibilty and luxury of this method of air travel, but nevertheless a good many people seem to be genuinely interested in them.

Taking the five types in alphabetical order the Irving comes first.

The *Irving* Air Chute, invented and designed by Mr. Leslie Irvin, and manufactured in this country by the Irving Air Chute of Gt. Britain Ltd., at Letchworth, is the standard parachute equipment in the Royal Air Force. It is called the Irving because the person who registered the parent firm in the United States did not know how to spell Mr. Irvin's name.

Since it was adopted it has saved the lives of 16 Service personnel and three civilians. The number of lives saved by parachutes made by the parent company in the U.S.A. is too great to record.

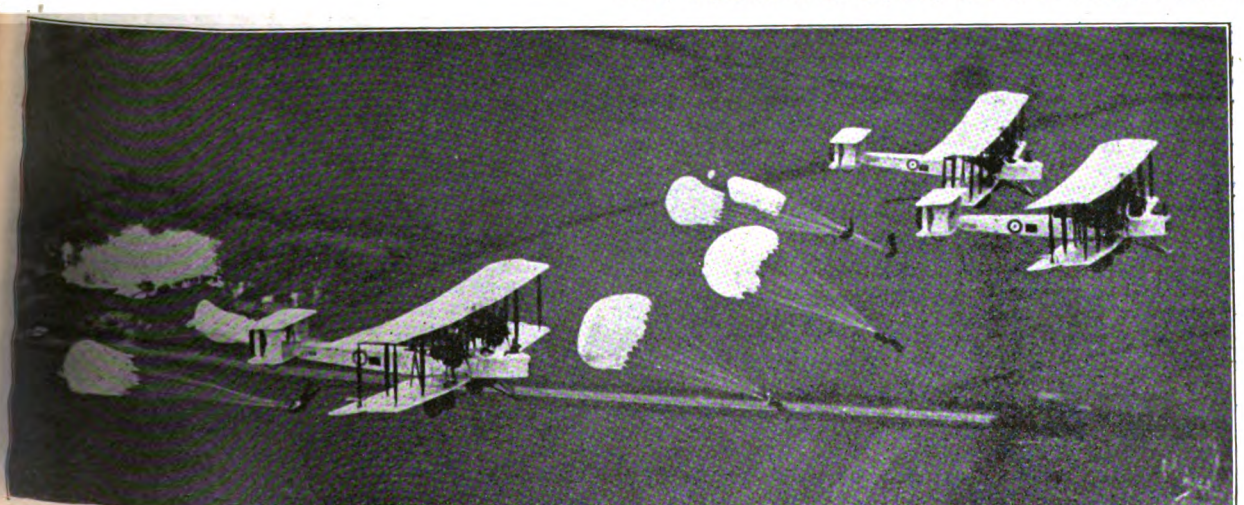
The Company's stand at Olympia shows three types of packing: the Seat type for pilots, the Lap Pack for observers, gunners and photographers and the Back Pack for use in lighter-than-air craft.

Irving Air Chutes are made in three sizes, 24 feet in diameter for general service use, 28 feet in diameter for exhibition and training jumps and 22 feet in diameter for use in conjunction with the 28 feet one for exhibition and training jumps.

The design and construction is the same for all sizes and in all kinds of pack.

A new type of pack was also exhibited on the stand. With this type the aviator wears the harness and keeps the pack in a handy position in the machine. There are two clips on the front of the harness and the pack snaps onto them with one movement. The parachute operates equally well with only one clip fastened. The straps of the harness are lightly stitched down the front, which stitching gives when the parachute opens, suspending the pilot from the middle of his back as in the other types of packing.

The harness consists of webbing of a tensile strength of 3,000 pounds and is reinforced on all metal parts. It is easily adjusted to fit anybody and is so designed that no



"——THAN TARRY TILL THEY PUSH (OR PULL) US."—A simultaneous pull-off by six airmen with Irving Airchutes from three R.A.F. Vickers Vimy biplanes.—(*With apologies to Shakespeare, Julius Cæsar, and all concerned.*)

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bodily injury can result to the wearer when the parachute is opened at high speed. The metal parts are chrome-nickel steel, with a tensile strength of over 5,000 pounds and are either galvanised or cadmium plated.

The fabric is a specially woven high grade silk and the suspension or shroud lines are silk cords of 400 pounds tensile strength. These cords are continuous from their point of attachment from one side of the harness to the other passing through and over the top of the parachute. The pilot parachute is attached to the main parachute by means of a separate silk cord of 400 pounds tensile strength. The action of the pilot chute provides a means of deploying the parachute away from the aviator and thus eliminates any chance of his becoming entangled in the main parachute.

The Irving parachute can be folded and packed in its container in a very simple manner and without any tools or equipment. The rip-cord which secures it is of flexible aircraft cable with locking pins on one end and a steel ring on the other. The average time for the parachute to open and assume normal descent is approximately 1 and 3/5 seconds after the hip-cord has been pulled. An officer of the U.S. Air Corps saved his life with an Irving Air Chute when his controls failed at 150 ft.

THE ROBUR.

The Robur Parachute was represented at the Show by Carl H. Lundholm A-B. of Stockholm. The Robur parachute is produced by the manufacturers of the Thörnblad parachute and many of the devices of the latter are produced in the Robur. The special features claimed for this parachute are (1) The static release device which operates independently of the manual release; (2) both the release devices are well protected on the container; (3) the opening of the container is effected by one single elastic cover coiling up to either side; (4) the pilot chute is packed separately from the main parachute; (5) the pilot chute is fitted with harness of new and improved construction; (6) the manual release device can be easily disconnected from the container and the harness.

The free end of the static line is attached to a suitable place in the cockpit or cabin. When the aviator jumps the seal of the pocket which holds the static line is broken. The line is drawn out of its container and then draws out a steel wire. This releases a cover fitted with rustless springs or elastic which coils up and releases a pilot-chute. The pilot-chute fills with air. Its lines are stretched and draw two short pins out of two flexible loops. This frees the flaps covering the main parachute and draws it from the pack. The constructors claim that this method of packing the pilot chute separately from the main parachute eliminates the possibility of the pilot chute being driven between the shroud lines of the main parachute by the airscrew stream.

The Robur parachute is fitted with a manual release in addition to the static one. The canopy is made of Japanese silk or cotton of high quality. The shroud lines are of silk of 450 pounds strength.

THE RUSSELL.

The British Russell "Lobe" Parachute is made by the British Russell Parachute Co. Ltd., of Dominion Works, Dunsmure Road, Stoke Newington, N.16. The Russell parachutes are made in silk or specially constructed cotton material and are equipped with the Company's new improved adjustable harness and positive-action manually-operated packs.

A jerk of the release ring frees and ejects the parachute from the pack and there is no pilot parachute and no rubber elastic or springs.

The packs are of 12 oz. double-fill O.D. duck, with .080 piano-wire pins. The joints are wrapped, soldered and tested, rip-cord rings are made of seamless steel tubing cadmium-plated. The release-ring and rip-cord attachments are so constructed as to make it practically impossible to rip the pack except by pulling the ring after it has been removed from its pocket.

The constructors claim that the parachute operates safely at 100 feet. Oscillation or swinging is reduced to a minimum by a specially designed lobe-type canopy. It is easily controlled during descent with the means provided for partial collapsing and hastening descent. The Russell parachute can be easily packed and operated by inexperienced persons.

The Russell parachute is well known to those who attend flying meetings in this country and have so often watched Mr. John Tranum make exhibition descents with one.

THE SALVATOR.

The Salvator Parachute is manufactured by S. A. Brevetti Aeronautici "Salvator," Rome. It was invented by Giuseppe Furmanik and Prospero Freri and the first model was constructed in 1922. In 1925 it was adopted by the Royal Italian Air Force.

The Salvator parachute can be released automatically or by hand. It opens within 1½ seconds. The deformable cap allows of a relatively rapid escape of air which moderates the shock to the aviator at the moment of opening.

The makers claim that the Salvator parachute and harness weigh considerably less than any other standard make of parachute and harness. This is because the straps and braces of ordinary harness have been replaced by a broad belt of simple and compact design. This belt has a light webbing strap over one shoulder to keep it in place. The parachute pack is worn on the back and has been designed to be as comfortable as possible to the wearer.

THE VINAY.

The Vinay Parachute is manufactured by Louis Vinay, 67, Boulevard Bessieres, Paris 17e. This parachute is made so as to open quickly and to descend slowly. It can be had with a canopy of silk or cotton and it is packed into a variety of containers.

The most novel form of packing is the Vinay parachute suit which is a leather flying-suit and parachute-pack all in one. This parachute-suit is intended for observers, photographers or others who require freedom of movement in aircraft. The Blériot, Hanriot, Farman, Caudron, and other Flying Schools have adopted the Vinay Parachutes.—C. M. MCA.

HOW TO SPEND A HOLIDAY.

At 22.17 hrs. on July 28 a Curtiss Robertson Robin monoplane (Curtiss Challenger engine), piloted by Messrs. Dale Jackson and Forest O'Brien had succeeded in remaining in the air for 351 hours and were still flying.

A message dropped by the pilots onto the St. Louis Airport, over which they are flying, said, "We don't know how many more hours we have left in our ship and motor, but we are going to find out. So far the flight hasn't bothered either of us and we can last out as long as there is any run left in the motor, which doesn't seem to be weakening."

So far they have beaten the previous record of 246 hrs made in California. Another competing machine in Texas has been forced down after 233 hrs.

On July 29 a machine which had started at Minneapolis piloted by Messrs. P. J. Crichton and Owen Hangland in an attempt to beat the Robin, crashed near Minneapolis after 155 hrs. flying. Mr. Crichton was killed outright and Mr Hangland died later from his injuries.

At noon on the same day the Curtiss-Robertson Robin had completed 387 hrs.

And so it goes on.

RECORDS FOR WOMEN.

At the recent meeting of the *Fédération Aéronautique Internationale* at Copenhagen the delegates agreed to recognise a category of Records for Women.—One gathers that the representative of the Royal Aero Club, Lt. Col. Mervyn O'Gorman, strenuously opposed this stupid decision.

One has always been in favour of Votes for Women, as it puts women in the same category as men. Records for Women puts women into a different and inferior category. Convinced feminists should be violently opposed to any regulation which puts women in a class apart and thereby advertises feminine inferiority.

ANOTHER FEMININE RECORD.

On July 28-29 Mlle. Maryse Bastié, flying a Caudron monoplane (40 h.p. Salmson engine) over Le Bourget Aerodrome succeeded in remaining in the air for 26 hrs. 46 mins. This exceeds by 24 mins. the previous longest flight made by a woman.

Presumably there is evidence that this aviatrice was not accompanied by a male pilot of the first class as she was when she laid claim to a feminine long-distance record some time ago.

A DISCLAIMER.

During the Aero Show a booklet was distributed bearing the title *Conquering the Air* and purporting to be written "By C. G. Grey, Editor of THE AEROPLANE." One desires to dissociate oneself from the contents of the said booklet.

Some weeks before the Show one was asked to write an article on certain great flights in which the products of the Wakefield firm were used. Having the greatest possible respect for Sir Charles Wakefield and the valuable work that he has done for Aviation, and hoping that an article on these flights might in some little way help Sir Charles Wakefield's work, one did in fact write an article which might have formed the contents of this booklet if it had been let alone.

Unfortunately, whoever were responsible for producing the booklet have mangled the original article to such an extent, have re-written it into such painful journalese, and have put into it so many phrases and so many sentiments entirely unlike any that one would personally express, that one is regretfully compelled in self-defence to disclaim the authorship.—C. G. G.

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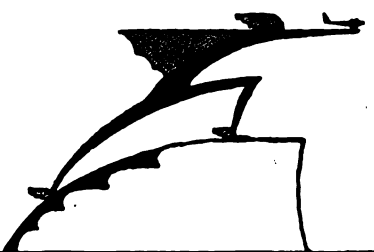

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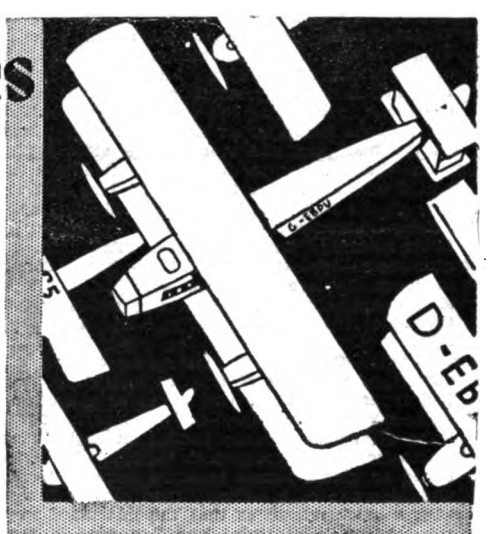

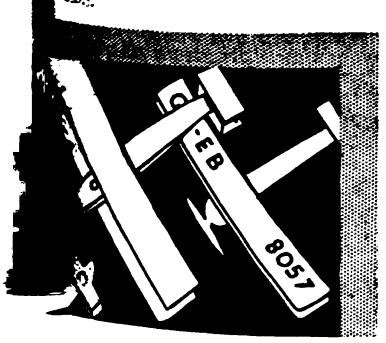

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AN ITALIAN LIGHT AEROPLANE.—The Romeo Ro.5 two-seat monoplane (85 h.p. Fiat A-50 engine) built by the Officine Ferroviarie Meridionali of Naples.

THE ROMEO Ro.5.

One of the most interesting foreign light aeroplanes exhibited at Olympia was the Romeo Ro.5, a two-seat light aeroplane built by the Italian firm known as the Societa Anonima Officine Ferroviarie Meridionali, of Naples.

At the Italian Government Trials held at the Montecelio aerodrome, near Rome, this year, the Ro.5 put up a remarkable performance. The machine was the fastest, had the greatest speed range, and had the best take-off among the competitors, and finished first in the severe test of 100 hours' flying and 100 landings. During these trials the strength of the fuselage structure and undercarriage was amply demonstrated.

Any make of engine, either radial or in-line, of from 80 to 100 h.p., may be fitted to this machine.

In the machine shown at Olympia, the 85 h.p. Fiat A-50 seven-cylinder radial engine was installed.

SPECIFICATION.

TYPE.—Two-seat light monoplane with folding wings.

WINGS.—High-wing monoplane. Wings in two outer panels attached to small centre-section. Spruce spars of rectangular section of constant depth but diminishing thickness. Ribs have plywood webs with flanges of ash and reinforcing pieces of linden. Drag bracing consists of duralumin struts and piano-wire bracing. Wing covered with fabric, leading edge being reinforced with plywood. Narrow cord ailerons hinged along whole of outer wing panels. These ailerons can be operated as flaps to increase lift. The wings are braced with streamline steel-tubes arranged in the form of "N"s hinged to fittings on lower longerons, with the front legs attached to pyramids carrying the undercarriage shock-absorbers. For folding the front bracing struts are detached, and the ailerons folded up on the wings. The wings then hinge back on the rear spar and rear bracing strut fittings.

FUSELAGE.—Rectangular section welded steel-tube structure. Rigidly braced with steel tubes to aft of the rear cockpit, thence by piano-wire to the tail. Fabric and plywood covering.

TAIL UNIT.—Normal monoplane type. Structure similar to wings with fabric covering. Control surfaces unbalanced.

UNDERCARRIAGE.—Wide-track divided axle-type. Steel-tube Vees, hinged to lower fuselage longerons with telescopic legs sprung with elastic shock-absorber, hinged to pyramids carrying bracing struts. Ssock-absorber travel is nearly 10 in. Tracking tail skid of steel tube.

POWER PLANT.—One 85 h.p. Fiat A.50 air-cooled engine, though any other type of engine of from 80 to 100 h.p. may be fitted. Two fuel tanks of 70 litres (15½ galls.) each are placed in wings, one on each side of fuselage. Gravity feed to engine. Oil tank of 15 litres (3¼ galls.) capacity carried on engine mounting.

ACCOMMODATION.—Two cockpits in tandem. Both may be entirely enclosed by glazed panels reaching from fuselage to centre-section. Wide doors to each cockpit. Dual control of normal type is fitted with a quick release so that the instructor may immediately disconnect pupil's controls. The flap gear is operated by a small screw in front of pilot on dashboard.

DIMENSIONS.—Span 11.22 m. (36 ft. 11 in.), Length 7.050 m. (23 ft. 3 in.), Wing area 19 sq. m. (205 sq. ft.), Width folded 3 m. (9 ft. 10 in.)

WEIGHTS AND LOADINGS.—Weight empty 400 kgs. (882 lbs.), Disposable load 280 kgs. (617 lbs.), Weight loaded 680 kgs. (1,499 lbs.), Wing loading 35 kg./sq. m. (7.17 lbs./sq. ft.), Power loading 8 kg./h.p. (17.6 lbs./h.p.).

PERFORMANCE.—Maximum speed 170/180 km./hr. (105/112 m.p.h.), Cruising speed 150/155 km./hr. (93/96 m.p.h.), Landing speed 60/65 km./hr. (37/40 m.p.h.), Service ceiling 5,000 m. (16,400 ft.), Range 1,000 km. (620 miles).

INDIAN AIR MAIL NEWS.

The homeward-bound mail from Karachi was unable to start last Sunday because the aerodrome was unsafe owing to heavy rains. The machine left a day late, on Monday and should be able to make up the lost time by making longer hops, the first being from Karachi to Bushire instead of to Jask.

The outward-bound mail arrived at Karachi on Monday evening instead of Saturday owing to unusually bad weather. The first delay occurred between Baghdad and Basrah. A severe sandstorm between these two places forced the machine to return to Baghdad, where it was delayed for two days. On reaching Jask the mails were again held up, this time because the aerodrome at Karachi was flooded after a 18-hour downpour.

A COLLISION AT STAG LANE.

On July 29 two D.H. Gipsy Moths, one piloted by Mr. A. S. White with Mr. F. L. Knight as passenger, and the other flown by Capt. G. F. Boyle alone, collided at a height of about 800 ft. near Stag Lane Aerodrome. Both machines were wrecked and all three occupants were killed.

Apparently Mr. White, who was chief demonstration pilot to the De Havilland Aircraft Co. Ltd., was gliding in to land when the other machine, approaching from the opposite direction, flew underneath it and the wings of the two machines touched.

The first machine fell into a field and was completely wrecked and the second machine fell some 200 yards away and almost immediately burst into flames.

ARCHER STATHAM WHITE, A.F.C.

Flt. Lt. A. S. White, known to all his friends as "Jimmy" has for some years been one of the best-liked people in civil aviation. He joined the De Havilland firm about seven years ago and after considerable experience as an air-taxi pilot was made chief pilot of the De Havilland School. With the last few months he has been appointed as demonstration pilot to the firm and in that capacity he demonstrated Moths to possible purchasers, anywhere and at any time.

He was one of the very finest instructors. He had an almost uncanny way of imparting his knowledge to pupils and his manner instilled confidence into the most nervous.

One has had the privilege of doing a certain amount of flying with him lately and one had unfailing faith in him. And one knows how very much his friends will miss him.

To his wife and family one offers the sympathy of all those who were proud to number Jimmy among their friends.

—G.

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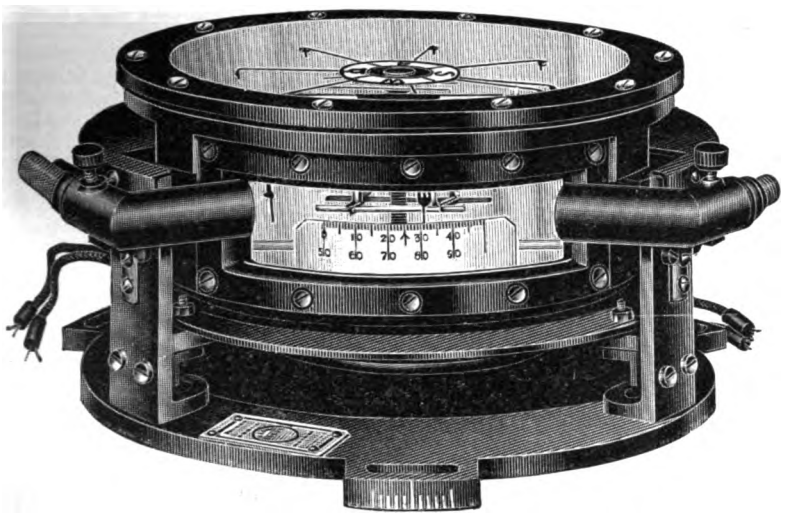

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 19; Monday, 46; Tuesday, 43; Wednesday, 48; Thursday, 57; Friday, 52; Saturday, 43.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 105, passengers 778, freight 49¾ tons. India Route: Inward, passengers 3, mail 694 lbs.; outwards: passengers 5, mail 670 lbs.

AIR UNION:

Paris—London and return: Machines 84, passengers 364, freight 37 tons.

K.L.M.:

Amsterdam—Rotterdam—London and return: Machines 50, passengers 360, freight 16¼ tons.

SABENA:

Brussels—London and return: Machines 15, passengers 102, freight 5 tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London and return: Machines 26, passengers 57, freight 5¾ tons.

MISCELLANEOUS:

British machines 21, passengers 29.

Foreign machines 7, passengers 2.

Total number of trips by British machines, 126, carrying 807 passengers. Foreign machines, 182, carrying 885 passengers.

COMPARATIVE FIGURES.

Week ending July 27:

Machines, 308; Passengers, 1,692; Crews, 669; Total personnel, 2,361.

Corresponding week, 1928:

Machines, 245; Passengers, 1,692; Crews, 469; Total personnel, 2,161.

Corresponding week, 1927:

Machines, 194; Passengers, 1,383; Crews, 357; Total personnel, 1,740.

Corresponding week, 1926:

Machines, 192; Passengers, 1,220; Crews, 237; Total personnel, 1,457.

Corresponding week, 1925:

Machines, 169; Passengers, 941; Crews, 242; Total personnel, 1,183.

Corresponding week, 1924:

Machines, 181; Passengers, 930; Crews, 225; Total personnel, 1,155.

Corresponding week, 1923:

Machines, 146; Passengers, 682; Crews, 233; Total personnel, 915.

Corresponding week, 1922:

Machines, 209; Passengers, 734; Crews, 342; Total personnel, 1,076.

Corresponding week, 1921:

Machines, 155; Passengers, 462; Crews, 144; Total personnel, 606.

Corresponding week, 1920:

Machines, 115; Passengers, 240; Crews, 144; Total personnel, 384.

FINANCE FOR CIVIL AIR PORTS.

In the House of Commons on July 26, Mr. Harold Balfour asked the Lord Privy Seal whether the provision of financial assistance to local authorities or private concerns for the purpose of aiding the construction of provincial civil airports in England and Scotland can be considered in conjunction with other schemes for work to be undertaken during the coming winter for the relief of unemployment.

Mr. Thomas: In so far as such works are carried out by local authorities it will be open to them to make application for assistance under the Development (Loan Guarantees and Grants) Bill. Indirectly Government assistance is already being offered for such projects under the agreement which is being made with National Flying Services Limited.

A WARNING TO WING-WALKERS.

Air Ministry Notice to Airmen No. 41 of the year 1929 warns Wing-Walkers as follows:—

(1) The attention of all concerned is directed to the structural damage which may be caused through demonstrations of "wing-walking" being carried out during flight on light aeroplanes such as the De Havilland Moth, Avro Avian, Blackburn Bluebird, Simmonds Spartan, etc.

(2) If the practice of "wing-walking" on the type of aircraft referred to above is pursued, it will be necessary for the Air Ministry to prohibit it under Article 9 (4) of the Air Navigation (Consolidation) Order, 1923.

A BOMBAY GROUSE.

The Bombay correspondent of *The Times* writes as follows:—

The statement by Mr. Wedgwood Benn in the House of Commons yesterday that the Government of India had decided to give the Karachi-Rangoon air mail service priority over the Karachi-Bombay service has been received with indignation by the Bombay commercial community. The Bombay Chamber of Commerce wrote to the Government of India in the first week of June, pointing out the necessity for the establishment of an air mail service between Bombay and Karachi.

The Chamber stated that Bombay, one of the most important cities of the Empire, was placed at a great disadvantage by not being in direct aerial communication with the air service to Karachi, although mailed matter received at and dispatched from Bombay formed a large part of the total mail. The demands of the Bombay Chamber of Commerce have since been strongly supported by all the leading chambers of commerce of the Bombay Presidency and South India. At present it takes mails more than two days reach Bombay from Karachi.

This grouse seems justified to some extent. The whole point of an air mail service is lost if there are delays at either end. A two-day delay between Karachi and Bombay is obviously bad, and steps should be taken to link Karachi and Bombay more closely. But the millionaire business community of Bombay could well afford to run an air line of their own to take their mail to and from Karachi.

The whole point about going through to Calcutta is that the Indian line is merely a short link in the great Imperial Airway (Strategic as well as Commercial) to Australia.

THE A.D.C. AIRCRAFT LTD. SPORTS.

The Athletic Club of A.D.C. Aircraft Ltd. held their annual sports at Croydon Aerodrome on July 27. Many spectators were present including Lt.-Col. J. E. Barrett Lennard, Mr. and Mrs. Henry Morgan, Mr. A. W. Haschke, Major Jack Stewart, Capt. R. Walker, Mr. E. Olney, and Mr. Neville Stack.

The latter gave a fine exhibition of aerobatics on a Hermes-Moth which aroused great enthusiasm.

The main prize winners were:—100 yds. handicap, A. C. Johnstone; 220 yds. and 440 yds., L. Greaves; 880 yds., H. Green; 1 mile, W. Hills; 100 yds. veterans and 1 mile walking, H. Peck.

The Silver Trophy for the Department winning the most events was won by the Machine Shop. The Trophy for the individual winning most events resulted in a tie between L. Greaves and H. Peck.

The Clerk of the Course was Mr. A. H. Capel, designer of the Hermes, who proved that he can manage sports as efficiently as he can manage the intricacies of design.

PERSONAL NOTICES.

DEATH.

WILLIAMSON.—On July 27, at Coventry Hospital, the result of a flying accident, Jock, second son of Mr. and Mrs. Williamson, Heligan, Pentewan, Cornwall, aged 21 (R.A.F.O.).

BIRTHS.

BENSON.—On July 23, to Eva, wife of Flt. Lt. Stewart Benson, A.F.C., R.A.F., of Anna Valley, Andover—a son.

DAVIES.—On July 24, at Waverley Court, Camberley, to Aldyth (*née* Tudor), wife of Flt. Lt. E. D. H. Davies, R.A.F.—a daughter.

YARDE.—On July 22, at Tangmere, Chichester, to Marjorie, the wife of Flg. Off. Brian C. Yarde, R.A.F.—a son (stillborn).

MARRIAGES.

BURTENSHAW—M'QUEEN.—At St. Peter's, Meavy, South Devon, on July 24, Lieut. Jack Burtenshaw, R.N., only son of Sq. Ldr. A. Burtenshaw, O.B.E., M.C., R.A.F., to Margot, only daughter of Eng. Capt. B. D. M'Queen, R.N., retd., and granddaughter of the late John M'Queen, Grotchet Knowe, Galashiels.

DRUMMOND—DRAKE-BROCKMAN.—On July 17, at St. John's Church, Toorak, Melbourne, Australia, Sq. Ldr. R. M. Drummond, D.S.O., O.B.E., M.C., R.A.F., to Isabel Rachael Mary Drake-Brockman, only daughter of the late Paris Frederick Drake-Brockman, of the Inner Temple, and of Mrs. Drake-Brockman, of Cintra Park, Upper Norwood.

PEARSON—FRITH.—At Grantham, on July 24, Flt. Lt. Wilfred Joshua Pearson, to Irene May, daughter of Mr. and Mrs. W. G. Frith.

TAIT—BROOKE.—A marriage took place on July 26, between Flt. Lt. V. H. Tait, R.A.F., and Miss Phyllis Brooke, only daughter of Brigadier-General H. F. Brooke, C.B., C.M.G., C.B.E.

TAYLOR-HURRELL.—On July 10, at Bristol, Maj. F. C. W. Taylor, Education Officer, R.A.F., to Mrs. Renée Hurrell, of Stoke Bishop (Nine Elms, Heckington, Lincs.)

FORTHCOMING MARRIAGE.

BUXTON—FISHER.—The engagement is announced between Geoffrey Mungo Buxton, R.A.F., eldest son of the late Commander Bernard Buxton, D.S.O., Royal Navy, and the late Lady Hermione Buxton, and Horatia Mary, younger daughter of Vice-Admiral Sir William Fisher, K.C.B., C.V.O., and Lady Fisher.

SCOTT—WHARTON.—The marriage arranged between Charles Edward Scott, M.C., R.A.F., late Sherwood Foresters, third son of the late Mr. James Scott, of Dublin, and Mrs. Scott, and Kathleen May, only daughter of Mr. A. Wharton, Bircham Tofts, King's Lynn, will take place at Karachi on Oct. 3.

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Special PREPAID Rate—18 words 4/6, 3d. per word after; 13 insertions, 18 words, 4/-; 26 insertions, 18 words, 3/6; 52 insertions, 18 words, 3/-, 2d. per word after. Situations Wanted ONLY—18 words 1/-.

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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Gorey

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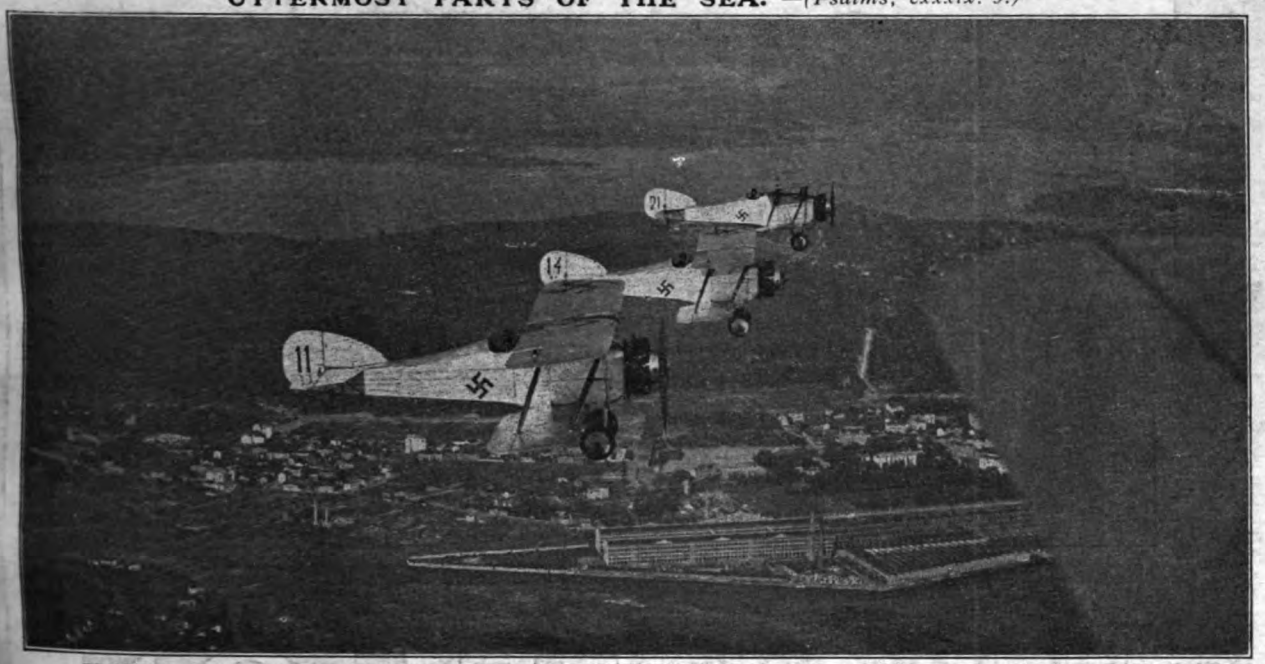

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AUG. 7, 1929.

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VOL. XXXVII
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ON THE CHALLENGE INTERNATIONAL DE TOURISME.

That is a fine title. Is not it? And Tourism is a good word which is worth adopting,—for it means rather more than the mere act of touring.

Last year the event from which this great International Competition has grown was merely a tour of France,—and we all knew it as the Orly Meeting, because it began and ended at the Orly Aerodrome to the South of Paris. This tour also begins and ends at Orly. But the course takes the competitors to nearly all the capitals of civilised Europe. So it is truly international. And it is truly a challenge from one nation to another.

In particular the competition is a challenge from Germany to the rest of Europe.

Originally there were 82 entries. Of these, 34 were entered by the Aero Club of Germany. They included one entry (Lord Carbery), who this time claimed to be a Canadian, and one Austrian.

There were 28 entries by the Aero Club of France. These included one Brazilian, one American, one Franco-American, five British, two Belgian, and two Yugo-Slav—leaving only 16 actual French entries against 32 German.

There were 14 Italian entries,—as usual with orders from Il Duce Mussolini to win or crash. There were four Czechoslovak entries. And there were two Swiss.

The machines had to arrive at Orly by midday on Saturday last,—but most of them were there on Friday. Those which were in time, 55 in all, were:—

Germany,—24 machines—including 8 B.F.W.'s; 2 Raab-Katzensteins; 1 D18 (Darmstadt Akademische Fliegergruppe); 2 Albatroses; 6 Klemms; 1 Arado; 1 Focke-Wulf; and 3 Junkers.

France,—14 machines—including 3 Caudrons; 1 Guerchais; 5 Potez; 2 St. Huberts (Belgian); 2 Moths (British); and 1 Icarus-Michlovitch (Yugo-Slav).—So there are only 9 French machines in all.

Italy,—12 machines—including 4 Fiats; 1 Cantiere Navale Triestino; 4 Officine Ferroviarie Meridionale (Romeos); and 3 Bredas.

Czechoslovakia,—3 machines—including 2 Avias (Antilopas); and 1 Aero.

Switzerland,—2 machines—both Klemms, and therefore German aeroplanes.

THE MOTORS.

The motors used by the various national clubs and manufacturers were as internationally mixed as the entries. They were:—

Salmson 13,—to wit, 5 in French machines, 5 in German machines, 2 in Swiss and 1 in a Yugo-Slav.

Siemens 8,—all in German machines.

Fiat 8,—all in Italian machines.

Cirrus 7,—3 in German machines, 3 in Italians; and a Hermes in a German machine.

Walter 6,—3 in Czechoslovak machines, 2 in Belgians, and 1 in a German.

Genets 5,—all in German machines.

Renault 3,—all in French machines.

Gipsy 3,—2 in British machines, and 1 in a German.

Anzani 1,—in a French machine.

Isotta-Fraschini 1,—in an Italian machine.

The methods of cowling were as variegated as the machines into which the engines were fitted. And one fancies that the cowling will cause the downfall of many a good motor. There is a great deal to be said for the idea instituted by the Cirrus motor firm, which is that the engine-maker should discover what sort of cowling best suits his own motor, and that the cowling and mounting should then be sold as part of the complete power-plant, ready to bolt onto the fuselage,—which would be designed to fit.

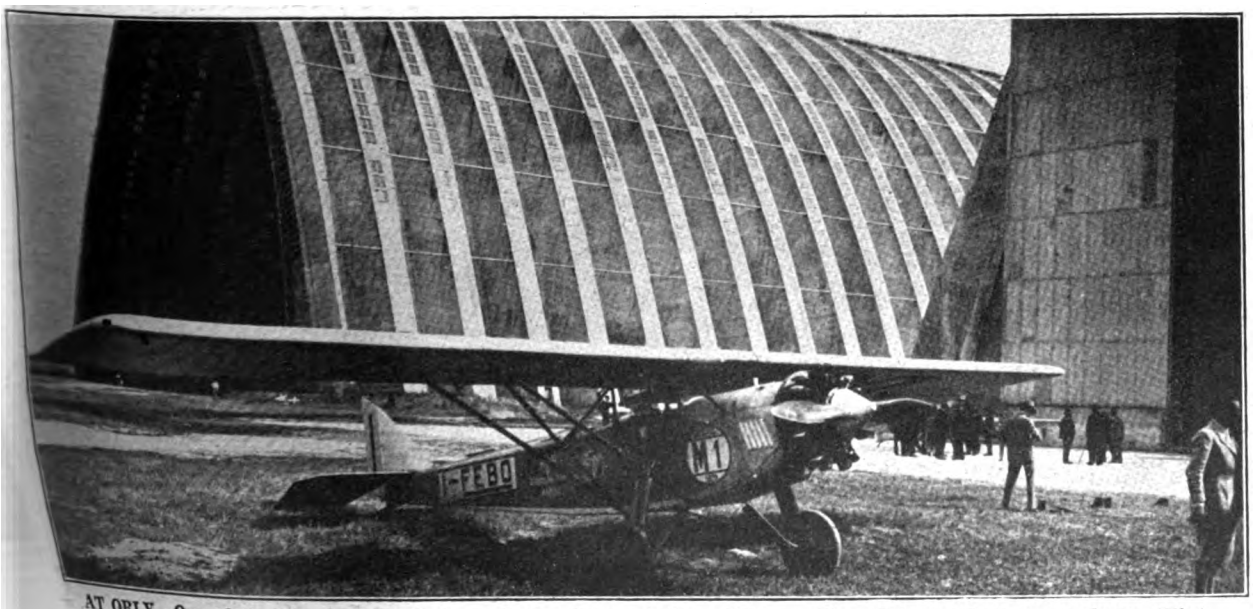
Some of the machines at Orly are so boxed-in that they will certainly over-heat, and others are left with their cylinders sticking out so that they must spoil the performance of the machines.

One point to be noted is that there are no machines with two-cylinder or three-cylinder engines. Four was the minimum, and most had five or nine.

Taking them all round, the machines at Orly showed remarkable advance in the design and construction of light aeroplanes on the Continent. They were enough to show anybody that unless we go ahead in this country we are going to lose our much-prized lead in light aeroplanes.

OUR LOST CHANCES.

The great pity is that there were not more British entries. Originally there were four. Lady Bailey arrived late. The Moth which she intended to fly was a brand-new one, and for some reason could not be got ready in time. Consequently she was disqualified. Mr. Staniland and the Spartan did not appear at all. That left only Mr. Broad and Miss Spooner. But Lady Bailey, always a sportswoman, is flying round the course with the rest.



AT ORLY.—One of the big airship sheds and the door of the other. The Romeo Ro.5 monoplane (Fiat motor), flown by Gelmetti, is in the foreground.

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AT ORLY.—Looking towards the aerodrome. The Arado and one of the Bredas are noticeable.

The British entries were made through the Aéro Club de France, so our two representatives are flying under the French flag. The reason the Royal Aero Club took no part in the competition was that each country participating had to pay 20,000 francs to be represented, and, as there seemed no prospect of any considerable number of British machines being entered, the Royal Aero Club did not feel like putting down nearly £200 for the sake of entering only three or four machines.

Also there was a certain amount of soreness in England over the last Orly competition, because the prizes which were won in September of last year were not handed over to the winners until about January of this year, and so people who were concerned in the competition last year were not keen on entering this year.

Those who might have entered for the competition probably omitted to notice that whereas last year's competition was run by an independent concern—merely under the rules of the Aéro Club de France—this year's competition is being run by the Aéro Club de France itself, and is therefore being properly conducted. Anyhow, by not entering for the competition we English have lost another magnificent chance of advertising our aircraft to the world.

Affairs at Orly.

Last year at Orly the whole thing was more or less of a joke. People rushed around frantically and pulled machines on and off scales and did all kinds of funny things with them. This year everything was done with a machine-like precision which was wholly admirable and businesslike. The result of all this precision was in fact to make the proceedings rather dull, but they were distinctly interesting.

But, apparently, the Aéro Club de France, like our Society of British Aircraft Constructors and our Society of Motor Manufacturers and Traders, is not interested in interesting the public in aviation. And the Aéro Club de France went rather further than we did in hiding aviation from the public gaze.

We did at any rate allow people of leisure to come to our Aero Show, even though we kept the mere vulgar public away by throwing them out at nine in the evening. The Aéro Club de France went one better than that. The competing machines were housed this year in a great airship shed at Orly, on the south side of the aerodrome, which belongs to the French Naval Aviation Service. And none is allowed to penetrate there without a special permit.

Last year the machines were housed in the ordinary civil sheds on the west side of the aerodrome, and the members of the public who were interested in flying were able to go into the public enclosure of the aerodrome and hang over the fence and watch what was going on. This year nobody can enter the Naval Airship Station except those who are provided with the necessary badge or brassard by the Aéro Club de France. And as the Naval Airship Station is the better part of a mile away from the Civil Air Station, the public can see nothing—except machines in the air, when they happen to pass over that way.

Consequently on Sunday, although tens of thousands of people must have passed the aerodrome on the main road to Fontainebleau, one of the most popular Sunday resorts for Parisians, there cannot have been at most more than a thousand or so privileged beings on the aerodrome.

A Matter of Catering.

The one thing about the organisation at Orly which was thoroughly bad was the arrangement of food supplies. The sanitary arrangements were not bad, for the simple reason that there were none at all.

Naturally there is always great difficulty in catering for anything like a crowd in an out-of-the-way place like an aerodrome, but at any rate the catering people could have found out how many pilots and passengers and mechanics there were, and roughly how many permits had been issued to other people, and could have made some sort of a shot at catering accordingly. But they did not. The result was that the people who went to lunch first got whatever there was, and those who came later got no service, although there seemed to be plenty of food about.

On Sunday one went to lunch with Mr. Earl Osborn and Mr. Percival. We waited an hour-and-a-half, because the waiters said that we were due for the third service and they were still serving the second. And then when the people who had been lunching disappeared the waiters still did nothing. At long last one of them brought a yard or so of bread. Then, after repeated calling, another one brought a bottle of beer. After that Mr. Osborn raided the kitchen and stole three plates of meat. After that, seeing that we were determined to have something, yet another wai

AT ORLY.—The Marine Airship Station.—In the fore ground is the little Baumer Sausewind, which arrived too late to compete, and was disqualified.

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After the Show!

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Captain Malcolm Campbell set up world's land speed records for 5 miles and 5 kilometres with his Napier engined car.

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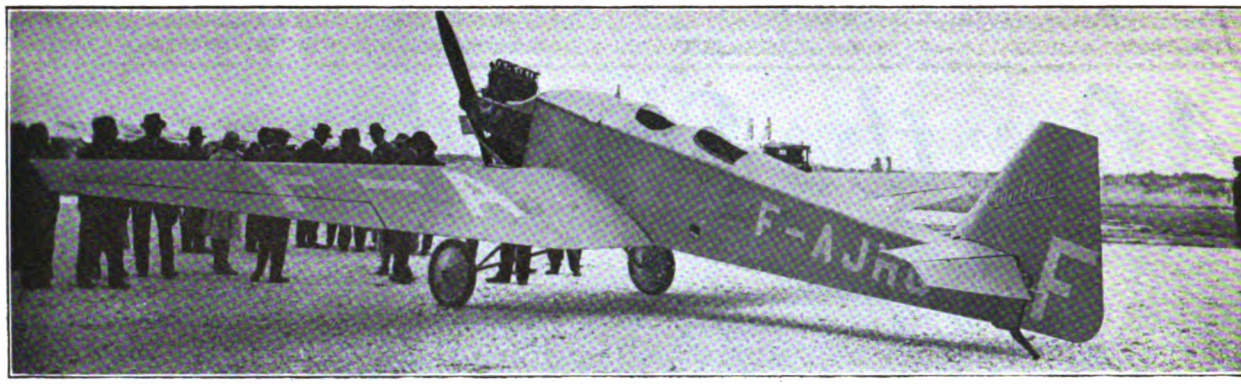

THE CAUDRON C-190.—A new low-wing monoplane (85 h.p. Renault four-cylinder-in-line engine) flown by M. Barbot.

brought some cheese, and then another offered some ices, but never brought them.

When we had finished they charged us 25 francs apiece for a lunch which would have been dear at 10 francs, and had the impudence to ask for a tip for the *service*,—which they did not get.

Incidentally, a pleasing contrast to this inefficiency was the comfort and civility at the Hotel Regina in the Rue de Rivoli. It is one of the big hotels of Paris and the accommodation is very good indeed, but the prices are no higher than those of a lot of the little hotels tucked away in back streets to which people go because they think they are cheap. The Regina is at the corner of the Place Rivoli and one side of it looks out onto the Tuileries Gardens, so it is quite in the best part of Paris. One can recommend it strongly to anybody whose finances and tastes do not quite run to Claridge's or the Lotti or the Chatham.

A French Criticism.

The French themselves do not seem to be any more pleased with the efforts of the French Aircraft Industry in this great International Competition than we have reason to be pleased with our own commercial enterprise.

That excellent paper *L'Aéro-Sports*, which has a way of speaking its mind as frankly as The Aeroplane does, issued a Special Edition, gratis, on Saturday, August 3, in which a writer signing himself "Chignole" tells the French something about themselves, for their own good, thuswise:—

Poor France! On the first day of the Meeting Orly exposes to the eyes of the world the great pity of our Aviation.

Quite happy at going to assist at a brilliant aeronautical competition we spun gaily along the beautiful road to Fontainebleau to the Aero-Port of Orly, where the 82 entrants for the Aerial Tour of Europe ought to find themselves united. We knew that this year, contrary to the preceding French participation in this kind of test would be important and that at least we would be able to defend ourselves. Interesting efforts, although tardy, had been made by our constructors, and we were going to see . . . exactly the contrary to what we *thought* we were going to see.

As soon as we crossed the sill of the hangar we had a slight shock to the heart. Under the same roof which still shelters some ancient aircraft, which certainly were not, even in the prime of their youth, very beautiful samples of our aeronautical fauna, there found themselves, ranged as on parade, squadrons of toy avions, German, British, Italian, Yugo-Slav, Czechoslovak, etc. . . . Of French competitors, not the tail of one, let alone the wings.

According to certain augurs, arguing the point on the aerodrome, this seemingly was a regrettable delay solely due to a last scrupulous over-elaboration of an ultimate tuning-up before tackling the test. What a profound error. The truth, alas! was quite otherwise. Little by little indiscretions filtered into the conversation. We learned one after another that A—— had declared forfeit; B—— likewise; that C—— had one of his machines (assembled in all haste, according to the eternal rite) too heavy, and that the second had not got its motor that morning; that G—— was still held up at Le Bourget for his Certificate of Navigability; and that P——'s outfit was not yet perfectly fit. Moreover, among all these aircraft, a certain number had never flown, had not even been put into the workshops a fortnight ago.

To insist would be painful. For the *n*th time, this year as in preceding years, French constructors have not understood that a competition of this importance is not an improvisation. For the International Challenge of 1929, as for the mobilisation of 1914, we were not ready. There is, however, a slight difference, which is that in 1914 it was necessary that everything worked, whereas to-day the safety of France did not exact anything more than that our constructors should press themselves. For the sake of our prestige a decent abstention would have been preferable, and the word forfeit takes in the circumstances a singular significance.

What a lesson all these nations give us, great and small, with their clear organisation, the impeccable presentation of their machines, the manifest superiority of their realisations.

To understand this it is necessary to have seen the fine Junkers Junior, a two-seater of 320 kilos, entirely metallic; the majestic Klemm, arriving in squadrons over the aerodrome; the graceful interior-drive Breda; the elegant Romeo; the bright-red Fiat; the curious Ikarus and Aerotovarna; the classic and rapid De Havilland Moth—all these machines, perfectly fit months ago, and here with their chances of winning, handled by pilots sure of their performances.

M. Chignole continues by saying that for twenty years French Aviation has taken part in competitions, and that he has followed them for nineteen years. Until recently he has been forced to believe in miracles. But he does not believe in them any more; he records simply, with a certain bitterness, because of the bankruptcy (mental) of French Aviation.

The Treaty of Versailles, he says, which was intended to kill German Aviation, has only perfectioned it. One cannot bridle with treaties the qualities of intelligence, method and adaptation of a laborious and sportive people. The Germans have not to-day any aviation of war. France has, and is far advanced, but in commercial and touristic aviation France will be, or even is, tributary to foreigners. And these, says M. Chignole, are the branches of aviation with which one has to count in these Locarnian times.

Continuing, he says that the French war machine (which he disrespectfully calls *zincs de guerre*), of 500, 600, and 700 horse-power, are wiped out from the point of view of performance by dwarfs of 70 h.p., which are doing their 200 kilometres an hour.

M. Chignole consoles himself, and France, with the fact that the national motor, the Salmson, equips not only those few French machines which are fit to enter the Tour of Europe, but also the imposing German team of Klemms, and the Yugo-Slav competitors, and he hopes that the French motor which won last year in a foreign machine will perhaps save this year also, if not the prestige of the aircraft constructors, at least that of the motor-makers. And he has a hope that the last-minute Caudron, put together during

THE ARADO L-1.—A cantilever monoplane (40 h.p. Sal mson engine) flown by Dr. H. H. Eggers.

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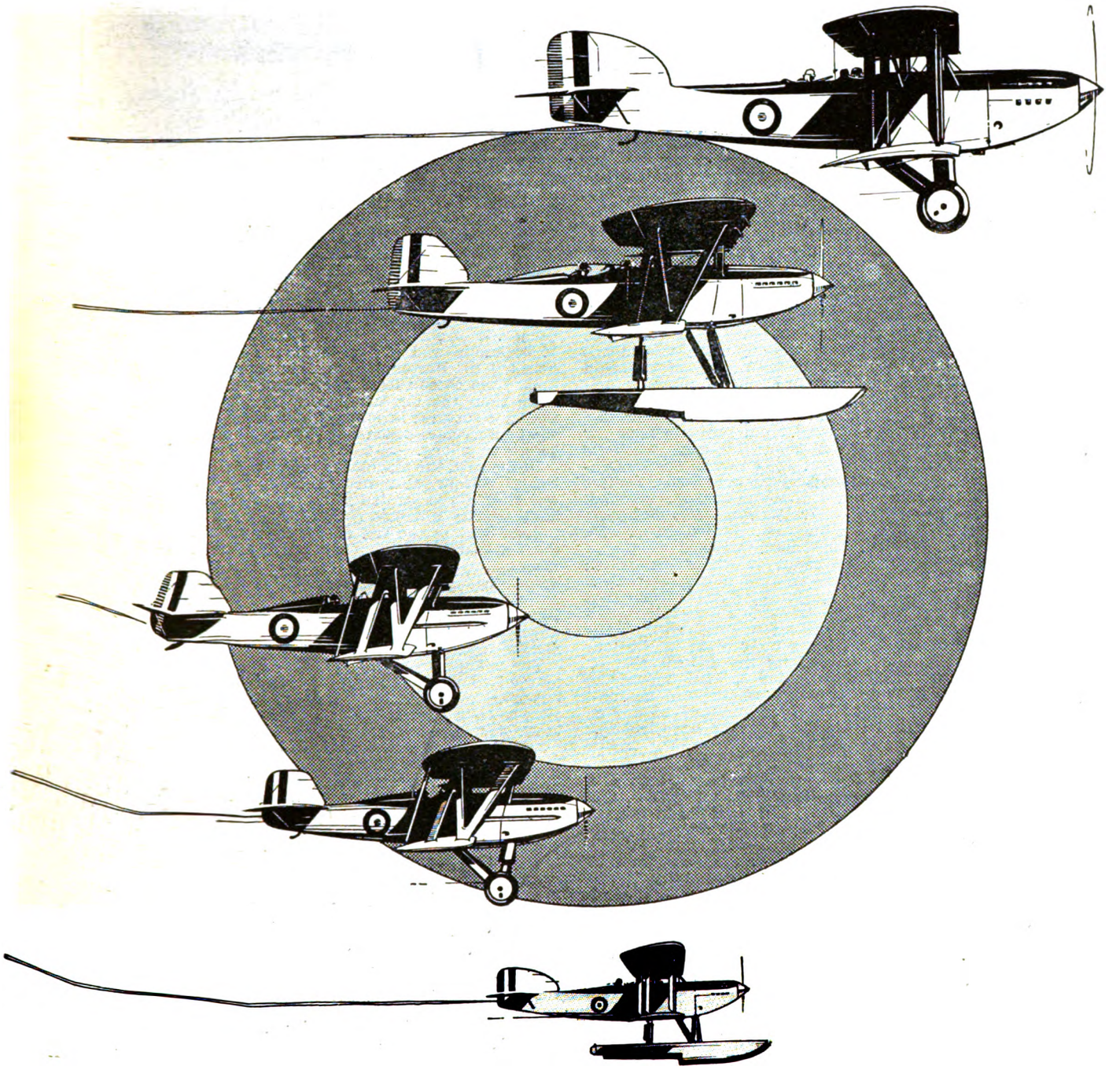

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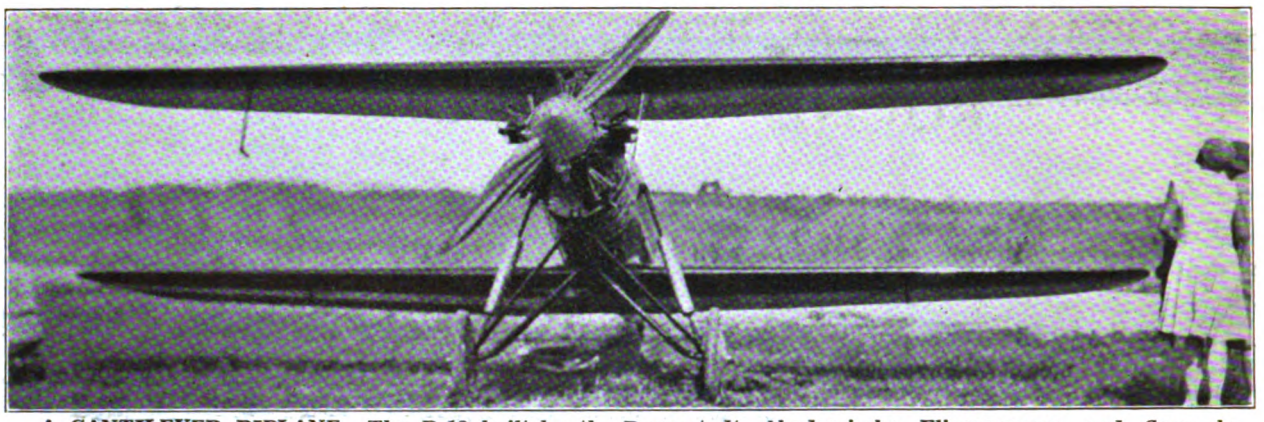


A CANTILEVER BIPLANE.—The D-18 built by the Darmstadt Akademische Fliegergruppe and flown by Herr Nehring.

days and nights of hard work, may as an outsider furnish the winner.

FROM OUR POINT OF VIEW.

One congratulates M. Chignole on his brilliantly acid article. One has been trying to do the same sort of thing with the British Aircraft Industry for a number of years. But the Englishman is considerably more pachydermatous than the Frenchman, and perchance M. Chignole may wake up the French Aircraft Industry to a sense of its immediate danger sooner than one is able to wake up our people on this side. Anyhow, one wishes him luck with his good work, and one congratulates him on a very fine literary effort.

The fact remains that our good friends from Germany have, in the slang sporting phrase, "got it all over us" as well as our friends the French. And the only hope for British Aviation, in this great Tour of Europe which is going to impress on the people of every capital on the Continent the progress of civil and sporting aviation, centres in the skill and staying power of that splendid sportswoman Miss Winifred Spooner, with her mechanic Mr. Campbell, and that wonderful all-round pilot Mr. Hubert Broad, with his mechanic Mr. Weedon. Good luck to them!

When one considers the enormous wealth of the British Aircraft Industry as displayed with so much ostentation at Olympia a fortnight ago, the pitiful way in which that Industry has missed the chance of advertising itself in this Tour of Europe is enough to make one weep. But, on the other hand, we can take all the greater pride in the four gallant people who are representing the British Empire. And we should feel particularly proud of Miss Spooner in that she is flying her own machine, bought with her own money, and is not flying as the representative of a firm, though very wisely the De Havilland people have lent her one of their best all-round mechanics.

THOSE AIRSHIP SHEDS.

One arrival at Orly on Saturday, relying for transport as usual on Captain Cyril Turner, A.F.C., late R.F.C. and R.A.F., and now representing Fairchild interests in Europe. He is the unfailing mainstay of British and American aviation people in Paris.

The first thing that struck one was the orderliness of everything. All the 55 machines were parked inside one of the two great airship sheds, which were built at Orly towards the end of the War 1914-1918 for rigid airships of the largest size.

These sheds are in fact about 1,000ft. long by 300ft. wide at the base, by about 250ft. high. They are built of ferro-concrete, practically in the form of half-hoops. Only one of them is actually finished—the other has no doors.

They are really beautiful examples of reinforced-concrete architecture and construction. Mr. Jackaman, who, besides being one of our best pilots of these days, is a constructor of buildings, and in fact built the sheds and the Social Focus at the Heston Air-Park, simply could not tear himself away from these sheds. They seemed to fascinate him even more than the aircraft inside. So we may some day see similar structures in miniature on some of the many municipal aerodromes which we are going to have in this country before very long.

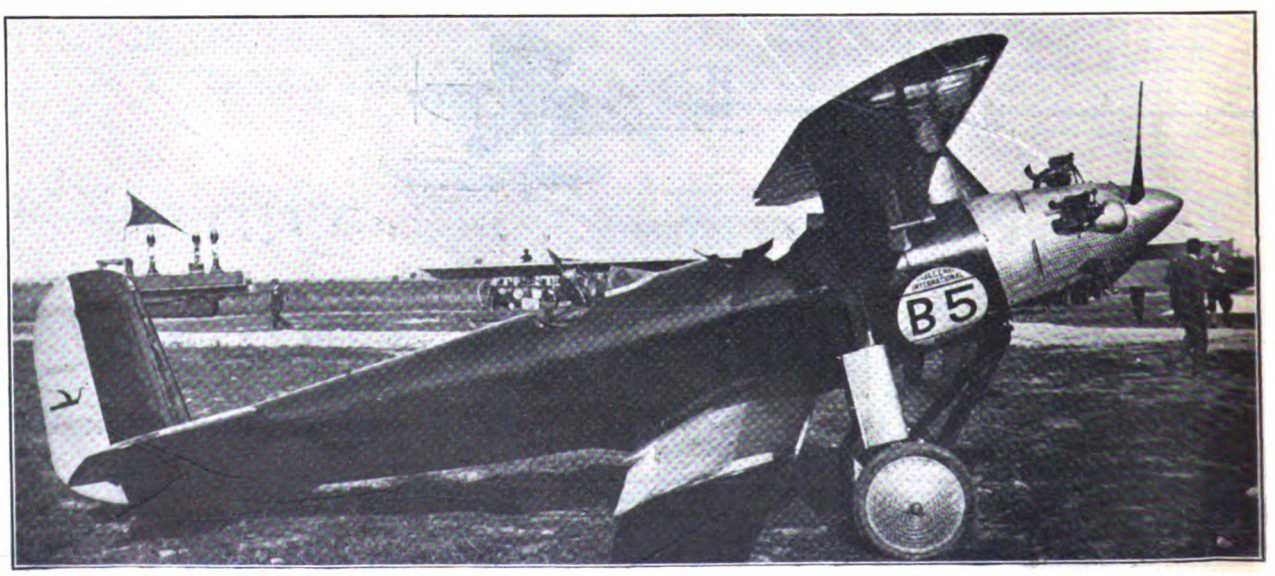
In the shed the machines were arranged first of all according to nations, and then according to teams. The result was that if you wanted to see any particular machine you knew exactly where to go and look for it.

Some idea of the size of the shed may be gathered from the fact that 55 machines with plenty of room all round each machine took up rather less than one-third of the floor-space. The far end was occupied by a small airship of the Naval Air Service,—a kind of baby Astra-Torres with two Cirrus engines, or possibly two Renaults,—and with it were about a dozen amphibians of about the size of the Supermarine Seagull.

The middle one-third of the shed longitudinally was allotted to the 55 competitors. But they only took about one-third of the width. So there was plenty of room for everybody to circulate and to get machines in and out and to shelter from the one or two showers which fell.

AN INTERNATIONAL CEREMONY.

On the Saturday afternoon there was an interesting and quite amusing little ceremony which deserves note because of its curious internationalism. Mrs. Cyril Turner, who used to fly professionally in California some years ago as Andrée Peyre—her family name—acquired an Avro Avian while in England during the Show. So, having flown it to France with her husband as passenger on the last Saturday of the Show, she thought it would be a good idea to have it baptised on the following Saturday at Orly.



A CANTILEVER BIPLANE.—Another view of the Darmstadt D-18 (Armstrong Siddeley 65 h.p. Genet engine).

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CAPTAIN THE HON. HUGH GROSVENOR'S FLIGHT

ROUND AUSTRALIA

ON A "CIRRUS-MOTH"

Our Australian Agents Messrs. Gilbert-Lodge & Co., Ltd., have received the following letter:—

GOVERNMENT HOUSE,
ADELAIDE,
19th June, 1929.

Messrs. Gilbert-Lodge & Co., Ltd.,
188, King Street,
Melbourne.

Dear Sirs,

I must thank you very much for your letter congratulating me on my trip round Australia. I must say that my engine, a CIRRUS MARK II, thoroughly lived up to the reputation that the Cirrus has rightly earned.

Beyond a bit of trouble with one magneto, no engine defects occurred throughout the whole flight, and I never had a single moment's anxiety about the machine at any time.

The petrol and oil consumption remained steady throughout, and I would like to say that the engine was running as well over the last hop as it was during the first, and I am still flying the machine regularly with the same engine.

I have no objection whatever in your using this letter as an advertisement.

Yours faithfully,

(Signed) HUGH GROSVENOR.

P.S.—Would be pleased to get all information about A.D.C. products, particularly "HERMES."

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A BELGIAN ENTRY.—A St. Hubert monoplane (85 h.p. Walter) flown by M. Maus.

The ceremony of baptism was performed by the British Director of Civil Aviation, Air Vice-Marshal Sir Sefton Brancker, assisted by M. Laurent Eynac, the French Secretary of State for Air, and by Mr. F. Montague, the British Under-Secretary of State for Air, and Mr. J. J. Ide, the European representative of the National Aeronautic Committee of America. The machine itself is British-built, and it bears British registration letters, as the property of a Frenchwoman domiciled in France who has acquired British nationality by marrying an Englishman.—Which only shows how international aviation may make us in the end.

The other side of the picture was shown by a persistent rumour which circulated on Sunday and rather upset some of the competitors. This was to the effect that the Polish Government refused to admit to Poland any German, Swiss or Czechoslovak competitors in the competition unless they had special visas from the Polish representatives in their own respective countries.

When one left this rumour was still going strong, and the representatives of these various countries were supposed to be besieging the Polish Embassy, or Legation, or whatever it is, in Paris, with the idea of getting the Polish Government to admit their nationals in the competition on their ordinary passports, without any further argument. The alternatives obviously were either that competitors arriving at Warsaw, according to the itinerary of the competition, would be arrested on landing, or else the Aéro Club of France would have to amend the route to avoid Poland.

Probably the whole thing was merely a rumour, but, anyhow, it was strong enough to cause quite a lot of talk.

Putting Them Through It.

On Saturday and Sunday all the machines were weighed and measured and put through their folding tests—or "width-reducing exercises," as our friend Bradbrooke called them last year. All this was so well organised that there was nothing really funny about it.

About the only amusing incident concerned the two Moths. Mr. Broad and his mechanic had folded the wings of their Moth in 22 seconds. So apparently the Commissaires of the meeting thought that there must be some special fake about it, and asked Miss Spooner whether she would bring her Moth out and do the folding test against time. She and her mechanic folded their wings in a trifle under 30 seconds. And thus the Commissaires were convinced that the Moth is really quite a handy thing to have about the house.

Quite a number of the machines did not fold or do anything. There are always clever people who will work out ways of sacrificing points under one rule so as to gain points on others. Such wangling was well worth while.

Points To Be Scored.

Points will be awarded thus:—

(1) Robustness of construction; Comfort; Installation of instruments; Arrangements to prevent turning over on the ground (such as using a split axle), and so forth—8 points.

(2) Self-starters for the motor—3 points.

(3) Arrangements for dual control—2 points.

(4) Installation of parachutes—2 points.

(5) Anti-fire arrangements—6 points.

(6) Facility for mounting and dismounting the machine by the crew (pilot and passenger) in less than 15 minutes. Possibility of passing through a door 3 metres wide and 15 metres high. Facility for towing of the apparatus by an automobile—5 points.

(7) Non-opening of the motor or non-changing of cylinders during the Tour—10 points.

(8) Non-use of spare airscrew—3 points.

(9) Non-use of spare wheel—1 point.

Total for Practical Qualities—40 points.

The Consumption Test gives 20 points.

Regularity throughout the Tour counts 35 points.

Speed throughout the Tour counts 70 points.

Total—165 points.

Thus a competitor can afford to sacrifice several point under No. 1, by using a plain cross axle instead of a spli axle, so as to reduce head resistance, and he can sacrific all five points given for dismountable or folding wings, s as to reduce weight, and thus increase his speed, and s decrease his petrol consumption for a given engine.

Furthermore, by sacrificing those few points to increasin speed, a competitor will have a better chance of gettin well ahead on the various stages of the journey.

Doing three or four stages in one day may mean any c several things. It may mean getting ahead of bad weathe it may mean having a day's rest while other people ar still slogging along, and at certain places it does definitel mean winning a prize for being the first arrival.

The Prize List.

The Town of Paris is giving a pair of Sèvres Vases the first competitor to arrive back in Paris.

Bucarest is giving a Cup, presented by Prince Bibesco, the first arrival at Bucarest.

THE WING-FOLDING TEST.—Miss Spooner is amused, while the Commissaires compare watches.

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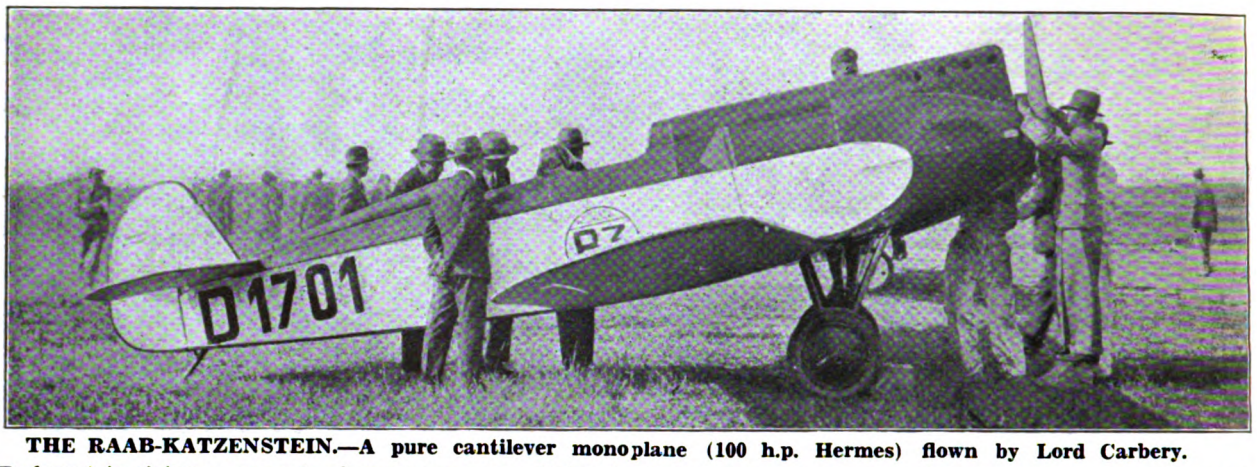


THE RAAB-KATZENSTEIN.—A pure cantilever monoplane (100 h.p. Hermes) flown by Lord Carbery.

Budapest is giving a souvenir plaque to every participant who survives so far.

Prague is giving a Cup, of Bohemian crystal, valued at 15,000 crowns, to the competitor who has the highest marks up to that point and finishes the competition.

Breslau is giving a prize of 500 marks to the first pilot in each category who lands at Breslau.

Warsaw is giving a prize of unmentioned value, presented by the Minister of Communications, to the first competitor arriving at Warsaw.

Hamburg is giving three Silver Cups, presented by the Senate of the Town of Hamburg, to the first three competitors in each category to arrive there.

Berlin is giving Silver Cups, presented by the Municipal Council of Berlin, to all the members of all the crews which land at Berlin.

Brussels is giving three medals, presented by the Royal Aero Club of Belgium, presumably to the first three arrivals.

The General Prize List is really worth quoting. It only shows how silly our people were not to have a go at it.

The Challenge Cup, a bizarre affair, is valued at 20,000 francs.

The First Prize is 100,000 francs, or something over £800; the Second Prize is 50,000 francs, or about £400; the Third Prize is 25,000 francs, or about £200; and there are seventeen prizes of 7,350 francs, or about £60 each.

Independently of these, the winner will get a Sèvres Vase, presented by the President of the French Republic; an Italian light aeroplane and a gold medal, presented by the Italian Minister for Air, Signor Balbo; a medal presented by the Aero Club of Germany, a motor-bicycle, presented by the Deutsche Industrie Werke of Spandau; and a prize of 1,000 marks from the Dürener Metallwerke if his machine is built entirely of metal.

The passenger in the winning machine will receive a pair of field glasses presented by the Carl Zeiss firm.

If the winner has a French motor, he will receive a six-horse Renault saloon, presented by the Renault Works.

If the winner has a Czechoslovak motor, he will receive a 60-horse engine from the Walter firm.

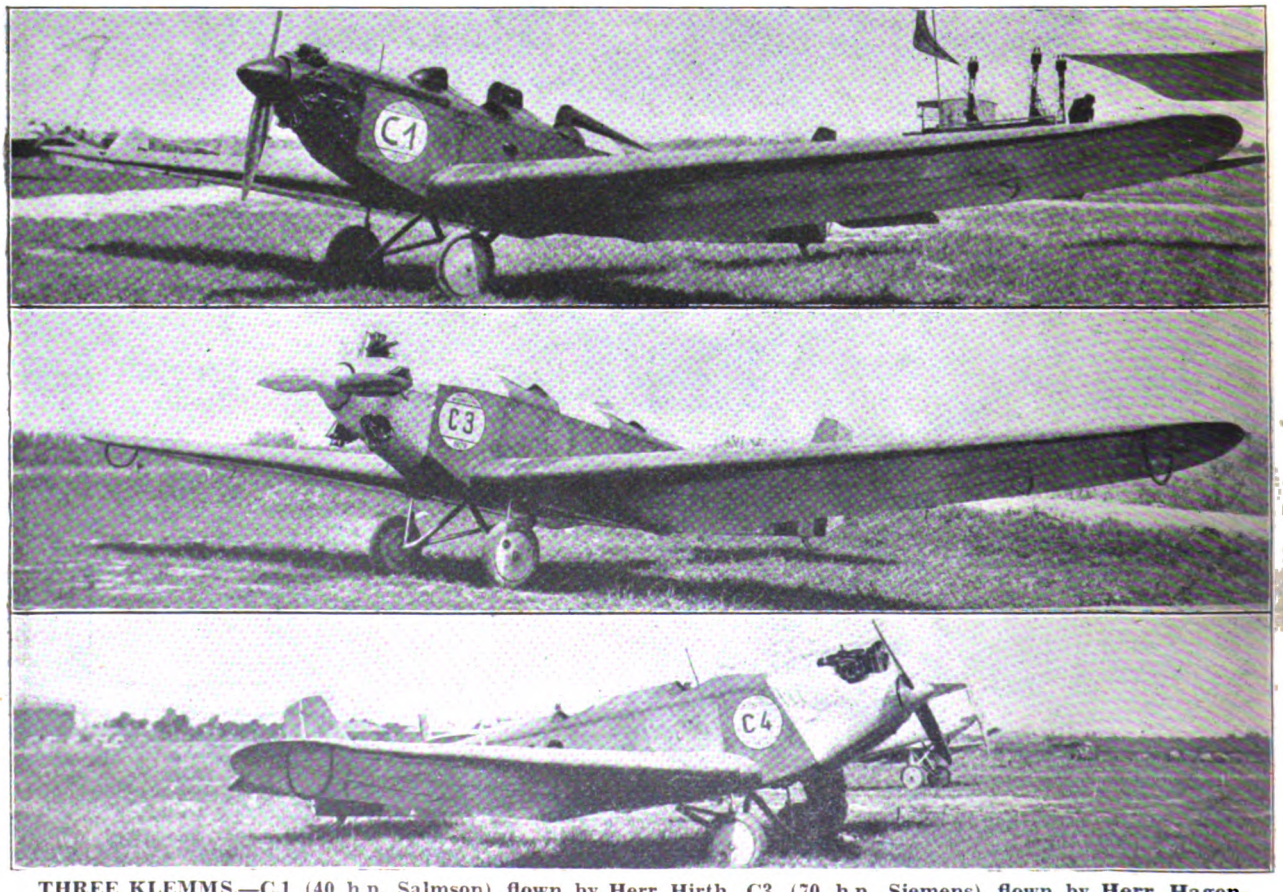
The competitor who gets the highest number of marks for the practical qualities of his machine, and is among the ten first to finish, will receive a chronograph from the Maison Leroy of Paris.

And the ladies, whether pilots or passengers, will receive scarves presented by the Maison Français de Tissus Rodier.—The only one is Miss Spooner.

In addition, the winner in the first category (machines weighing 400 kgs.) will receive the prize of the Town of Prague, a trophy of the value of 10,000 crowns.

Also in this category, a Gnome-et-Rhone motor-bicycle of 3 h.p. will be presented to the competitor who puts up the highest speed over the complete circuit without penalisation for irregularity.

And in the second category (machines under 280 kgs.), a Gnome-et-Rhone motor-bicycle of 2 h.p. will be given for the highest speed.



THREE KLEMMS.—C.1 (40 h.p. Salmson) flown by Herr Hirth, C3 (70 h.p. Siemens) flown by Herr Hagenmeyer and C.4 (80 h.p. Cirrus) flown by Herr Kirsch.

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CANADA SAYS

COMMERCIAL CABLES

The following CABLEGRAM received at 10.20 M. "Via Commercial Cables,"

CAPTAIN ROY MAXWELL DIRECTOR OF ONTARIO GOVERNMENT AIR SERVICE WHO HAS JUST RETURNED FROM AN EXTENSIVE TOUR OF NORTHERN ONTARIO VISITING REMOTE AND UNTRAVELLED AREAS OF THE DISTRICT OF PATRICIA IN CONNECTION WITH THE COMPLETION OF LAST TREATY WITH INDIAN TRIBES WITH DEPUTY MINISTER OF LANDS AND FORESTS AS PASSENGER SPEAKS WITH UNSTINTED PRAISE OF THE PERFORMANCE OF HIS GIPSY MOTH STOP AIRCRAFT AND ENGINE FUNCTIONED FAULTLESSLY THROUGHOUT THE LONG TOUR AND SCHEDULE WAS MAINTAINED IN SPITE OF ADVERSE WEATHER AND HEAVY LOAD.

MOTH TORONTO.

WESTERN UNION CABLEGRAM

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CANADIAN BUILT LIGHT AEROPLANE

TO BE FITTED WITH GIPSY ENGINE CARRIED OUT TEST

FLIGHTS YESTERDAY WITH EMINENTLY SATISFACTORY RESULTS STOP THE

PERFORMANCE EXCEEDED EXPECTATIONS AND THE TEST PILOT WAS IMPRESSED

BY THE RESERVE OF POWER AND SMOOTH RUNNING QUALITIES.

MOTH TORONTO.

THE DE HAVILLAND AIRCRAFT CO. LTD. 328 19 JUL 1929

COMMERCIAL CABLES

The following CABLEGRAM received at 9.10 M. "Via Commercial Cables,"

THE ONTARIO GOVERNMENT HAS HAD TWELVE GIPSY MOTHS IN CONSTANT INTENSIVE OPERATION ON FIRE DETECTION DUTY SINCE THE OPENING OF THE PRESENT OPERATING SEASON STOP IN LESS THAN TWO MONTHS THESE AIRCRAFT HAVE FLOWN AN AGGREGATE OF OVER TWO THOUSAND HOURS AND HAVE GIVEN ENTIRELY TROUBLEFREE SERVICE STOP NOT A SINGLE REPLACEMENT MADE ON ANY GIPSY ENGINE STOP OFFICIALS AND ENGINEERS ALIKE EXPRESS COMPLETE SATISFACTION STOP THE CONDITION OF ENGINES IS SO GOOD THAT THE PERIOD BETWEEN TOP OVERHAULS HAS BEEN EXTENDED TO TWO HUNDRED HOURS.

MOTH TORONTO.

Now comes testimony from Canada of Moth dependability. It endorses once again the Gipsy's claim to unfailing reliability which is evidenced by the Sealed Gipsy Tour—to date 500 flying hours with only routine attention. This engine will be re-installed in a Moth, after the exhibition at Olympia, and the Tour will continue.

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AN ITALIAN CABIN MONOPLANE.—A Breda 15 (80 h.p. Cirrus) flown by Signor Mazotti.

Also, there are numerous prizes given by the various nations for the best performance by their own nationals.

No such prize is offered for the British competitors, but probably if he or she should happen to win, he or she will be given a Lunch at the Royal Aero Club—or possibly even at the Savoy.

CONCERNING THE MACHINES.

The whole competition is such a terrific test of men, aeroplanes, and engines that any attempt to spot the winner at this stage would merely be absurd. One can only indicate some of the machines that seem particularly interesting.

Certainly the most exciting machine in the competition is Lord Carbery's. It is a Raab-Katzenstein monoplane with a Hermes engine, and is more like a very large Tiger-Moth than anything else. It is a pure cantilever with wings of extraordinarily thin section for the work they have to do. It has a cross-axle under-carriage and quite small wheels for its size, so Lord Carbery is evidently depending entirely on skill and speed to get him through.

The prettiest machine of the lot is Herr von Bismarck's B.F.W., with a Cirrus engine. He wanted a Hermes, but could not get one in time—and, anyhow, he is probably better off with the well-tried Cirrus III. The machine is enamelled a pale cream with a dark brown top and cowling and it is quite one of the nicest-looking jobs one has seen.

Our two Moths looked very businesslike and creditable, but there was nothing new about either of them. Miss Spooner's machine looks weather-worn—naturally, after the flying it has done. Mr. Broad's blue and aluminium looks brighter.

Of the French machines, the Guerchais is far the most presentable. It has good, clean lines and is well finished.

The Caudrons have that curious angularity and clumsiness which has always marked Caudron design, and has always been redeemed by the ability to stand hard work.

The Potez machines look like miniatures of any American cabin job, and their finish is distinctly rough.

Among the Germans, the Klemms and the B.F.W.'s are very much alike, very workmanlike, but not particularly beautiful. The best finish of all the Germans is on the Arado, mostly bright red enamel with panels of lighter colour on the body and tail.

The Czechoslovak machines all look very smart in that peculiar finish, apparently of varnished aluminium, which is their speciality.

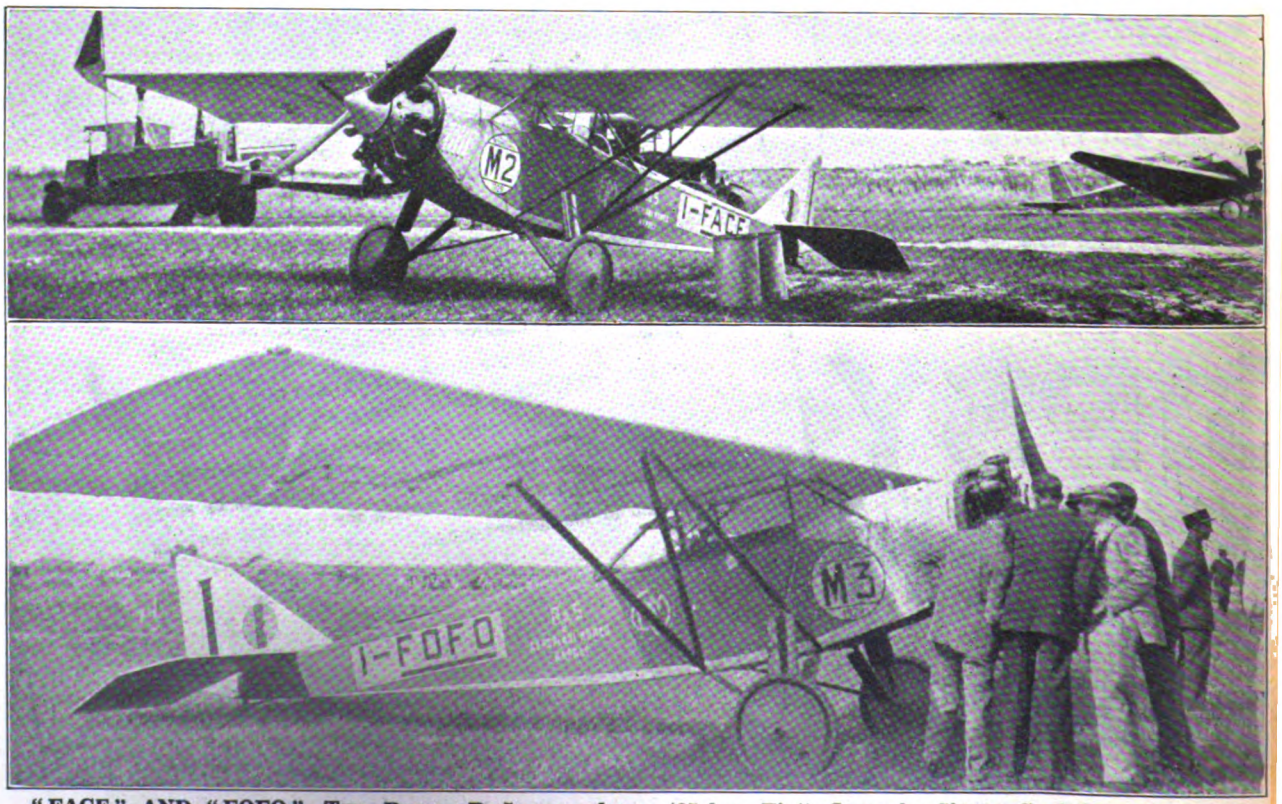
The Italian machines were particularly interesting. They remind one of the British working man who said: "There is no such thing as bad beer, but some beer is better than others." To say that there is no such thing as a bad Italian motor-car is perfectly true. And Italian light aeroplanes seem to come into the same category.

The Bredas are decidedly the prettiest machines. The way their cabins are arranged makes them look at once distinguished and serviceable, and their colouring is particularly attractive. But they seem to have so much stuff sticking up round the engine, and between it and the leading edge of the upper plane, that they strike one as likely to lose efficiency.

The Romeos with their long fuselages squatting low on the ground look efficient, and, one hears, are efficient in the air.

The team of four Fiats are the least good-looking of the Italian machines, but they fly well.

In the Italian Light Aeroplane Competition last year



"FACE" AND "FOFO."—Two Romeo Ro.5 monoplanes (85 h.p. Fiat) flown by Signor Castaldo (M.2) and Signor Guazzetti (M.3).

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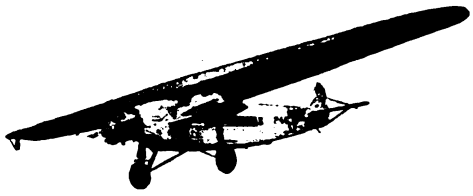

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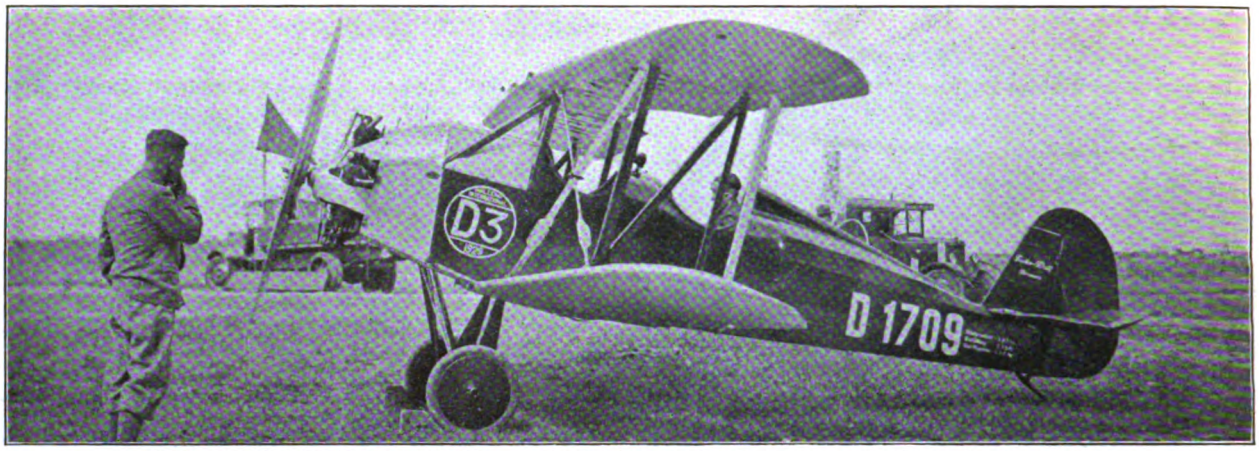

THE FOCKE-WULF KIEBITZ.—A light biplane (70 h.p. Siemens) flown by Herr Kissin.

the Fiats did so well that they were given an order for something like 300 machines by the Italian Government. The story has it that Signor Mussolini has decreed that every officer in the Italian Air Force shall have a light aeroplane of his own, and shall jolly well be made to fly it. That is the right spirit. Senior and junior officers alike ought to be made to fly, if only as an aid to promotion, on the argument that when a man is too slow-witted to fly, and either has to retire or kill himself, he is too slow-witted to hold a command.

The two little Belgian St. Huberts, designed and built by Mr. Guldentops, of the S.A.B.C.A., though hardly what one can call beautiful, are at any rate very workmanlike, and ought to get round the course with great regularity.

The Visitors.

One thing which was particularly striking about the limited audience at Orly was the number of Americans who were there and the scarcity of English people. Apart from Mr. J. J. Ide, who is always everywhere, as befits the representative of the N.A.C.A. for the whole of Europe, one came across Mr. John Hamilton, of the Hamilton Metalplane; Mr. Lester Gardner, now belonging to himself; Messrs. Van Zandt and Manning, of the Ford Company, who had flown over to Le Bourget the day before; Mr. Marvin Northrop, down from a holiday in Scotland after doing a deal with A.D.C. Aircraft, Ltd.; and Mr. Earl Osborn, of *Aviation*, New York; not to mention Mr. Dick who lives at Buc and flies his own Farman monoplane. When all these clever people get back to the States with all the accumulated knowledge of the Tour of Europe to work on, plus all that they saw at Orly of Continental ideas of the design of light aeroplanes, they may possibly start turning out something which at any rate will stop the sale of British designs in America—a line of business which seems to have constituted one of our chief national exports during the past twelve months or so.

The British Empire was represented by Mr. Montague (our Under-Secretary of State for Air), Sir Sefton Brancker (Director of Civil Aviation), Flt.-Lt. J. I. T. Jones, R.A.F. (his pilot), Mr. N. S. Percival (representing Australia unofficially but very effectively), Mr. Jackaman (representing private owners), Capt. Cyril Turner (one can never be quite sure whether he is British or American or French interests), and your humble servant. One does not include in the British list the half-dozen or so very capable British engineers looking after the Armstrong Siddeley Genets and A.D.C. Cirrus and Hermes engines and the Moth aeroplanes. They were there strictly on business, and not merely as on-lookers.

A Lamentable Accident.

The Times of Aug. 6 records a fatal accident to a German competitor, Herr Hoffman, a wing of whose machine broke when he was taking part in the petrol consumption test. There is no pilot named Hoffmann in the competition, so this must refer to Herr Offermann, who was flying the B.F.W. monoplane numbered A.2.

Herr Offermann was one of the most active assistants of the Aero Club of Germany. And one is indebted to him for much kindness during the Aero Show in Berlin last year.

He was by no means a young man, and he had been flying for many years. During the War 1914-18, besides being an active-service pilot, he was a test pilot of various types of Dornier seaplanes, and his knowledge of aircraft was extensive and valuable.

He had great personal charm, and had the typical German qualities of friendliness and hospitality to a high degree. One wishes to offer the deepest sympathy to his friends and his family.

Journalistic Errors.

Certain errors which have been published in the daily papers ought to be corrected. The "Own Correspondent" of *The Times* in Paris, reporting affairs at Orly, says:—

> The best landing times were made by the two British entrants—Broad, 22sec.; Miss Spooner, 30sec. The fastest time was made by the German, Corberry, at a speed of 174 kilometres (about 110 miles) per hour.

Actually, those were the times taken to fold the wings of the two Moths, as related hereinbefore, and "the German Corberry" is in fact John Evans-Freke, Baron Carbery in the Peerage of Ireland, who appears in the programme as a Canadian.

The Daily Telegraph is even less accurate, though not so funny. In the issue of Aug. 3 the aviation correspondent of that paper says:—

> About eighty light aeroplanes, representing a dozen countries, will

STOKING UP.—A Fiat A.S.1 monoplane (85 h.p. Fiat) flown by Signor Donati.

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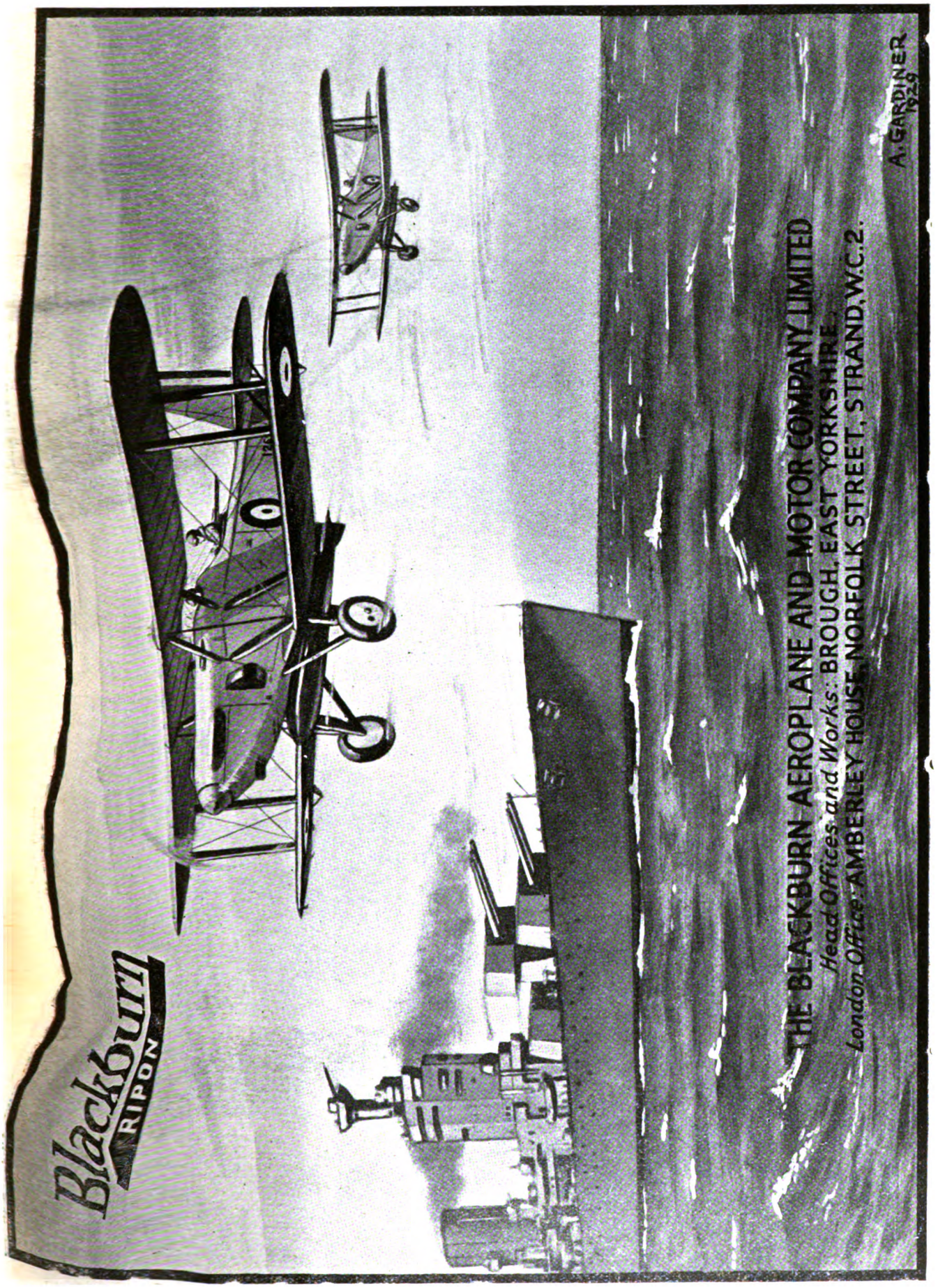

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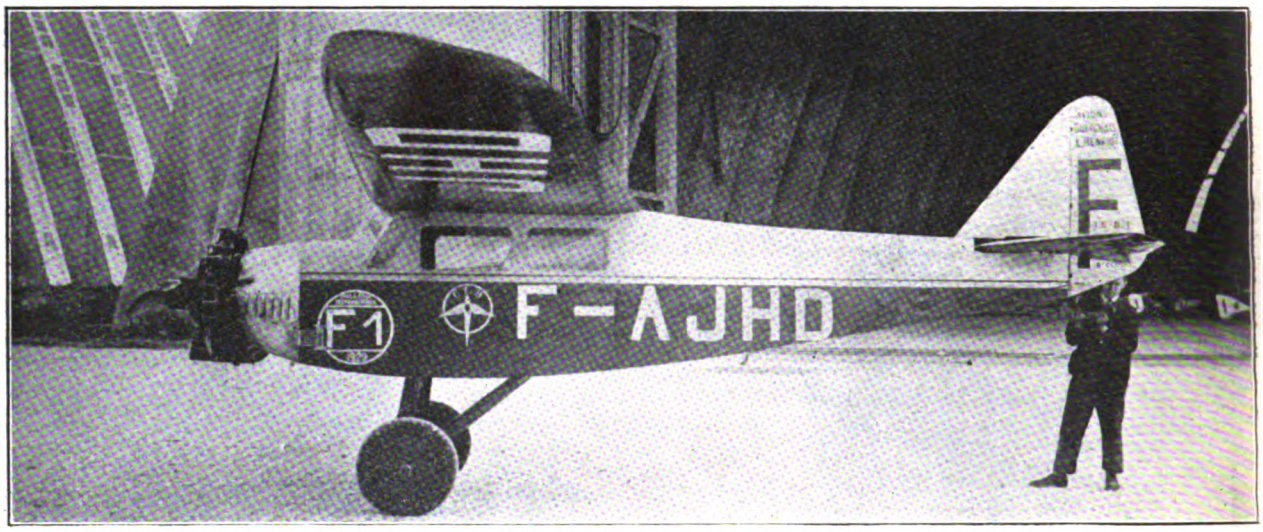
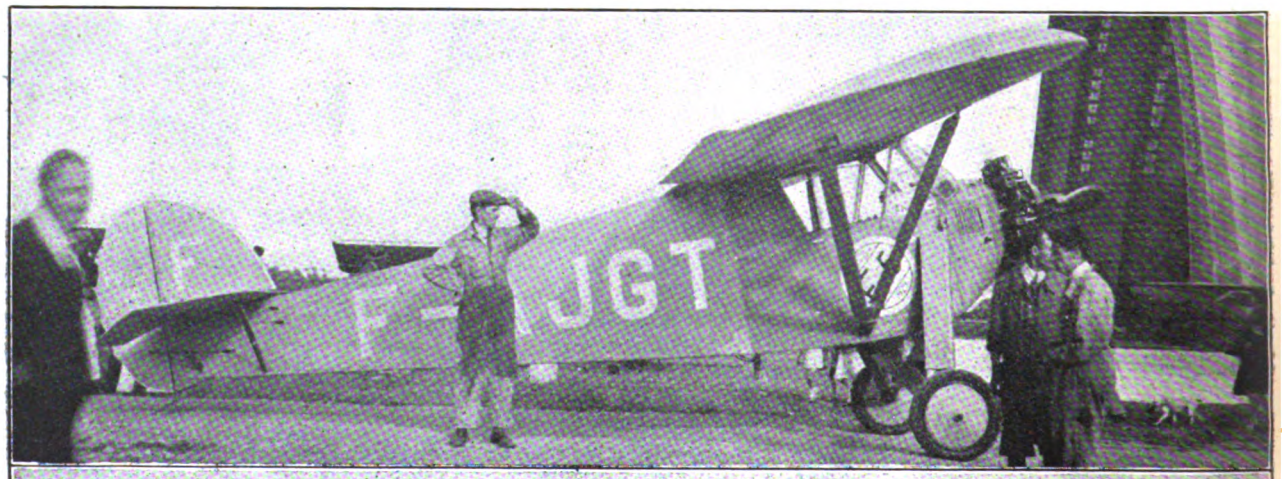


A CLEAN JOB.—A Guerchais-Henriot monoplane (95 h.p. Salmson) flown by M. Lemerre.



THE POTEZ 36.—F5 (95 h.p. Salmson) flown by M. Roques, and F3 (80 h.p. Renault) flown by M. Payol.

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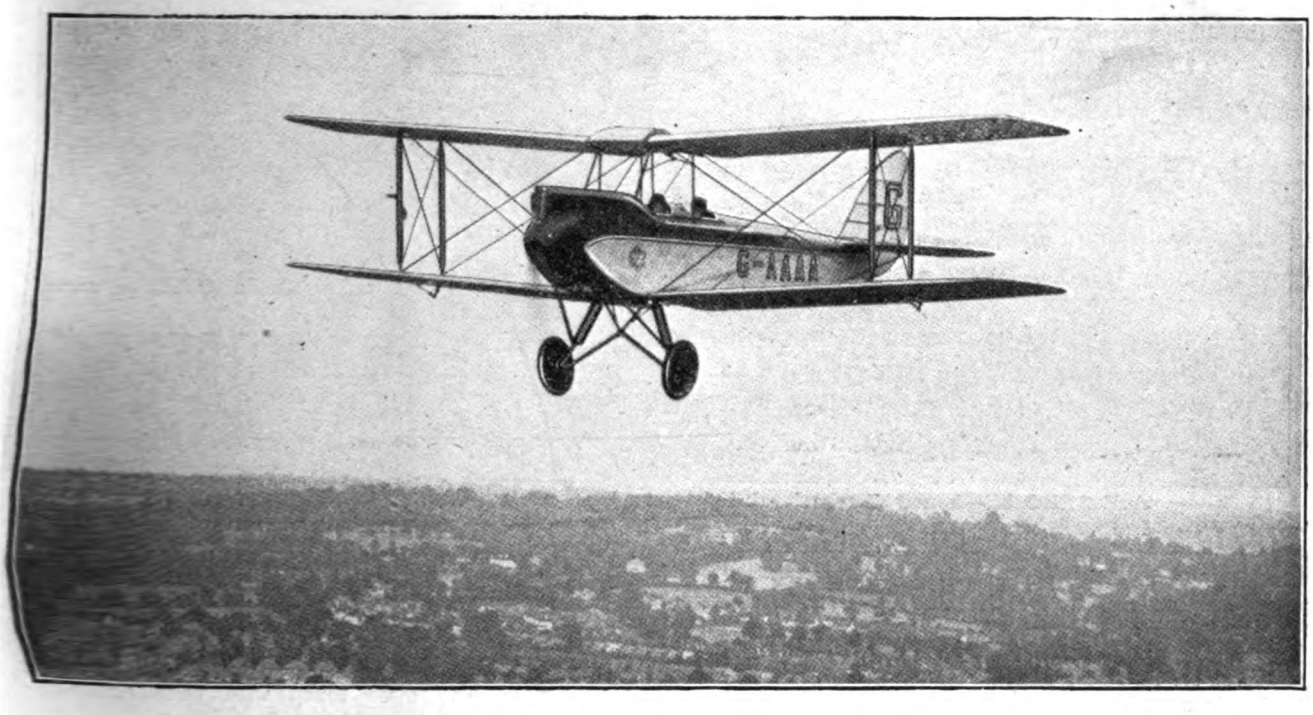

The Great Gipsy Moth Reliability Test

Sealed Gipsy Engine

has now flown 502 HOURS on PRATTS

The distance covered at 27/7/29 was 42,695 miles. Petrol consumption averaged 19½ m.p.g.

Speed and Security Depend upon Purity

Pratts

McC. 178

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THE AERO 34.—A new Czechoslovak light aeroplane (85 h.p. Walter) flown by M. Novak.

to-day set out on a tour over Europe in a competition for the Coupé Challenge, valued at 20,000f. (£166), offered by the French Aero Club. Many subsidiary prizes are offered.

British entrants include the Hon. Lady Bailey, Miss Winifred Spooner, and Captain H. S. Broad, in Moths, and Mr. C. Staniland and another pilot in Spartans.

. . . Two Autogyros will take part in the tour. Germany has thirty-four machines, France twenty-eight, and Brazil, the United States, and Canada are among the countries represented.

This air expert also says that the competitors are expected to reach Paris on Aug. 20.

The truth is that the competitors were not timed to start from Paris till Aug. 7, and the winner is expected back in Paris on Aug. 14.

The "80 light aeroplanes" which he alleges set out on Saturday will probably have been reduced to less than 50 by Wednesday (the day on which this article will be put into print).

The first prize is about £800, and not £166. There are no Autogiros in the Contest. The numbers of machines given for the different nations are all wrong. And the "Coupé Challenge" sounds like a row in a taxi.

Both *The Times* and *The Telegraph* are generally very accurate in their aeronautical news, so one can only imagine that their regular aeronautical correspondents were Bank-holidaying when these mis-statements were written by non-aviating members of these distinguished staffs.

Intrinsic Value.

Taking it all round, the International Challenge Tourism is quite the most important event in aviation sin the outbreak of peace. All the fuss about the Schnei Trophy stirs up a certain amount of interest in high-spe flying, and convinces thousands of people that flying frightfully dangerous. But a tour of this sort round t capitals of Europe brings all sorts of important people all countries into close touch with aeroplanes of sorts of makes and working under ordinary conditions.

If one or two people do happen to be killed in the cou of the competition, their deaths will be put down to ordin transport risks, just like motor accidents, and most pap will probably take no notice of them at all. They will pr ably be dismissed in two or three lines, like our poor fri Offermann. If anybody is killed in the Schneider Cont the papers of the whole world will ring with the news.

The progress of this tour of Europe will be very int esting to watch, and arrangements have been made which The Aeroplane will have notes of that progress fr various stopping places, subject always to the eccentrici of Continental post-offices and railway transport. In case, even if we have to wait a few weeks for the news, official result of the competition will provide much valu information, and will give a wonderful advertisement to makers of the winning machine and engine. All the m pity that we have not a better chance of winning.—C. G

OPEN AND CLOSED.—The Avia BH.11B or Antilopa (85 h.p. Walter) with wings open and folded alongside the fuselage for the gate test. T1 flown by Karel Fritsch, and T2 flown by V. Vlcek.

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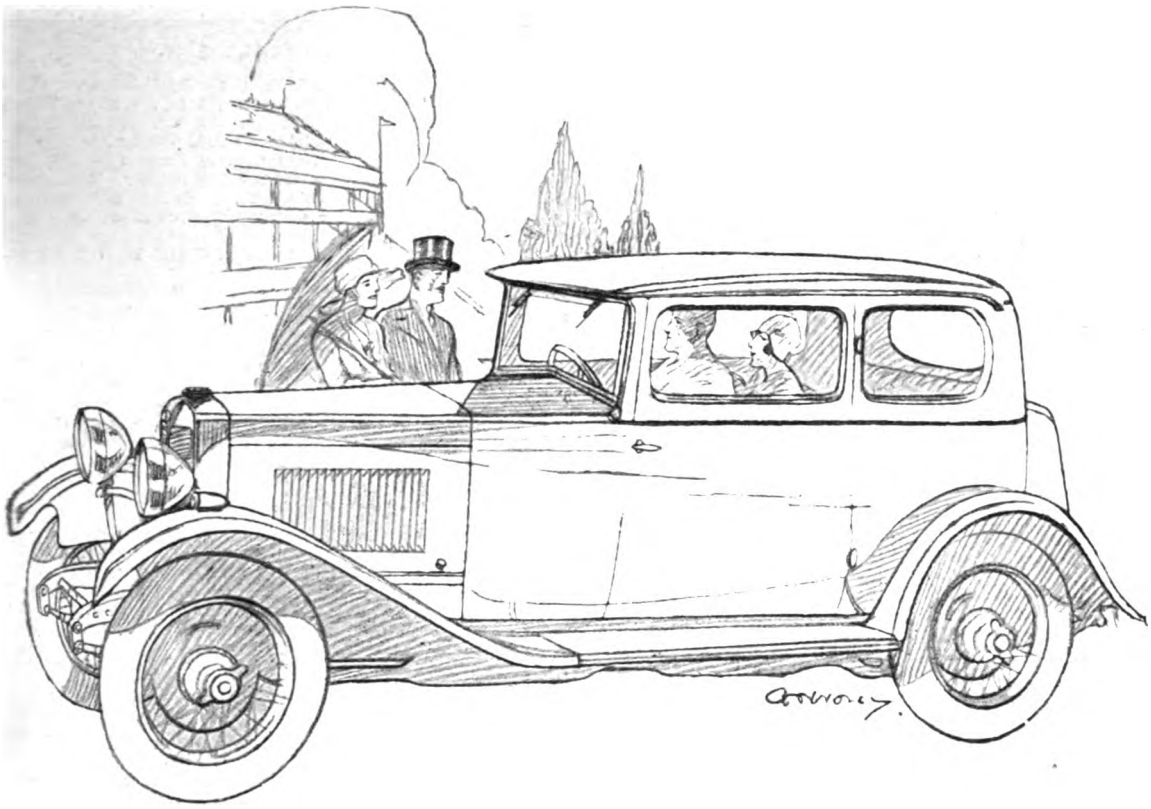
Exquisite!



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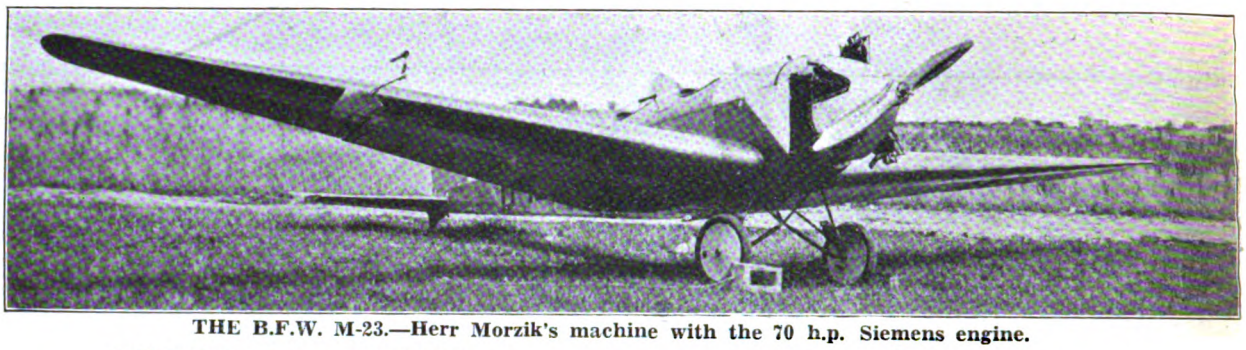


THE B.F.W. M-23.—Herr Morzik's machine with the 70 h.p. Siemens engine.

THE LIST OF COMPETITORS.

Entrants are divided into two categories. The 1st Category is for aircraft weighing from 280 kgs. to 400 kgs. empty. The 2nd Category is for aircraft weighing less than 280 kgs. empty.

Aircraft in the 2nd category are identified in the list below by an asterisk. All other aircraft are in the 1st Category.

Aero Club of Germany.

*A-1—Bayerische Luftverein, B.F.W. M-23 (80 h.p. Genet)—Thomas.
*A-2—Aero-Club von Deutschland, B.F.W. M-23 (70 h.p. Siemens Sh.13)—Offermann.
*A-3—Oscar Caminnesi, B.F.W. M-23 (70 h.p. Siemens Sh.13)—Von Dungern.
*A-4—Deutsche Verkehrsfliegerschule, B.F.W. M-23 (70 h.p. Siemens Sh.13)—Morzik.
*A-5—Theo. Croneiss, B.F.W. M-23 (80 h.p. Genet)—Croneiss.
*A-7—Bayerische Flugzeugwerke, B.F.W. M-23 (70 h.p. Siemens Sh.13)—Schütz.
*A-8—Bayerische Flugzeugwerke, B.F.W. M-23 (110 h.p. Siemens Sh.14)—Loerzer.
*A-9—Bayerische Flugzeugwerke, B.F.W. M-23 (90 h.p. Cirrus III)—Von Bismarck.
B-2—Luftfahrtverein, Raab-Katzenstein-25 (75 h.p. Cirrus II)—Altemeier.
B-3—Raab-Katzenstein Flugzeugwerke, R-K-25 (100 h.p. Hermes)—Lord Carbery.
*B-5—Akademische Fliegergruppe, D-18 (65 h.p. Genet)—Nehring.
B-7—Deutsche Verkehrsfliegerschule, Albatros L-82A (100 h.p. Gipsy)—Ziegler.
B-9—Albatros Flugzeugwerke, Albatros L-22A (70 h.p. Siemens Sh.13)—Junck.
*C-1—Wurtembergischer Luftfahrtverband, Klemm L-25 (40 h.p. Salmson)—Hirth.
*C-2—Leichtflugzeugbau Klemm, Klemm L-25 (40 h.p. Salmson)—Lusser.
C-3—Leichtflugzeugbau Klemm, Klemm L-26 (70 h.p. Salmson)—Hagenmeyer.
C-4—Leichtflugzeugbau Klemm, Klemm L-26 (90 h.p. Cirrus III)—Kirsch.
*C-5—Fritz Siebel, Klemm L-25 (40 h.p. Salmson)—Siebel.
*C-6—Fritz Siebel, Klemm L-25 (40 h.p. Salmson)—Poss.
*C-9—Mecklemburgisher Aeroclub, Arado L-1 (40 h.p. Salmson)—Eggers.
D-3—Heinz Kissin, Focke-Wulf Kiebitz (70 h.p. Siemens Sh.13)—Kissin.
D-4—Junkers Flugzeugwerke, Junkers A-50 (80 h.p. Genet)—Kneer.
D-5—Junkers Flugzeugwerke, Junkers A-50 (80 h.p. Genet)—Roeder.
D-7—Junkers Flugzeugwerke, Junkers A-50 (80 h.p. Walter Vega)—Risztics.

Aero Club of Czechoslovakia.

T-1—Avia, Avia BH-II Antilopa (85 h.p. Walter Vega)—Kleps.
T-2—Avia, Avia BH-II Antilopa (85 h.p. Walter Vega)—Vlcek.
T-4—Aero Tovarna Letadel, Aero A-34 (85 h.p. Walter)—Novak.

Aero Club of France.

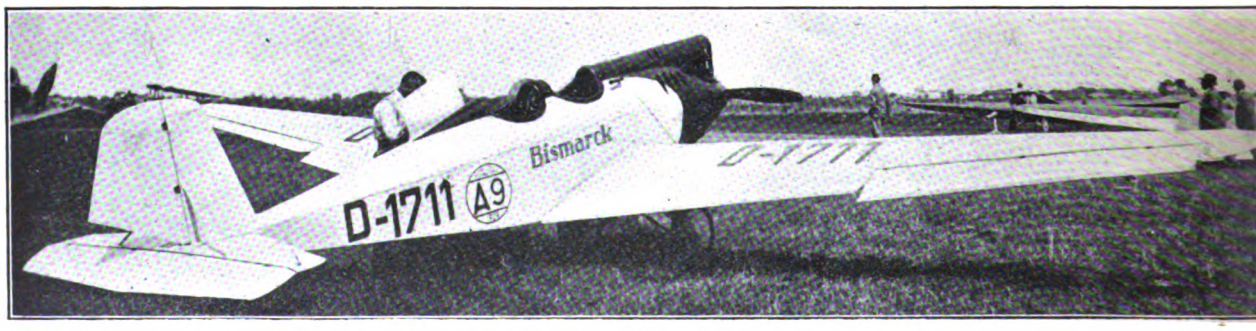
E-6—Rene Caudron, Caudron C-190 (85 h.p. Renault)—Barbot.
E-7—Rene Caudron, Caudron C-191 (95 h.p. Salmson)—Delmotte.
E-8—Club Aeronautique Universitaire, Caudron 23 (70 h.p. Anzani)—Fauvel.
F-1—Guerchais-Henriot, Guerchais-Henriot (95 h.p. Salmson)—Lemerre.
F-2—Henry Potez, Potez 36 (80 h.p. Renault)—Laulhé.
F-3—Henry Potez, Potez 36 (80 h.p. Renault)—Roques.
F-4—Henry Potez, Potez 36 (80 h.p. Salmson)—Payol.
F-5—Henry Potez, Potez 36 (80 h.p. Salmson)—Weiss.
F-6—Maurice Finat, Potez 36 (95 h.p. Salmson)—Finat.
H-2—Comte Alain de Lambilly, Orta-St. Hubert (85 h.p. Walter)—Mauss.
H-3—Joseph Vuylsteke, St. Hubert (85 h.p. Walter)—Vuylsteke.
H-5—De Havilland Aircraft Co. Ltd., Gipsy-Moth (100 h.p. Gipsy)—Broad.
H-6—Winifred Spooner, Gipsy-Moth (100 h.p. Gipsy)—Miss Spooner.
*H-8—S. A. Ikarus, Ikarus-Mickl (40 h.p. Salmson)—Tourko.

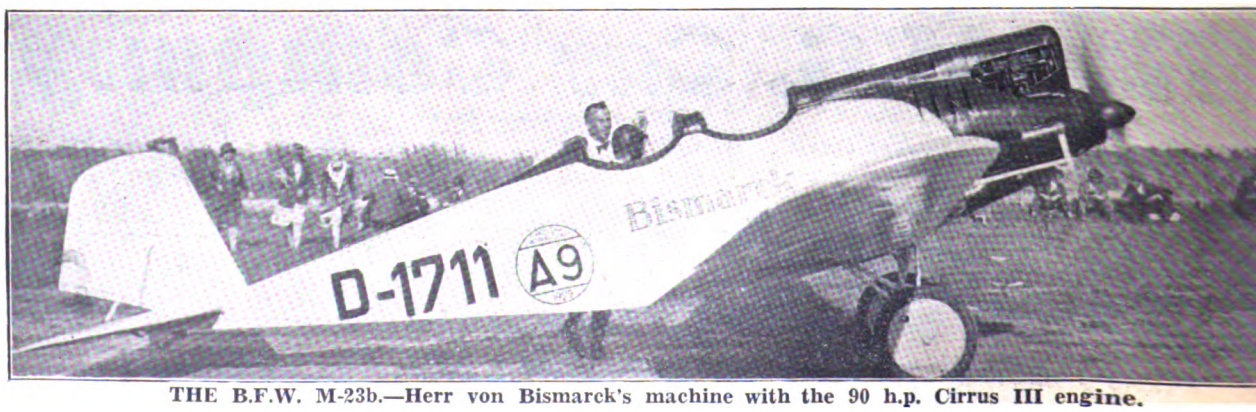
Aero Club of Italy.

K-3—Francis Lombardi, Fiat A.S.-1 (85 h.p. Fiat A-50)—Lombardi.
K-4—Aeronautica D'Italia, Fiat A.S.1 (85 h.p. Fiat A-50)—Donati.
K-5—Aeronautica D'Italia, Fiat A.S.-1 (85 h.p. Fiat A-50)—Suster.
K-6—Aeronautica D'Italia, Fiat A.S.-1 (85 h.p. Fiat A-50)—Batista.
K-7—Cantiere Navale Triestino, Cant-26 (80 h.p. Isotta-Fraschini Stoppani.
K-8—Carlo Benassati, Romeo Ro.5 (85 h.p. Fiat A-50)—Benassati.
M-1—Officine Ferroviare Meridionale, Romeo Ro.5 (85 h.p. Fiat A-50 Gelmetti.
M-2—Officine Ferroviare Meridionale, Romeo Ro.5 (85 h.p. A-50 Castaldo
M-3—Officine Ferroviare Meridionale, Romeo Ro.5 (85 h.p. Fiat A-5 Guazzetti.
M-4—Soc. Italiana Ernesto Breda, Breda 15 (90 h.p. Cirrus I Ferrarin.
M-5—Soc. Italiana Ernesto Breda, Breda 15 (90 h.p. Cirrus II Mazzotti.
M-6—Soc. Italiana Ernesto Breda, Breda 15 (90 h.p. Cirrus II Liberrati.

Aero Club of Switzerland.

*S-1—Von Muhlenen and Burkhard, Klemm L-25 (40 h.p. Salmso Burkhard.
*S-2—H. Wirth, Klemm L-25 (40 h.p. Salmson)—Wirth.





THE B.F.W. M-23b.—Herr von Bismarck's machine with the 90 h.p. Cirrus III engine.

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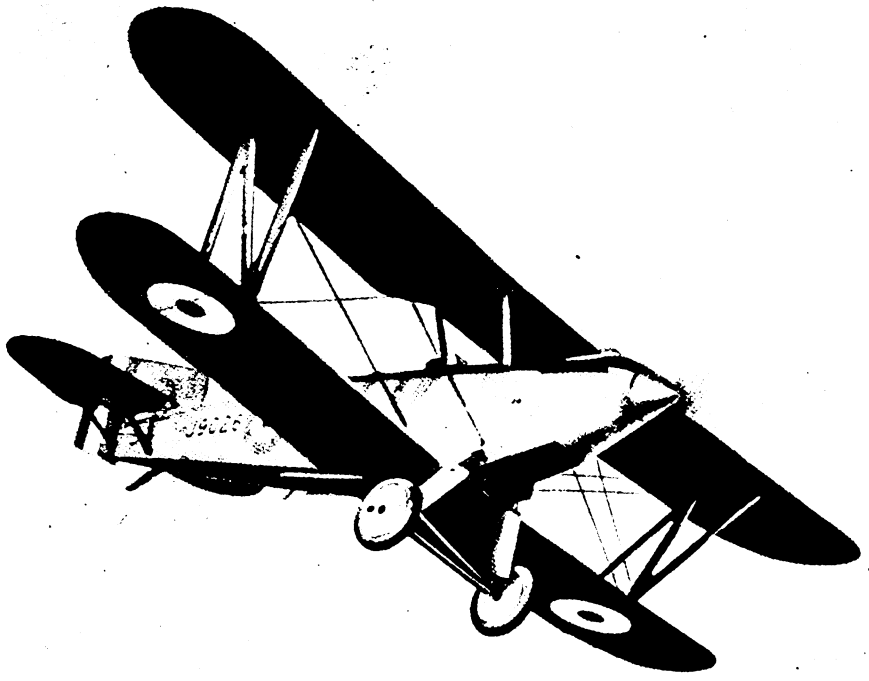

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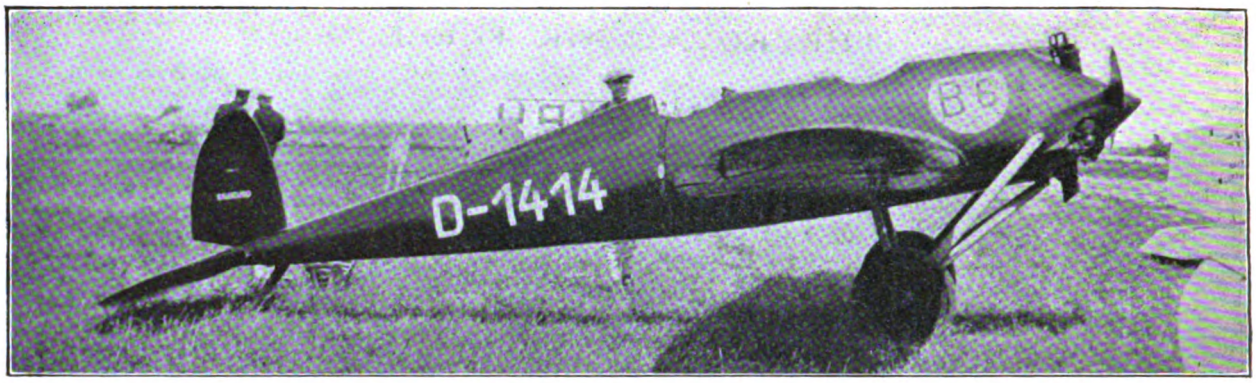
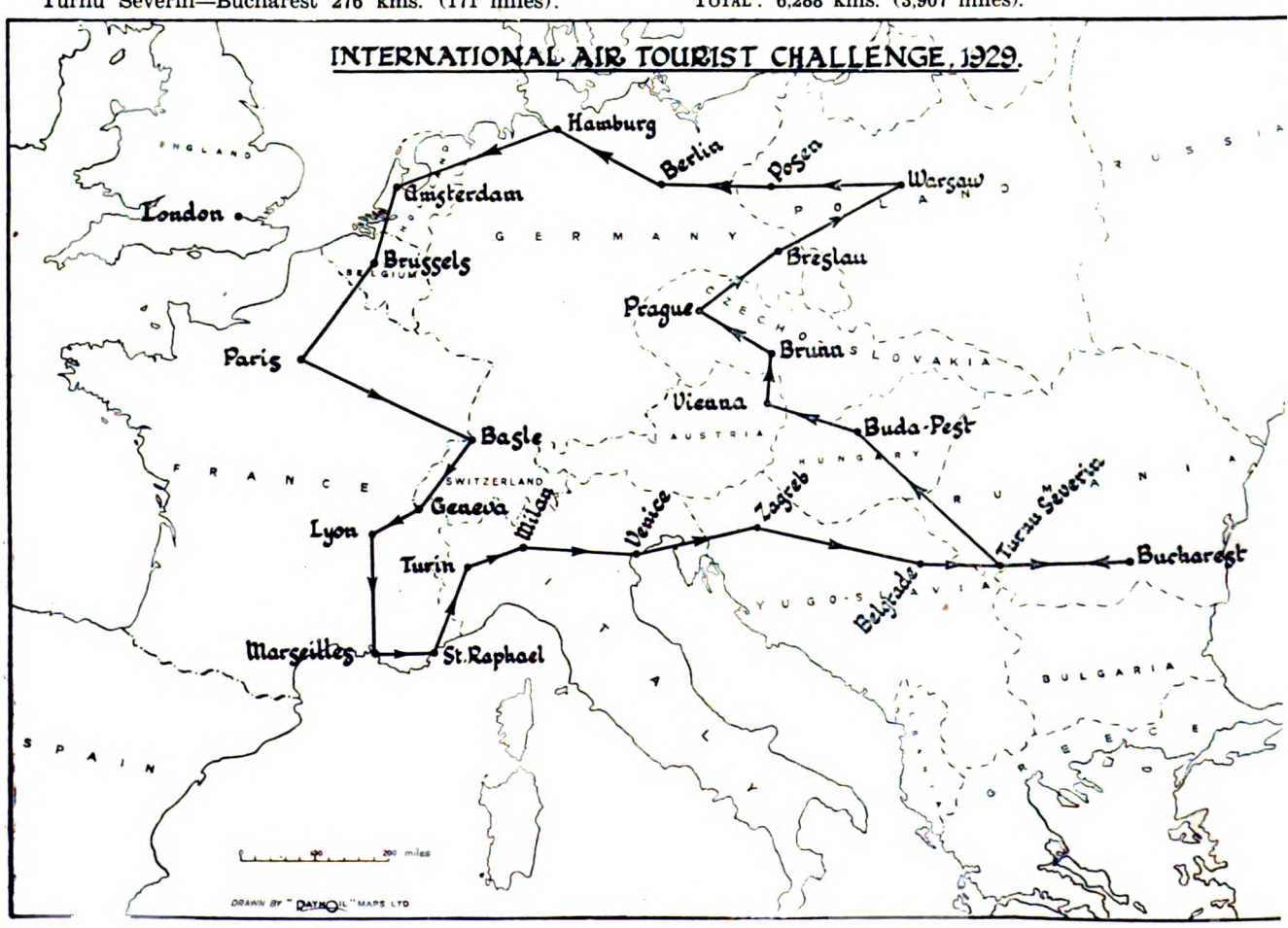


OUT OF IT.—The disqualified Baumer B4 or Sausewind (Wright Gale engine), which arrived too late.

THE ROUTE.

Paris—Basle 423 kms. (262 miles).
Bale—Geneva 183 kms. (114 miles).
Geneva—Lyon, 108 kms. (67 miles).
Lyon—Marseilles 225 kms. (140 miles).
Marseilles—St. Raphael 124 kms. (77 miles).
St. Raphael—Turin 255 kms. (158 miles).
Turin—Milan 138 kms. (86 miles).
Milan—Venice 252 kms. (157 miles).
Venice—Zagreb 345 kms. (214 miles).
Zagreb—Belgrade 370 kms. (230 miles).
Belgrade—Turnu Severin 186 kms. (116 miles).
Turnu Severin—Bucharest 276 kms. (171 miles).
Bucharest—Turnu Severin 276 kms. (171 miles).
Turnu Severin—Buda Pest 426 kms. (265 miles).
Buda Pest—Vienna 224 kms. (139 miles).
Vienna—Brunn 108 kms. (67 miles).
Brunn—Prague 190 kms. (118 miles).
Prague—Breslau 206 kms. (128 miles).
Breslau—Warsaw 308 kms. (192 miles).
Warsaw—Posen 282 kms. (176 miles).
Posen—Berlin 238 kms. (148 miles).
Berlin—Hamburg 262 kms. (164 miles).
Hamburg—Amsterdam 395 kms. (246 miles).
Amsterdam—Brussels 167 kms. (104 miles).
Brussels—Paris 284 kms. (177 miles).
Total: 6,288 kms. (3,907 miles).



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THE ROYAL AIR FORCE.

The London Gazette.

July 30.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—Plt. Off. on probation R. C. Warner is confirmed in rank (Feb. 8). The following Plt. Offs. are promoted to the rank of Flg. Off.:—G. Fox Overbury (June 9), J. A. S. Outhwaite (June 13) (with seniority of June 9), W. R. Hartwright (June 30).

Sq. Ldr. S. N. Cole is placed on the retired list on account of ill-health (July 26). Plt. Off. on probation T. G. Mellor resigns his S.S. comn. (July 7).

MEDICAL BRANCH.—Flt. Lt. E. J. Mockler, M.B., resigns his perm. comn. (July 31).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—The following are granted comns. in Class A.A. (ii) as Plt. Offs. on probation:—F. W. Moncreiff (July 12); D. J. L. Bryden (July 16); J. Leigh (July 17); C. H. N. L'Estrange (July 17); R. M. Henning (July 18). W. M. E. Crump is granted a comn. in Class A.A. (ii) as a Plt. Off. (July 17).

V. O. G. Bell is granted a comn. in the Special Reserve as a Plt. Off. on probation (July 1).

The following Plt. Offs. on probation are confirmed in rank:—G. H. Newberry (July 2); F. C. Fisher, F. G. Hill (July 16); G. D. Emms, E. J. B. Langhorne, S. M. Thompson, T. D. Trouncer (July 23); G. G. W. Farquharson (July 24). Flg. Off. E. F. Rhodes is transferred from Class A.A. (ii) to Class C (July 26).

MEDICAL BRANCH.—E. J. Mockler, M.B., is granted a comn. as a Flt. Lt., Class D.i., on resigning his perm. comn. in the R.A.F. (July 31).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 605 (COUNTY OF WARWICK) (BOMBER) SQUADRON.—The following to be Plt. Off.:—J. F. Gummow (June 13).

Appointments.

Week ending Aug. 6.

GENERAL DUTIES BRANCH.—Wing Commanders R. J. Mounsey, O.B.E., to Home Aircraft Depot, Henlow, for Engineer duties, 17/7. J. C. P. Wood, to No. 10 Group H.Q., Lee-on-Solent, for Air Staff duties, 17/7.

Squadron Leaders L. H. Slatter, O.B.E., D.S.C., D.F.C., to No. 19 (Fighter) Squadron, Duxford, 27/7. H. V. Drew, O.B.E., A.F.C., to H.Q., A.D.G.B., Uxbridge, 17/7. B. E. Harrison, A.F.C., to No. 35 Sqdn., Bircham Newton, 10/7. G. H. Boyce, A.F.C., to Air Ministry (C.A.S.), 10/7.

Flight Lieutenants S. D. Macdonald, D.F.C., to No. 605 Sqdn., Castle Bromwich, 1/8. J. H. Butler and R. J. H. Holland, to R.A.F. Depot, Uxbridge, 5/7. H. R. McL. Reid, D.F.C., to Experimental Section, R.A.E., S. Farnborough, 17/7.

Flying Officers J. S. Dewar, to School of Naval Co-operation, Lee-on-Solent, 18/7. C. F. C. Coaker, to Home Aircraft Depot, Henlow, 15/7. C. A. C. Patton, to No. 216 Sqdn., Middle East, 2/7. W. G. Cheshire, to Station H.Q., Heliopolis, 3/7. W. K. Beisiegel, to No. 408 Flight, Donibristle, 34/7.

Pilot Officers J. Cox, to No. 8 Sqdn., Aden, 12/6. R. L. Bennet, to No. 26 (A.C.) Sqdn., Catterick, 18/7. E. C. W. S. Smith, to No. 33 (Bomber) Sqdn., Netheravon, on appointment to a perm. comn. (on probation), 15/7.

MEDICAL BRANCH.—Squadron Leader R. H. Bebb, O.B.E. (Dental), to R.A.F. Depot, Uxbridge, on appointment to a temp. comn., 1/8.

Flight Lieutenants G. H. H. Maxwell, M.B., to H.Q., Coastal Area, 8/8. P. D. Barling, M.B., to R.A.F. Depot, Uxbridge, 18/7. R. A. W. Kerr, M.B., to R.A.F. Depot, Uxbridge, 12/7.

STORES BRANCH.—Flight Lieutenant F. W. Taylor, to R.A.F. Base, Gosport, 19/8.

Flying Officers C. H. W. Boldero, to No. 603 (City of Edinburgh) (B.) Sqdn., 7/8. A. E. Haes, to No. 4 Stores, Depot, Ruislip, 7/8. J. T. Riggs, to No. 25 (F.) Sqdn., Hawkinge, 7/8.

Pilot Officers M. H. Robinson, to Station H.Q., Northolt, 7/8. A. J. Howell, to Station H.Q., Kenley, 7/8. W. J. B. Elliott, to Station H.Q., Worthy Down, 7/8. J. E. V. Tyzack, to Station H.Q., Upavon, 7/8. R. G. Seymour, to No. 2 (A.C.) Sqdn., Manston, 7/8. G. Blinman, to No. 4 Stores Depot, Ruislip, 7/8. H. H. Hilliar, to No. 1 F.T.S., Netheravon, 7/8. R. C. Storrar, to No. 1 School of T.T. (Apprentices), Halton, 7/8.

CHAPLAINS BRANCH.—The Rev. J. R. Appleyard, to Station H.Q., Upavon, 1/8. The Rev. J. H. P. Still, B.A., to School of T.T. (Men), Manston, 6/8. The Rev. R. H. Horton, to H.Q., R.A.F., Cranwell, 8/8.

The R.A.F. in Egypt.

The terms on which the British and Egyptian Governments propose to conclude a Treaty of Alliance were published in London and Cairo on Aug. 7. This Treaty includes the following paragraphs:—

(1) The military occupation of Egypt by the forces of His Britannic Majesty is terminated.

(9) In order to facilitate and secure to His Britannic Majesty the protection of the Suez Canal as an essential means of communication between the different parts of the British Empire, His Majesty the King of Egypt authorises His Britannic Majesty to maintain upon Egyptian territory in localities to be agreed upon, to the east of longitude 32 deg. E., such forces as His Britannic Majesty considers necessary for this purpose. The presence of these forces shall not constitute in any manner an occupation and will in no way prejudice the sovereign rights of Egypt.

A series of explanatory notes from Mr. Henderson (Secretary of State for Foreign Affairs) to the Egyptian Prime Minister includes the following:—

With regard to the British forces referred to in paragraph 9 of the proposals:—

(i) The Egyptian Government will provide, free of cost to His Majesty's Government, lands, barracks, etc., in localities to be agreed upon, equivalent to those now occupied by the British forces in Egypt. Upon the completion of this new accommodation, those forces shall be transferred thereto, handing over the lands, barracks, etc., thus vacated to the Egyptian Government. In view of the technical objections to effecting this transfer piecemeal it shall await the completion of the new accommodation to be provided. Having regard to the character of the region lying to the east of longitude 32 deg. E. steps will be taken to furnish reasonable amenities, by planting trees, gardens, etc., for the troops, who will also be provided with an adequate emergency fresh water supply.

(ii.) Subject to any modifications which may in the future be made by agreement between the two Governments, the privileges and immunities in jurisdictional and fiscal matters at present enjoyed by the British forces in Egypt will continue.

(iii.) Unless the two Governments agree to the contrary, the Egyptian Government will prohibit the passage of aircraft over the territories situated on either side of the Suez Canal and within

ROYAL COMMUNICATIONS.—His Royal Highness the Prince of Wales, K.G. (bareheaded in the foreground), about to enter the Service Wapiti which is maintained at Hendon for his use, to fly to the Scouts' Jamboree at Birkenhead on Aug. 1. His Royal Highness was in no way deterred by the bad weather, indications of which can be seen in the photograph.

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20 kilom. of it. This prohibition will not, however, apply to the forces of the two Governments or to services maintained by genuinely British or Egyptian organisations operating under the authority of the Egyptian Government.

We also agree that the Egyptian Government will give all necessary facilities to British military aircraft, *personnel* and stores on passage to or from the aerodromes placed at the disposal of the British forces in accordance with paragraph 9 of the proposals. His Majesty's Government will give appropriate facilities to Egyptian military aircraft, *personnel* and stores in territory under their control.

The Royal Air Force Units affected by this Treaty will be:—

The R.A.F. Depot (Middle East), Abukir; the Port Detachment, Alexandria: Headquarters R.A.F. (Middle East), Cairo: Air Ministry Auditor (Middle East), Cairo: Station Headquarters, Heliopolis: No. 216 (Bomber) Squadron, Heliopolis: Headquarters Meteorological Section, Heliopolis: No. 208 (Army Co-operation) Squadron, Heliopolis: No. 45 (Bomber) Squadron, Helwan.

[This arrangement will at any rate cause such a concentration of force along the Canal as to assure our command of the steamship route to India beyond any argument.—Ed.]

The 1928 Operations in 'Iraq.

His Majesty the King has been graciously pleased to approve of the General Service Medal with Clasp "Southern Desert, 'Iraq," being granted, provided the claims are approved by the Air Council, to personnel of the Royal Air Force who took part in the operations against the Akhwan in the Southern Desert, 'Iraq, under the orders of Air Commodore T. C. R. Higgins, C.B., C.M.G., R.A.F., between Jan. 8 and Jan. 22, 1928, both dates inclusive, or Wing Cdr. (now Group Capt.) E. R. C. Nanson, C.B.E., D.S.C., A.F.C., R.A.F., between Jan. 22, 1928, and June 3, 1928, both dates inclusive.

Individuals previously awarded the medal will receive the clasp only.

The grant of the medal and/or clasp will not be made in respect of visits to the sphere of operations by personnel of Air Headquarters, etc., not on the strength of or attached to Akforce, or for service of a temporary nature. This is not, however, intended to exclude special service officers sent out on special missions into the desert.

No claim will be considered unless it is submitted on the form laid down in the appendix to Air Ministry Weekly Order 466.

Claims for serving personnel will be forwarded through C.O.s of units to the Secretary, Air Ministry, Adastral House, Kingsway, London, W.C.2. Officers no longer serving may obtain a copy of the form of application from the Secretary, Air Ministry, and airmen no longer serving, from the Officer i/c Records, Royal Air Force, Ruislip, Middlesex. When completed, the form should be forwarded direct to the Secretary, Air Ministry.

A nominal roll of personnel who were engaged in the operations referred to will be prepared by the A.O.C., 'Iraq Command, and forwarded in triplicate to the Secretary, Air Ministry, for the approval of the Air Council. No action will be taken to issue any medal or clasp until the descriptive particulars of the claimant have been verified and the approval of the Air Council has been given.

The rank entered on the roll will be the highest recorded rank held by an officer or airman while qualifying for the award.

The Air Council reserve the right to disqualify from receiving the medal any person who has been guilty of desertion, or who, by reason of misconduct occurring during the operations for which the award is made, has not, in their opinion, rendered approved service.

[The word Akhwan means simply Brotherhood. It is applied to a somewhat fanatical group of the strict religious sect known as the Wahabi, the head of which is Ibn Saud, Sultan of Nejd and King of the Hejaz, and it includes Arabs of a number of different tribes.—Ed.]

The Henlow Courtmartial.

The Air Ministry announced on Aug. 1 that Flg. Off. Denys Stanley Thomas, who was tried by Courtmartial at Henlow on charges in connection with a crash near Barnet on May 3, has been sentenced to be cashiered and to be imprisoned with hard labour for one year.

The Halton Passing Out.

Air Vice-Marshal C. A. H. Longcroft, C.B., C.M.G., D.S.O., A.F.C., Officer Commanding Inland Area, R.A.F., inspected the Aircraft Apprentices of No. 1 School of Technical Training, R.A.F., at Halton on July 30 on the occasion of the passing-out of the September, 1926, Entry.

The Air Officer Commanding Halton, Air Commodore I. M. Bonham-Carter, C.B., O.B.E., in the course of his Report, stated that the Entry now passing out was the fourteenth to complete the Service course of training as Aircraft Apprentices. One special feature of this Entry was the all-round excellence of the top fitters' class and the top carpenter riggers' class. They were exceptional in their attainment and keenness. The top fitters' class especially was distinguished not only in school, but also in the practical training, in sports and games and in general Wing activities.

The fitters (aero engine) had shown a very high standard of skill in basic work and an advance had been made in the general standard of workmanship. Of a total of 88 fitters, 36 had obtained from 80% to 98%, and 114 had obtained from 60% to 80%.

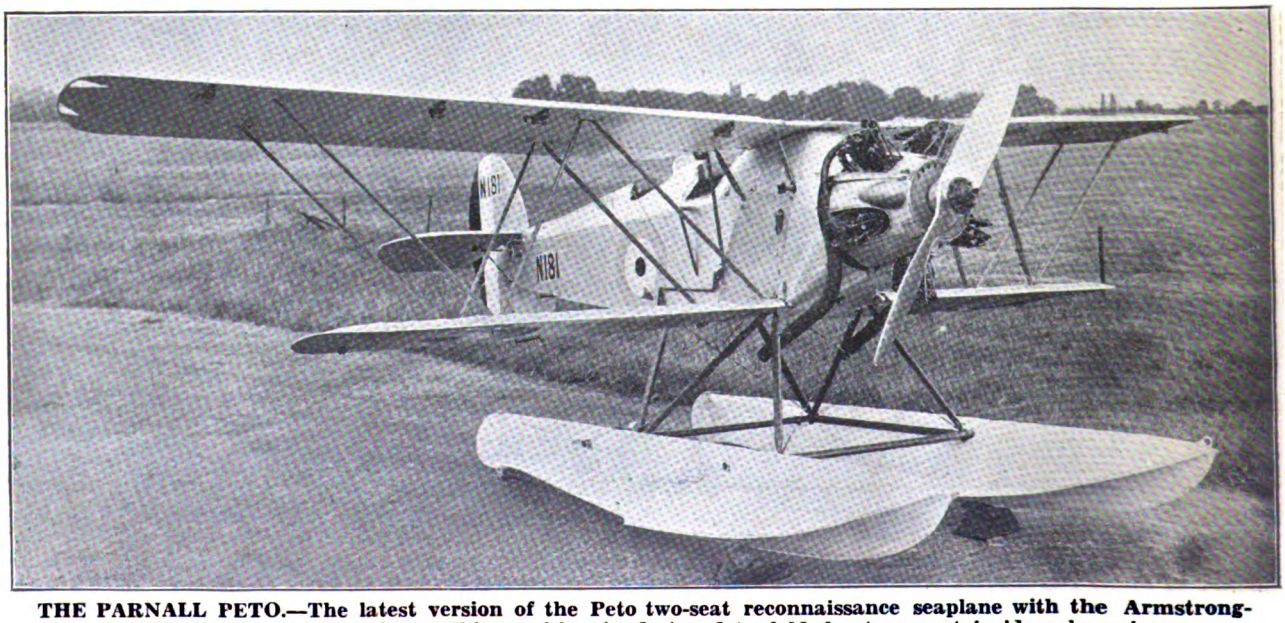
Twenty Aircraft Apprentices of this Entry had been selected for training as fitters (driver, petrol) and the experiment had been tried of reserving all driving instruction until the last two terms of the course. Each class had been allotted a vehicle to overhaul.

The standard of proficiency among the fitters (armourer) had shown an improvement on the last Entry.

A high standard of skill of hand had been attained in basic work among the carpenter riggers of this Entry. The final output had been three complete Gloster Grebe airframes and various partially completed components. The carpenter motor-body builders had received specialist instruction in motor-body building and repairs. During their training they had built a complete Leyland 3-ton body, also the main part of a Crossley tourer car body and a complete rear hood structure for a Morris six-wheel tender. All repairs to station and instructional transport had been done by them.

The Entry was well up to the average high standard of skill in the copper-smiths and sheet-metal workers. Visitors to Halton who themselves had been foremen sheet-metal workers had admitted that the general standard was much above that of the ordinary journeyman.

The standard of drill and discipline had been as good as could be expected under the prevailing conditions. The Apprentices had begun to learn steadiness on parade, march discipline and how to keep their kit and equipment serviceable, marked, and ready for immediate use They had two main difficulties to overcome, first the difficulty



THE PARNALL PETO.—The latest version of the Peto two-seat reconnaissance seaplane with the Armstrong-Siddeley Mongoose engine. This machine is designed to fold for transport inside submarines.

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of alert behaviour, care of dress and attention to march discipline, and secondly the difficulty of refraining from breaking the rules about smoking.

In games the Entry had done extremely well. In athletics the standard had been good, but in boxing with a few exceptions the Entry had showed more keenness than skill. The success of teams and of individuals had been gratifying, but as regards the best, it could be wished that more instruction was available, and as regards the average and the reluctant, there was not the organisation nor were there the grounds to ensure that all played games.

The health of the Entry had been good and the number of cases of infectious diseases had been particularly low. This might be due to the fact that all milk supplied was Grade "A" Tuberculin tested.

The passing out of this Entry should bring a number of very good tradesmen into productive work if their development during the succeeding two years was carefully fostered and controlled.

Of the 508 who had originally enlisted in this Entry, 60 had been posted to Flowerdown. Sixteen had been discharged as inefficient, 8 by purchase, 4 on medical grounds, and 3 had died and 23 had been transferred to the junior entry.

The results of the final examinations were as follows:—

Leading Aircraftmen 48. Aircraftmen 1st Class 251. Aircraftmen 2nd Class 96. Failed 1. Not examined owing to sickness 5. Total 401.

The following apprentices have been offered Cadetships:—N. C. S. Rutter, S. C. Widdows, J. B. Evans, C. W. Williams.

The following apprentices had been retained for an advanced course with a view to promotion to the rank of Corporal:—C. E. G. Hamblin, R. E. Drake, S. W. Lane E. A. Hollidge, H. G. Hastings, F. C. French, D. W. Munro, E. J. Brandon, J. E. Dutton, J. H. Burgess, J. W. Monk, E. B. Loftus, S. G. Searle, W. N. Wood, H. Holne, J. Sutcliffe, R. P. Rowe, D. W. Scivier.

The following awards had been made:—Grand Aggregate, 560897 AA. Rutter, N. C. S.; Educational Subjects, 560897 AA. Rutter, N. C. S.; Fitters A.E. 1st, 560962 AA. Hamblin, C. E. G.; Fitters A.E. 2nd, 560897 AA. Rutter N. C. S.; Fitter D.P. and Fitter Arm., 560908 AA. Scutt, E. J.; Coppersmith and S.M.W'kr., 560948 AA. Woolfrey, A. R.; Carpenter Rigger and MBB 1st, 560813 AA. Hastings, H. G.; Carpenter Rigger and MBB 2nd, 560525 AA. Burgess, J. H.

The Sir Charles Wakefield Scholarship has been awarded to 560897 AA. Rutter, N. C. S.

Inter-Services Athletics.

The Inter-Services Athletic Championships were held at the R.A.F. Stadium at Uxbridge on July 31. The Army won its seventh consecutive victory with 28 points. The R.A.F. was second with 19 points and the Navy third with 12 points.

The R.A.F. won the Two Mile Relay and the One Mile Team Race.

The results were:—

880 Yards Relay.—ARMY (Sec. Lieut. A. D. Ward, 2nd Bn. Dorset, Sec. Lieut. J. H. Mott, 1st Bn. York and Lancaster, Sec. Lieut. P. D. Powell, 1st Bn. Middlesex, L.-Cpl. C. Richards, 1st Bn. K.O.S.B.), 1; NAVY, 2; R.A.F., 3. Won by a foot; two yards. Time, 1 min. 34 1-10 sec.

Two Miles Relay.—R.A.F. (AC. R. H. Thomas, Henlow AC. Turner, Uxbridge, Cpl. Trim, Martlesham Heath, L-AC. Hester, Uxbridge), 1; ARMY, 2; NAVY, 3. Won easily. Time, 8 min. 18 3-10 sec.

Long Jump.—ARMY (Sjt. Harcourt, 1st Bn. Oxford and Bucks L.I., and Lieut. D. L. Hooton, 1st Bn. York and Lancaster), total 42 ft. 3¼ in., 1; R.A.F., 41 ft. 11¼ in., 2; NAVY, 41 ft. 7¾ in., 3. Best individual jump, Lieut. Hooton 21 ft. 1½ in.

Three Miles Team Race.— ARMY (L.-Cpl. Hester, Cheshire, L.-Cpl. Broadley, 3rd Div. R.C. Signals, Pte. Elwin, 2nd Bn. R. Tank Corps), 1; R.A.F., 2; NAVY, 3. First three men home: L.-Cpl. Broadley, 15 min. 16 3-10 sec., 1; Cpl. Ferris, R.A.F., Uxbridge, 2; Pte. Elwin, 3. Won by 50 yards.

440 Yards Hurdles Relay.—ARMY (Lieut. Lord Burghley, 2nd Bn. Grenadier Gds., Sgt. Foley, 1st Bn. Scots Gds., Lieut. T. C. Boileau, Oxford and Bucks L.I., and Lieut. D. L. Hooton, 1st Bn. York and Lancaster), 1; NAVY, 2; R.A.F. finished third, but were disqualified. Time, 1 min. 4 9-10 sec.

Putting the Weight.—ARMY (Lieut. C. E. Beckwith, Northumberland Fusiliers, and Sjt. Foley, 1st Bn. Scots Gds.), 79 ft. 8¼ in., 1; R.A.F., 2; NAVY, 3. Best Throw: Lieut. Beckwith, 40 ft. 8 in.

One Mile Relay.—ARMY (Lieut. Lord Burghley, 2nd Bn. Grenadier Guards, Pte. Dolan, 1st Bn. K.O.S.B., Lieut. the Hon. C. B. A. Bernard, 1st Bn. Oxfordshire and Bucks L.I., and Bandsman Dunn), 1; R.A.F., 2; NAVY, 3. Time, 3 min. 31 4.5 sec.

One Mile Team Race.—R.A.F., 1; ARMY, 2; NAVY, 3. Order of finish: AC. Thomas, R.A.F., and AC. Turner, R.A.F., equal 1; L.-S. Bloomfield, NAVY, 3. Time, 4 min. 37 7-10 sec.

400 Yards Relay.—ARMY (Sec. Lieut. A. D. Ward, 2nd Dorsets, Sec. Lieut. J. H. Mott, 1st Bn. Yorks and Lancs, Lieut. R. R. Garner, East Yorks, and Lieut. Beamiss, R. Tank Corps), 1; R.A.F., 2; NAVY, 3. Won by inches. Time, 39 7-10 sec.

High Jump.—ARMY (Lieut. H. R. Norman, 2nd Bn. Coldstream Gds., and Lieut. T. P. Saunders, Queen's Own Cameron Highlanders), 11 ft., 1; R.A.F., 2; NAVY, 3. Best Jumps: Lieut. Norman and Flg. Off. Nuttall (R.A.F.), 5 ft. 7 in.

The R.A.F. Lawn Tennis Championships.

The R.A.F. Lawn Tennis Championships were held at Queen's Club on July 29, 30, 31 and Aug. 1 and 2. Wing Cdr. H. J. F. Hunter beat Wing Cdr. R. E. Saul (holder) in the final of the Singles, and Wing Cdr. Hunter and Wing Cdr. Saul beat Flt. Lt. Davies and Flt. Lt. Williamson-Jones in the final of the Doubles.

The details were:—

R.A.F. SINGLES CHAMPIONSHIP.

First Round.—Flg. Off. J. W. Busteed beat Grp. Capt. E. G. Fowler (2—6, 6—4, 6—4); Sq. Ldr. C. St. Noble beat Wing Cdr. J. C. P. Wood (6—3, 6—1); Flt. Lt. E. D. H. Davies beat Cpl. C. G. Payne (6—1, 6—2); Flg. Off. A. H. E. Frost beat F-S. H. C. Witts (7—5, 4—6, 6—1); Flt. Lt. C. Williamson-Jones beat Plt. Off. H. E. Sales (6—3, 6—4); Flt. Lt. H. G. White beat Flg. Off. F. G. Downing (6—3, 6—4); Sq. Ldr. N. F. D. Buckridge beat Air Comdre. A. D. Warrington-Morris (9—7, 6—4); Wing Cdr. R. E. Saul (holder) beat Flt. Lt. J. Duminy (6—1, 6—4); Sq. Ldr. T. C. Thomson beat L-AC. Muir, W. B. (6—4, 9—11, 6—0).

Second Round.—Wing Cdr. H. J. F. Hunter beat Busteed (6—0, 6—0); Davies beat Flg. Off. L. V. Hirst (7—5, 6—0); Williamson-Jones beat Flg. T. C. Reep (6—1).

Flg. Off. R. E. Hall beat Flt. Lt. H. J. Gilbert (2—6, 6—3, 6—3); Hall beat Sq. Ldr. C. St. Noble (6—1, 7—5); Sq. Ldr. N. F. D. Buckeridge beat Flt. Lt. H. G. White (6—4, 6—1); Wing Cdr. R. E. Saul (holder), w.o., Wing Cdr. L. T. N. Gould scratched; Sq. Ldr. F. G. M. Williams beat Sq. Ldr. T. C. Thomson (6—3, 6—4); Flg. Off. A. H. E. Frost beat Grp. Capt. H. R. Nicholl (6—1, 6—2).

Third Round.—Wing Cdr. H. J. F. Hunter beat Flg. Off. R. E. Hall (8—6, 7—5); Flt. Lt. E. D. H. Davies beat Flg. Off. A. H. E. Frost (6—2, 6—1); Flt. Lt. C. Williamson-Jones beat Sq. Ldr. N. F. D. Buckeridge (6—1, 3—6, 6—3); Wing Cdr. R. E. Saul (holder) beat Sq. Ldr. F. G. M. Williams (6—0, 6—3).

Semi-final Round.—Wing Cdr. H. J. F. Hunter beat Flt. Lt. E. D. H. Davies (6—1, 6—1).

Wing Cdr. R. E. Saul (holder) beat Flt. Lt. C. J. Williamson-Jones (6—2, 6—4).

Final Round.—Wing Cdr. H. J. F. Hunter beat Wing Cdr. R. E. Saul (holder) (6—3, 4—6, 4—6, 6—2, 6—3).

R.A.F. DOUBLES CHAMPIONSHIP.

First Round.—Flt. Lt. H. J. Gilbert and Flt. Lt. J. Duminy beat Plt. Off. H. E. Sales and Flg. Off. R. E. Hall (6—3, 5—7, 6—4); Flt. Lt. E. D. H. Davies and Flt. Lt. C. J. Williamson-Jones beat Sq. Ldr. C. St. Noble and Sq. Ldr. N. F. D. Buckeridge (6—8, 6—3, 6—4); Air Comdre. A. D. Warrington-Morris and Wing Cdr. A. G. M. Belfield beat Flg. Off. J. R. Ackers and Wing Cdr. J. C. Wood (6—1, 6—1).

Second Round.—Wing Cdr. R. E. Saul and Wing Cdr. H. J. F. Hunter beat Flg. Off. F. G. Downing and Wing Cdr. F. L. Robinson (6—3, 8—6); Air Comdre. A. D. Warrington Morris and Wing Cdr. A. G. M. Belfield beat Grp. Capt. H. R. Nicholl and Air Comdre. F. W. Bowhill (6—3, 6—0); Flg. Off. L. V. Hirst and Flt. Lt. H. G. White beat Flg. Off. J. W. Busteed and Sq. Ldr. C. T. Thomson (6—2, 6—2); Flt. Lt. E. D. H. Davies and Flt. Lt. C. J. Williamson-Jones beat Flt. Lt. H. J. Gilbert and Flt. Lt. J. Duminy (7—5, 6—2).

Semi-final Round.—Wing Cdr. R. E. Saul and Wing Cdr. H. J. F. Hunter beat Air Comdre. A. D. Warrington-Morris and Wing Cdr. A. G. M. Belfield (6—0, 6—2).

Flt. Lt. E. D. H. Davies and Flt. Lt. C. J. Williamson-Jones beat Flg. Off. L. V. Hirst and Flt. Lt. H. G. White (6—3, 6—4).

Final Round.—Wing Cdr. R. E. Saul and Wing Cdr. H. J. F. Hunter beat Flt. Lt. E. D. H. Davies and Flt. Lt. C. J. Williamson-Jones (6—1, 6—4 6—3).

R.A.F. INTER-STATION DOUBLES.

Semi-final Round.—Grp. Capt. G. V. Fowler and Flt. Lt. C. J. Williamson-Jones (Henlow) beat Wing Cdr. H. J. F. Hunter and Wing Cdr. L. T. N. Gould (7—5, 4—6, 6—4); Flg. Off. L. V. Hirst and Flt. Lt. E. D. H. Davies (Halton) (holders) beat Sq. Ldr. C. St. Noble and Flg. Off. A. H. E. Frost (6—4, 7—5).

Final Round.—Flg. Off. L. V. Hirst and Flt. Lt. E. D. H. Davies (Halton) (holders) beat Grp. Capt. G. V. Fowler and Flt. Lt. C. J. Williamson-Jones (Henlow) (9—7, 3—6, 7—5, 6—4).

R.A.F. VETERANS' CHALLENGE CUP.

Final Round.—Wing Cdr. F. L. Robinson (rec. 2/6) beat Sq. Ldr. F. G. M. Williams (scratch) (4—6, 7—5, 6—4).

R.A.F. PLATE SINGLES.

Semi-final Round.—Flt. Lt. H. G. White beat Flg. Off. J. W. Busteed (6—2, 6—2); Sq. Ldr. C. St. Noble beat Wing Cdr. L. T. N. Gould (8—10, 6—2, 6—2).

Final Round.—Noble beat White (6—3, 2—6, 6—4).

NEW OFFICIAL PUBLICATIONS.

The following important new publications have recently been issued by His Majesty's Stationery Office. Copies may be had from THE AEROPLANE Book Dept., Cannon House, Pilgrim Street, E.C.4, at the published price plus postage.

Regulations for the Royal Air Force, 1928:—This includes the King's Regulations and Air Council Instructions for the Royal Air Force with appendices and index embodying regulations and orders issued up to November 22, 1928, in one volume, price 7s. 6d.

R.A.F. Drill and Ceremonial (Provisional):—Full particulars of non-technical training, individual and collective training, ceremonial drill, complements in boats, etc., fully illustrated with photographs and diagrams. 2s. 6d.

Dress Regulations for Officers of the Royal Air Force:—This volume is about the size of a copy of THE AEROPLANE and has a stiff cover with gilt lettering. It is overpoweringly illustrated with headless bodies in uniform. Such interesting information as the order that cummerbunds will be worn with tropical mess kit on and after Jan. 1, 1930, up till which date waistcoats are optional, will fill many an idle moment with instruction and entertainment for the owner of this delightful book. 4s. 6d.

Royal Air Force Pocket Book:—A new edition of this invaluable publication without which no ardent aviator can tie a hitch knot, quarter a dead sheep, level an aerodrome, or construct an adequate grease trap. 3s.

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THE SCHNEIDER TROPHY CONTEST.

The Italian Schneider Team will probably arrive in England very shortly. It will comprise in all eleven high-speed seaplanes, and in addition to the actual high-speed team of pilots, there will be twenty officers and a large number of mechanics.

Rumour has it that at least two of the Italian seaplanes will have two 1,000 h.p. engines mounted in tandem, with the pilot situated between them. This arrangement is similar to that proposed by Dr. Claud Dornier. A model of a proposed Dornier racing seaplane of this type was exhibited at Olympia a few weeks ago, and in Berlin last year. The Fiat and the Savoia and the Macchi firms are known to have produced racing seaplanes for the contest. Both Fiat and Isotta-Fraschini have built special racing engines, which are rumoured to give anything from 1,000 to 1,600 h.p.

Little news is available about the French contestants except that the machines are built and ready for the engines. The engines are built and one of each type has been fitted to the aircraft for installation purposes. Contrary to previous reports, the Hispano-Suiza engines are not of the inverted "T" type, but of a flattened inverted broad arrow type, the angle between the cylinder blocks being 85 degrees.

Contrary to all published reports, the team will consist of young pilots of the French Naval Air Service, and will not include veteran pilots such as MM. Sadi-Lacointe, Lasne, and Bonnet, who have had no experience of modern speeds and are regarded as being too old to have nerve reactions quick enough for such work.

The French are not optimistic about their chances. They believe in their motors and their aeroplanes, but are doubtful about their floats. But at any rate they hope to escape with an honourable defeat, and not to appear ridiculous by being completely out-classed. [When a competitor talks in that way, you may regard him as being dangerous.—C. G. G.]

The American "team"—consisting of Lieut. A. L. Williams, U.S.N., has taken his Kirkham-designed machine to the U.S. Air Station at Annapolis, where he proposes to test it.

The rumour that Col. Charles Lindbergh is to be the spare pilot, or that he offered to act as such, is obviously pure newspaper bunk.

The British contestants are ready, but none of the machines had flown up to Aug. 1. A "private view" is to be given to the Press on Aug. 12, at Calshot.

A DAY TRIP TO THE "ORFORD."

The Royal Aero Club has made arrangements whereby a limited number of Day Tickets will be issued to Members of the Royal Aero Club and Associated Light Aeroplane Clubs to witness the Contest for the Schneider Trophy, to be held on Saturday, September 7, 1929, from the s.s. *Orford*, which will be berthed at the starting line off Ryde Pier.

Members may apply for not more than two extra tickets for Guests.

The price of the Day Tickets is £2 2s. each, which covers transport by the Club Tender from Southampton to the s.s. *Orford* and return to Southampton.

Buffet Luncheons and Teas will be available on the s.s. *Orford* at reasonable prices.

TRANSPORT ARRANGEMENTS.

A special train for the Members will leave Waterloo on Saturday morning, September 7, at 7.5 a.m., arriving at Southampton (Town Terminus) at 8.50 a.m.

The Official Tender of the Club, *The Duchess of Cornwall*, will leave the Royal Pier, Southampton, at 9.45 a.m. sharp, for the s.s. *Orford*, and will return from the s.s. *Orford* to Southampton not later than 6.30 p.m.

The special train for the Members for the return journey to town will leave Southampton at 8.55 p.m.

To avoid confusion at Waterloo, the Club has arranged with the Southern Railway for tickets to be available to Members in advance, and these can be had at the Club, 3, Clifford Street, W.1. No class of carriage can be guaranteed. Return Tickets from Waterloo to Southampton, 22s.

All applications for Tickets for the s.s. *Orford* and Railway Tickets must be accompanied by a remittance covering the cost of tickets required.

Applications will be dealt with strictly in rotation of recept. *Early application is requested.*

ANCHORAGES AND INSTRUCTIONS FOR SMALL VESSELS.

The following has been issued by the Royal Aero Club, on behalf of the King's Harbour-Master, Portsmouth:—

1. Small craft drawing less than 8 feet of water may anchor in any of the following areas which have been reserved for them:—

Bramble, Browndown, Hayling, Horse Sand, Mother Bank, Wootton, and West Ryde Middle to the East of West Ryde Middle Light Buoy.

The details of these areas are shown on a published chart which can be obtained from the Secretary, the Royal Aero Club, 3, Clifford Street, London, W.1, the prices of which are eight shillings and sixpence for one of large size and two shillings for a smaller scale chart, post free.

2. All vessels, including rowing and sailing boats, must be at anchor in one of these areas not later than 1 p.m. (British Summer Time) on the day of the race and must remain anchored until the race is completed,—or postponed.

It will be greatly appreciated if the public will carry out promptly any instructions given by the Patrol Boats which will each have a Naval Officer on board and will be flying a yellow flag in the bow.

The only vessels, other than patrol boats, allowed to be under way after 1 p.m. (British Summer Time) are a small number of official and first-aid boats.

3. British Men-of-War and Shore Signal Stations in the vicinity of Spithead and the Solent will fly a large Red flag from 10 a.m. (British Summer Time) until such time as the race is completed, or postponed, when this flag will be changed to a large Blue flag. Spectators who are unable to receive the W/T broadcast transmissions concerning the race will therefore have this means of ascertaining when the race is completed,—or postponed.

4. All ships and vessels in the vicinity of the Isle of Wight are requested to cease all W/T transmission, as far as possible, from Noon (British Summer Time) until the completion of the race.

5. Owing to Seaplane Reliability Trials taking place the previous day, no vessel is to take up a position in the Bramble, Browndown, or Wootton areas until the morning of the day of the Race itself.

6. It should be definitely understood that the presence of any vessel in any position other than the authorised anchorages as shown on the chart, whilst the race is in progress, is likely seriously to endanger its safety and that of the competing seaplanes.

7. It would be much appreciated if all vessels which are able to do so would dress ship overall during the Race.

8. In the event of postponement, these instructions will be in force for the day on which the Race takes place.

THE SCHNEIDER TROPHY CONTEST FUND.

In response to a recent appeal made by the Royal Aero Club, the following donations have so far been received:—

	£	s.	d.
Sir Charles C. Wakefield, Bart.	5000	0	0
The Hon. A. E. Guinness..	250	0	0
The Southern Railway Company	105	0	0
Mr. H. Gordon Selfridge	52	10	0
Cellon (Richmond) Ltd., Mr. A. K. Macomber, and Col. B. S. Millard (each)	50	0	0
The Hon. Henry Mond and Mr. F. G. T. Dawson (each)	20	0	0
Lairdways	15	0	0
Mr. E. Owers	10	10	0
Mr. C. Oswald Liddell	10	0	0
Lieut.-Col. Sir John Humphery, Mr. J. J. Morgan, Mr. William Leuchars, Mr. Stanley Spooner, Sq. Ldr. A. Kubita and Sir Charles Allom (each)	5	5	0
Sir John C. E. Shelley Rolls, Bart.	3	0	0
Mr. John E. Humphery, Mr. H. J. Preston and Mr. C. W. Berry (each)	2	2	0
Mr. C. Gray Hill, Mr. F. Bellamy, Mr. A. J. Ellis and Miss W. L. Lockyer (each) ..	1	1	0
Mr. E. Newgass		10	0

Subscriptions should be sent to the Royal Aero Club, 3, Clifford Street, London, W.1.

[Sir Charles Allom, once the proprietor of the Gosport Aviation Co., which made some of our finest flying boats, is to be congratulated on thus showing a renewed interest in Aviation. At this rate the Royal Aero Club may easily expect the odd guinea or so from Lord Waring, who is generally regarded as having acquired his peerage in connection with aviation, and others of the nobility and gentry created during the War 1914-18, who have unhappily severed their connection with flying since then.—C. G. G.]

LIEUTENANT BONNET.

The Times of Aug. 7 reports the death on Aug. 6 of Lieut. Bonnet, who was killed in a crash at Hourtin, near Bordeaux. As Adjudant Bonnet this officer was known as one of the finest French fighting pilots during the War and as one of the best speed pilots afterwards. In 1924 he put the World's Speed Record up to 448.171 km.p.h. (277.805 m.p.h.), on a Bernard-Hubert monoplane,—which speed is still the highest ever attained by an aeroplane on wheels, though it has been beaten by a number of Schneider Trophy speed machines.

The report of Lieut. Bonnet's death states that he had been designated by the Air Ministry to be one of the French team in the Schneider Trophy Contest. This statement has been denied to the writer personally by an officer of the French Air Ministry, who has stated that the French pilots for the Schneider Trophy Contest will be young officers of the Navy. Nevertheless there is still a possibility that Lieut. Bonnet may have been testing one of the French Schneider machines at the time of his death.

Lieut. Bonnet was well beloved by all who served with him. He did great service to French Aviation, not only by his many great flights, but also by his unusual skill and reliability as a test pilot. One offers to French Aviation deep sympathy in the loss of one of its most brilliant sons.—C. G. G.

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"TITANINE" DOPE AND THE

KING'S CUP AIR RACE, 1929.

1st GLOSTER "GREBE" Flying Officer R. L. R. ATCHERLEY
2nd D.H. MOTH Lieut. L. G. RICHARDSON, R.N.
3rd D.H. GIPSY MOTH Capt. W. L. HOPE.

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THE INDIA-AND-BACK RECORD.

At [illegible] on Aug. 2 the Fokker FVII monoplane, *The [illegible]* (Bristol Jupiter geared engine), [illegible] with Mr. R. F. Little as [illegible] Bruce the Duchess of Bedford as passenger [illegible] in an attempt to fly to India and back in [illegible].

At [illegible] on Aug. 5 the machine landed at Karachi. The journey from Lympne was made in four stages, with [illegible] at [illegible] Aleppo and Bushire, and the total flying time was [illegible].

At [illegible] on Aug. 6 the return journey was begun.

We may now look forward to a regular series of attempts on the India-and-back Record. These should be encouraged, [illegible] they will help to show up the ridiculous inadequacy of the present so-called Indian Air Mail Service, which [illegible] by train sleeps every night, and never exceeds [illegible].

An adequate air-mail service,—such as would be perfectly possible to-day at no more cost than the present service—would average 150 m.p.h. day and night, and would cover the whole distance in 36 hours, or thereabouts.

THE "GRAF ZEPPELIN."

At 12.30 hours, on Aug. 1, the *Graf Zeppelin*, commanded by Dr. Eckener, left Friedrichshafen for America with nineteen passengers, a general cargo weighing approximately two tons, about 7 cwt. of mails, and a crew of forty-two.

The previous attempt in May to fly to New York was abandoned, as the ship had to turn back when over Spain with three of her four engines out of action.

During the time she has been in dock the engines have been fitted with new couplings and various other improvements have been made. The trouble was that the old type of coupling fitted between the motors and the airscrews set up syntonic vibrations, which broke the crankshafts.

Newspaper reports say that among the passengers were Sir Hubert Wilkins, Miss Anna May Wong, and "Susu," the gorilla. The general cargo included a Rubens picture, a Bechstein grand piano, 600 canaries, and a bust of the late Baron von Hünefeld. The juxtaposition is interesting, and somewhat apposite.

Finally, there was the inevitable stowaway, a baker's apprentice from Düsseldorf, who introduced himself into the ship by the simple expedient of falling off the roof of the shed and bursting his way through the envelope. This yarn seems unbelievable. The doped fabric outside an airship would stand much more than the impact of a human body dropping a few feet. Possibly the truth is that the man dropped onto the top of the ship and crawled down the chimney which leads down between the gas-bags.

The *Graf Zeppelin* proceeded over Basle, Lyons, Perpignan, Barcelona, Gibraltar, to the Azores, actually leaving the European mainland at Cadiz, Spain, at 05.50 hours on Aug. 2. Soon after passing the Azores the *Graf Zeppelin* established wireless communication with the United States.

At 16.00 hours (21.00 hours B.S.T.) on Aug. 4 it was sighted over Cape May, New Jersey. At 19.29 hours the *Graf Zeppelin* arrived over Lakehurst, but did not come down until nearly 22.00 hours. The actual crossing from Friedrichshafen to Lakehurst took 93 hours, which is only some 18 hours less than the record-breaking crossing of the new German liner *Bremen*.

From Gibraltar to the north of Bermuda the weather was good, but beyond that there were head winds and rain.

Dr. Leisler Keipman, manager of the Hamburg-Amerika Line, who was a passenger on the ship, said that his company had decided to put its organisation behind the project of building airships.

According to another authority, four new Zeppelin airships twice the size of the *Graf Zeppelin* are to be built, and it is hoped to have them by the Spring of 1931.

A new airship base is to be established at Richmond, Va., which is clear of fog such as is found at Lakehurst.

President von Hindenburg telegraphed his "heartiest congratulations" to Dr. Eckener on the successful conclusion of the second Atlantic flight of the Graf Zeppelin, the arrival of which at Lakehurst in the early hours of Aug. 5, by European time, was described to German listeners by a relayed broadcast.

Lord Thomson, Secretary of State for Air, has sent the following message to Dr. Eckener:—"Air Council tender warm congratulations on your fine achievement and successful voyage to United States."

THE WINGS OF THE SOVIET.

On July 30 there arrived at Croydon the three-engined A.N.T.-9 monoplane, *Wings of the Soviet*.

A photograph of this machine, taken at the aerodrome near Rome, appeared in THE AEROPLANE, p. 312, of July 31.

It was piloted by M. Gromoff and carried ten passengers, among whom were M. Zarzar, the Chief of the Red Civil Air Fleet, representatives of the Dobrolot and Osaviachim civil air transport organisations, M. Archangelsky (one of the designers of the machine, who was acting as engineer-mechanic), and five journalists. Among the journalists was M. Effimoff, one of Soviet Russia's leading caricaturists, who, alone, as the result of his art, has been responsible for the exchange of five international notes of protest.

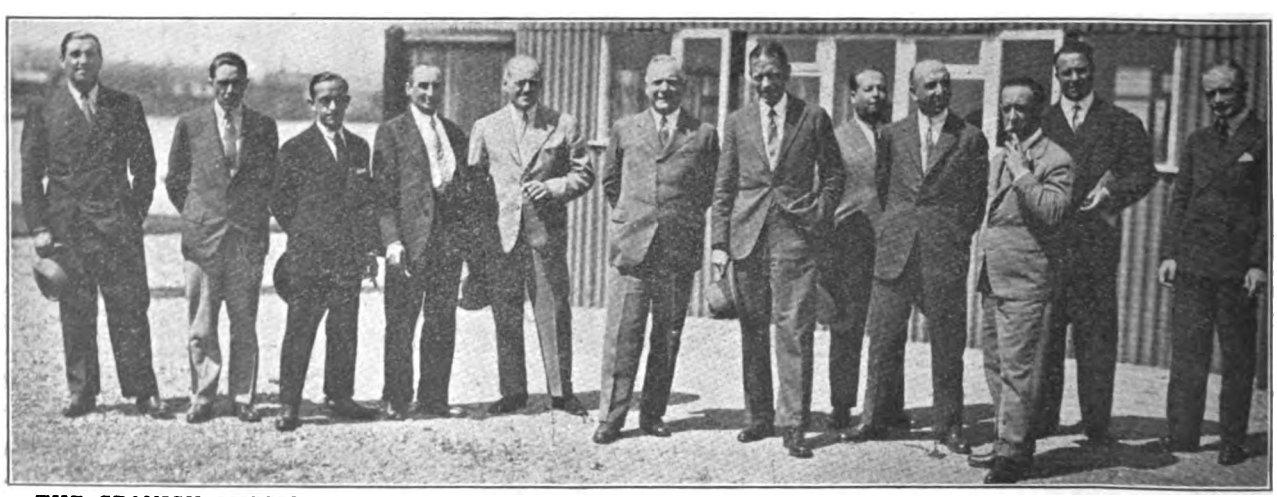
The machine is making a tour of the capitals of Europe and before reaching London it had flown from Moscow to Berlin non-stop in 10 hrs., from Berlin to Paris and from Paris to Rome. An attempt was made to fly non-stop from Rome to London, but what the French would call *une petite avarie* forced the machine to land at Nevers. After the trouble was remedied the flight was continued direct to London, where it arrived at 18.00 hrs. on July 30.

The A.N.T.-9 is the first of a series of three-engined commercial monoplanes built at the Central Aero-Hydrodynamic Institute, Moscow, to the designs of M. A. N. Toupoleff.

M. Toupoleff has been responsible for the production of several original all-metal aircraft, the best known of which is the A.N.T.-3, a two-seat high-performance postal or reconnaissance biplane originally fitted with a Napier Lion engine, and later with a Russian-built Liberty engine. This machine, piloted by M. Gromoff, flew a circuit of Europe of over 4,000 miles in 34 hrs.' flying time and later flew from Moscow to Tokyo. It was exhibited at the Berlin Aero Show last year.

The A.N.T.-9, or *Wings of the Soviet*, is a high-wing cantilever monoplane and has three Gnôme-Rhône Titan engines, one in the nose and one in the leading-edge of each wing-root, close up to the fuselage.

It is built almost throughout of an aluminium alloy known as Koltchougalumin, which has been developed by the Koltchougino Works. This metal in its hardened state has a tensile strength of 40 kgs. per sq. mm., or roughly 25 tons to the sq. in., with an elongation of 20 per cent. Its specific gravity is 2.85.



THE SPANISH MISSION AT SOUTHAMPTON.—Left to right: Gomez Spencer, Juan Montis, Antonio Numez, Pablo Hermide, Major Jullerot (of Vickers Ltd.), Admiral Juan Cervera, Air Commodore J. A. Chamier (of Vickers Ltd.), Manuel De Florez, J. Oster Echagué, J. Pastor, I. Fuster, Mr. C. R. Gray (of the Supermarine division of Vickers Ltd.).

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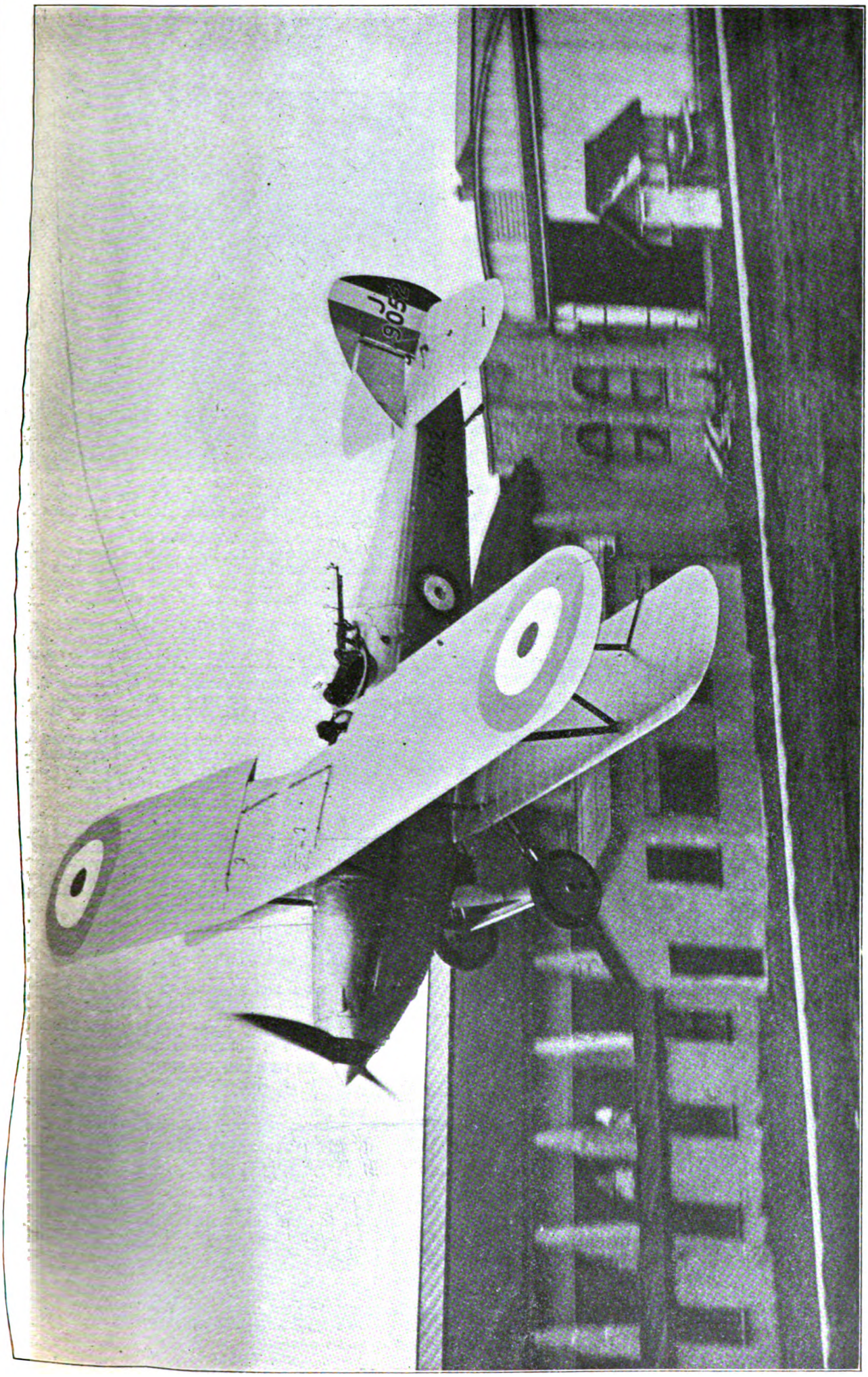

ON THE TURN:—A striking view of the Hawker Hart two-seat Fleet Reconnaissance Fighter [Rolls-Royce "F" engine] turning in front of the main sheds at Brooklands.—(*"Aeroplane" photograph.*)

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The external covering is of corrugated koltchougalumin, which gives the illusion that the machine is of Junkers construction. Actually this is not the case, the internal construction being quite original.

The engine mountings are welded steel tube structures and the wing engines are faired very neatly into the wings. The nacelle cowling appears to be bolted on and does not give the impression of accessibility. The fuel tanks are in the wings, the feed to the engines being by pump. A compressed-air starting system as well as magnetos are installed.

The pilots' cockpit is in front of the leading-edge of the wing and seats two side-by-side. Control is by the usual wheel with self-aligning pedals for the rudder. The control system is almost entirely internal. The rudder control is by cable and the elevators and ailerons by push-and-pull rods.

The cabin is large and roomy and seats nine passengers in ordinary cane chairs, which, however, are more comfortable than is usual with this type. A lavatory is situated immediately abaft the cabin, and alongside it is an emergency exit through the roof of the cabin with a short ladder leading up to it. Aft of this is a baggage compartment which has a separate door on the right side of the fuselage.

The undercarriage is of the divided type and each unit consists of a long telescopic leg with rubber-in-compression springing anchored to the wing underneath the wing engine. The bottom end of the leg is hinged to the bottom longeron of the fuselage by welded steel tube axle and radius-rod.

The tail unit is of the monoplane type. The surfaces are built up in a manner similar to the wings. All control surfaces are balanced.

The material used in the construction of the A.N.T.-9 is entirely Russian, even to the wheels and tyres.

A series of this type is now being built for use on a new line to be operated between Moscow and Vladivostok.

Before starting on its European tour the *Wings of the Soviet* has made a large number of domestic propaganda flights, including one non-stop flight from Moscow to Odessa.

In addition to carrying a complement of eleven on three Titan engines the machine has fuel for ten hours.

Its principal dimensions are:—Span 23.73 m. (77 ft. 10 in.), Length 16.8 m. (55 ft. 1 in.), Height 5 m. (16 ft. 5 in.). Its loaded weight is 4,750 kgs. (10,480 lbs.) and it carries a useful load of 1,690 kgs. (3,730 lbs.). The maximum speed is 210 km.p.h. (130 m.p.h.).

On its non-stop flight from Moscow to Berlin, carrying an overload in bad weather, it averaged 186 km.p.h. (116 m.p.h.) for 10 hours.

It left Croydon on Aug. 4 to return to Moscow by way of Berlin and Warsaw.

THE BUSK STUDENTSHIP IN AERONAUTICS.

The trustees of the Busk Studentship in Aeronautics, founded at Cambridge University in memory of Edward Teshmaker Busk, who lost his life in 1914 while flying an experimental aeroplane, have awarded the studentship for the year 1929-30 to Mr. Stanley George Hooker, B.Sc., A.R.C.S., of the Royal College of Science, London.

DISTINGUISHED VISITORS.—Left to right: Mr. Phya Prakit, Director-General of Posts, Siam; H.R.H. Prince Pura Chatra; and Mr. Chao Kavila, Engineer and Pilot of Siam, on a visit to the Supermarine Works of Vickers (Aviation) Ltd. at Southampton.

THE MOVING SPIRIT.—Mr. Hewlett of the Anglo-American Co. at Croydon sees that "The Southern Cross" gets the right stuff before starting for Holland.

ON AND ON AND ON.

On July 30 at 19.38 hrs. Mr. Dale Jackson and Mr. Forest O'Brien landed at St. Louis in their Curtiss-Robertson Robin monoplane (Curtiss Challenger engine) after having remained in the air for 420 hrs. 21½ mins.—or roughly 18 days and nights.

They beat the previous re-fuelling duration record by 173 hrs. 38 mins., and the reason for their descent was a peremptory order from their sponsors to do so. The sponsors had promised them a certain sum of money for every hour they flew over the previous record, and apparently it was feared that they might go on for ever. Actually they earned $17,000 (£3,400) in this way in addition to 18 days' wages.

A suggestion has been made that in future a platform on a high scaffolding shall be erected where the machine and pilots may retire into oblivion as long as they like without the need for running their engine or wasting petrol.

THE SPEED CRAZE.

According to *The Times* a special badge has been introduced in the Italian *Regia Aeronautica* for pilots of high-speed aircraft. It takes the form of a small V-shaped design in red enamel and will be conferred on military pilots who, when flying in machines capable of reaching a horizontal speed of more than 500 k.p.h. (about 312 m.p.h.), effectively attain that speed in a properly controlled test.

THE JUNKERS HEAVY-OIL ENGINE.

Further experimental flying has been made at Dessau with the Junkers compression-ignition engine, in a Junkers G-24 monoplane. The engine is stated to have given 850 h.p. at 1,300 r.p.m., and the fuel consumption is given as about 25 per cent. less per h.p./km. than that of a petrol engine of similar output.

A total of fifteen hours' flying was made in the latest tests. One flight was of eight hours' duration.

AN ERRAND OF MERCY.

On Aug. 1, Flt. Lt. Higgins, R.C.A.F., made a flight of 1,200 miles between dawn and dusk to succour an Indian boy who was lying badly injured on the shores of James Bay, at the southern extremity of Hudson's Bay.

EDUCATION AND EDIFICATION.

In The Aeroplane office, left over from the Aero Show, are a number of copies of notable foreign periodicals, including the Special Number of *Luftwacht*, in which particularly interesting special articles are published in German and English, and the important French fortnightly publication *L'Air*, also specially published for our Aero Show. A parcel containing copies of both these papers, together with one or two other foreign publications, will be posted to any applicant on receipt of 6d. in stamps for cover postage.

This offer is being made because intelligent people in this country ought to have the chance of becoming better acquainted with our Continental contemporaries.

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

THE SCARBOROUGH AIR PAGEANT.

Scarborough was treated to an ably-managed little Air Meeting on Bank Holiday Monday.

The Berkshire Aviation Tours have had some Avros at the flying ground—the old racecourse—for some few days, and they have been doing quite a good trade with passenger flights. On Monday the weather started badly with showers, but it cleared up fairly early and turned out quite cheerful.

A prelude to the day's Pageant was a formation of light aircraft which flew round the town and neighbouring country on Sunday evening. More and more private owners are painting their machines in gay colours, and on Sunday evening these machines vied with the colours to be seen on the beach, over which they flew.

Just before lunch on Monday Mr. Clarke flew the new Junkers F.13 over with Mr. Trost. They left again in the evening for Dublin—how we do get about these days!

The Rally to Scarborough was won by Mr. Ivor Thompson on a Yorkshire Club Bluebird. After his success he was made to pay for it by going up and giving an exhibition. Mr. Thompson is a club-trained pilot, with, as far as one could understand, no previous flying experience, but his display was quite one of the best and neatest shows one has seen. His bunts, rolls, and so on, were beautifully done, considering the power-to-weight ratio of the Bluebird.

Mr. R. G. Cazalet was the second in the Rally, with Mr. Dawson, on a Bluebird, third, and Miss Winifred Brown, on her Avian, fourth. Miss Brown also got the prize for the first lady pilot to arrive.

Mr. Kingwill gave a very pretty display on the Northern Air Lines Moth before the Scarborough Open Handicap.

This was over a two-lap course of about 25 miles and in view of the spectators all the time.

Miss Brown won after a good race, having started second. Flt. Lt. Rose, on a Moth, was second by a short airscrew-boss, with Mr. Lacayo, on an Avian, third.

Mr. Cazalet, on his Widgeon, seemed to get the usual terrific handicap that the Widgeon is always given, and consequently retained his position in the race, though he flew a beautiful course.

Flt. Lt. Rose gave another show to enliven the crowd—which, by the way, was quite numerous by now. And then Mr. Lawson did some inverted flying on an Avro.

Balloon bursting was the next thing on the programme. Only two pilots entered, Mr. Lacayo, on an Avian, and Flt. Lt. Rose on a Moth.

The Moth must have thought the balloons were candles, for it flew straight into most of them and effectively extinguished them.

The bombing event, now so customary, was varied by the dejected suitor in a Moth as the bomber, and the bride and bridegroom escaping in a car as the bombed.

No direct hits were scored, but the car was finally enveloped in smoke, which made the occupants continue their "great adventure" on foot—an attempt to carry the bride failing dismally and showing the decadence of the modern he-man.

Several more interesting events were billed, including Mr. Tranum in one of his well-known parachute drops, some crazy flying, and a finale in the shape of a flight at dusk by an illuminated Avian, but one was unable to wait for these, as one had to catch the post.

THE LEICESTER AERO CLUB INAUGURATION.

The Leicester Aero Club held their inaugural luncheon at the Granby Halls on July 31.

The club is the outcome of the far-sightedness of the Leicester Chamber of Commerce, and was really started in February. At that time the Commercial Aviation Committee of the Chamber of Commerce came to the conclusion that, in view of the fact that the proceedings for the establishment of a Municipal Aerodrome were likely to be protracted, their best line would be to sponsor the formation of a flying club so that those who mattered would thereby become more airminded and finally assist the whole matter instead of, as up to the present, rather obstructing it.

The Municipal Aerodrome is still "in the wind" and should become a reality before very long, but at the same time Leicester will have gained the advantages of having a flying club, and, being composed of business men whose idea of flying is to use it for their business, the club should benefit by having an income from taxi-work and special charter jobs. One was a trifle surprised to hear the sporting and social side of the club relegated to the back seat in such a county as Leicester—they are even calling their Moth "the Quorn"! But throughout the speeches, and especially that of the President, the whole theme was business and utility.

Not wishing to overlap any arrangements which might be under way, the Aviation Committee came to London and interviewed the Directors of National Flying Services Ltd. before actually starting on the club. But again finding that nothing might be done for a very long time they decided to go ahead and the club was duly formed. Mr. W. Lindsay Everard, M.P., consented to become their first President and generously got several of his business friends together and defrayed the cost of the first machine,—which is the first Moth of the all-metal production series.

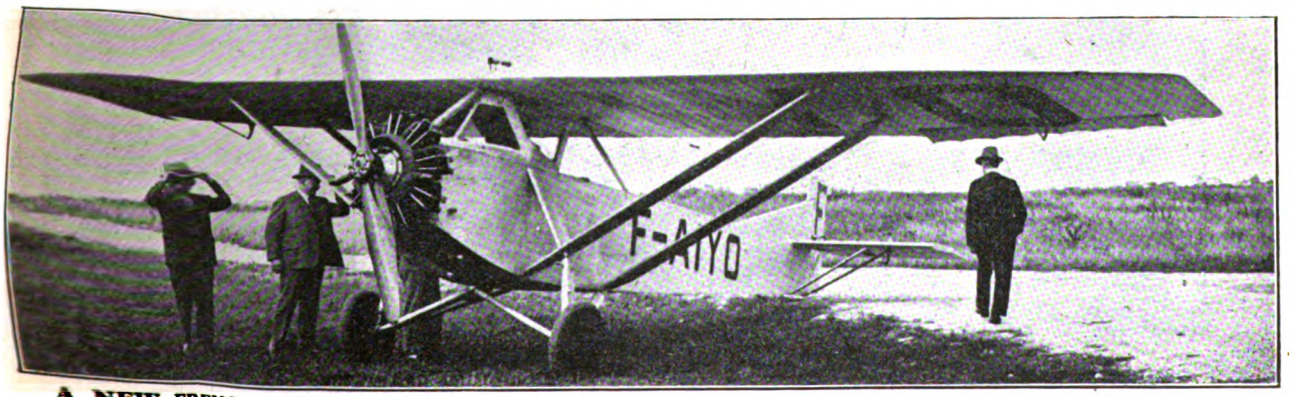
An aerodrome has been found about seven miles away from the city at the corner of the Desford and Peckleton lanes. It has been to a certain extent equipped, and should prove quite satisfactory as the surface is level. It was at one time used by the R.A.F. But seven miles out from a comparatively small city, such as Leicester is in area though not in importance, is much too far for a municipal aerodrome.

The Moth was in the large hall adjoining the dining-room and gave a fit setting to the lunch. This entertainment gave further evidence of the generosity of the Club's President, as the whole cost was defrayed by him. About 150 guests were present, and in spite of the aforementioned business attitude all seemed to enjoy themselves thoroughly. The Club is to be congratulated on having such a hard-working and efficient Secretary, for his efforts went far to make this first function a great success.

After the toast of The King, the Chairman and President of the Club, Mr. W. Lindsay Everard, M.P., proposed the toast "Our Guest," the Rt. Hon. Brig.-Gen. Lord Thomson, Secretary of State for Air.

MR. EVERARD said that he knew nothing about flying and had no use for it except as a means of getting about one's business in the fastest manner possible. As a sport he was not interested in it, but for business he was all for it and that was the reason for this Club's formation.

Now that this new form of transportation had come to stay he, for



A NEW FRENCH LIGHT AEROPLANE.—The Farman 200 monoplane (120 h.p. Salmson engine), which sells for approximately £770. This machine was present at the opening of the Orly Meeting.

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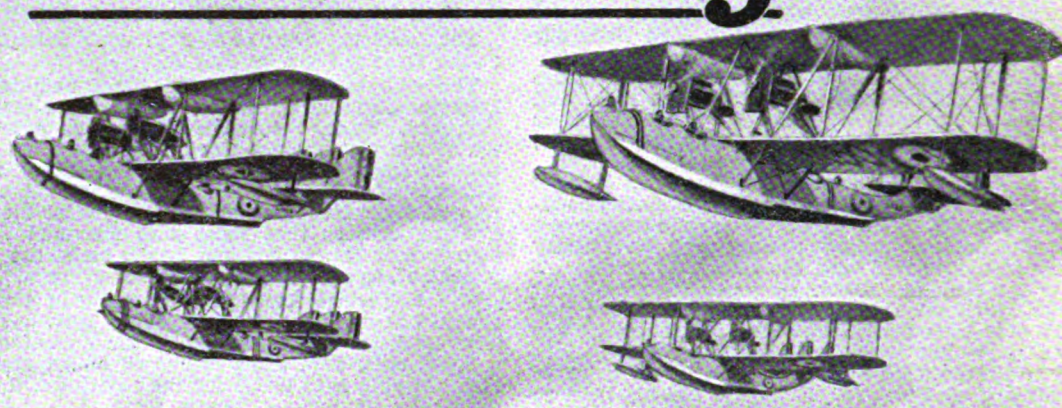
Efficiency



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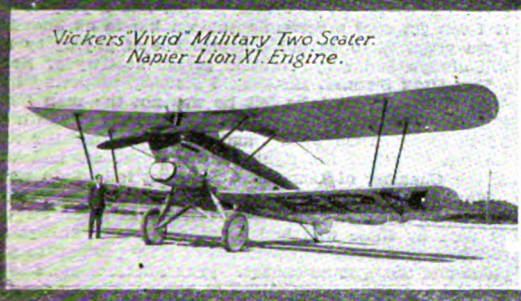
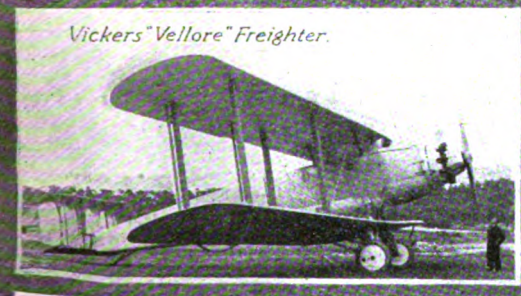
Vickers "Type 143" Single Seater Fighter.

Vickers "Vespa" Two-Seater for Military Reconnaissance.

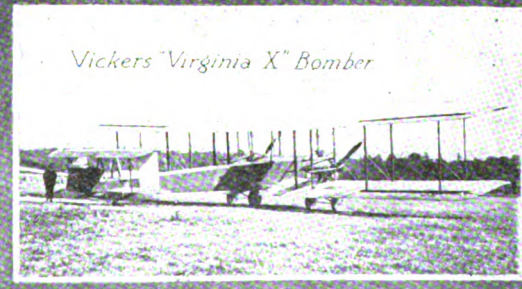

Vickers "Vivid" Military Two Seater. Napier Lion XI. Engine.

Vickers "Vivid" Seaplane.

Vickers "Vixen" (Condor) Military Two Seater.


Vickers "Vellore" Freighter.

Vickers "Victoria" Troop Carrier.


Vickers "Virginia X" Bomber

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LONDON, S.W.1.

Works:
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SURREY.

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one, was not going to see Leicester behind other counties. The foresight of the ancient City fathers had ensured for them the second railway in the country—the Westbridge line—and so had set them an example which they must live up to.

Leicestershire was already rather behind some other counties in that they had let the chance of a subsidy go by, but now having started they must catch up and pass them. They had excellent examples in H.R.H. the Prince of Wales and the Prime Minister, who both flew about their business. The Club owed its conception to the foresight and hard work of the Aviation Committee of the Chamber of Commerce, who although they had been thwarted over the Municipal Aerodrome were now doing their best for this club.

They had already had the advantage of a good deal of publicity, but he wondered if it would be possible to get a certain well-known aviator, whose exploits with trees and councillors received much publicity, to come and test their trees and councillors! They now had their own aerodrome and it was temporarily equipped and also passed by the Air Ministry.

He thanked the donors of the first machine and said that he understood that it might become two or even three machines very soon. What they now wanted was support from all, as they must have an Instructor and a Ground Engineer. When they had these, and the club was a live and going concern, he felt sure that the citizens of Leicester could rest assured that the Club would be of real use to them and to the Chamber of Commerce.

Thanking Lord Thomson for coming, he said that though he (Mr. Everard) was one of those who did their best to see that he was not made Secretary of State for Air he was very glad to have the honour of having him here to-day.

Lord Thomson said that he regarded it as a duty and as one of the principal functions of his office to encourage civil aviation and to assist its development. His dream was to see Civil Air Transport on the same basis as the Mercantile Marine, a widespread system entering into the lives of all our fellow-countrymen fostered and fed by an aircraft industry whose products would be the finest in the world, a system which would open up new markets for the sale of British goods. Only by being in the forefront of every development could we hope to keep our position in the World.

Mr. Purt, the very able Secretary to the Club, had written to him suggesting four points on which to particularise in his speech. He was not accustomed to generalise from the particular, but in this case he would bow to the commands of their Secretary. The four points were (1) Flying in general, (2) what it means to Britain, (3) the value of flying clubs, (4) why private individuals should back the clubs.

On point (1) he had come to the conclusion that he could not do better than quote a prominent official in the Air Ministry who had devoted nearly all his life to aviation and who had done a very great deal for civil aviation. . . . "15 years ago, before war distorted everything to do with flying, the trend was toward civil flying and military interest was less than civil interest; war however equalled up this, and while cost became of secondary importance high performance became paramount. Peace left a distorted view and flying was thought to be dangerous, machines overpowered, and pilots reckless. Regularity and normal development gradually came out of this turmoil through the artificial means of a Government subsidy. . . ." This, said Lord Thomson, exactly expressed his views.

On point (2) he said that flying meant to Britain increased efficiency and strength, but not strength of an aggressive type. Air transport must be World-wide to conform with the nature of our Empire. Recently they were horrified by the disaster in the Channel. Did they realise that since 1925 there had been 19,000 crossings of the Channel and only three forced landings in it, only one of which was fatal? If they compared that with any form of transport they would find that aviation came on top. Our pilots were second to none—ask any habitual air traveller which pilots they preferred.

The value of flying clubs was not, as so many uninstructed people seemed to think, to train war pilots. To compare the superb young pilots who by virtue of their specialised training were fitted to carry out the manœuvres over Hendon to the club pilot would be like comparing those who ride a hack round Rotten Row and those who hunt in Leicestershire. The real value of clubs lay in educating the public in air sense. Aviation was far more than a thing to be applied to war, and the clubs and their work enabled people to understand something of air transport, a form of transport which was far safer than the road. On the road you could never be sure of what the other man was going to do but in the air you had more room to avoid them; it was this elasticity of movement that was going to save so much time in business by allowing them to go direct to places.

Clubs as such, he said, appealed to him and he wished to do all he could for them. As regards subsidies everyone objected to them in principle, but he noticed that they always accepted them in particular. Lord Thomson said:—

"I am going to be extremely indiscreet, but I will say this to those who organised this club, and I do so with the full consciousness that sitting next to me is one of the representatives of the Air Ministry. I say to you here and now that ever since the inauguration of what is called the Guest scheme I have said publicly and privately—and for the moment my word is law in a certain department—that I am prepared, so far as resources permit, and I propose to extend them if I can get over a certain mountain known as Snowden—(laughter)—I am prepared to extend the principle of paying by results, and you will always find a sympathetic person at Gwydyr House."

The High Sheriff, Sir Harold Nutting, proposing the Leicestershire Aero Club, said that he felt he was not the man for the job as he knew nothing of flying, but he was very struck with the keenness of all those connected with it and wished them all the very best success. He felt they had the right man as President and with the backing of the Chamber of Commerce could not fail to do well.

Mr. H. Purt, the Hon. Sec. of the Club, replying, said that he now fully realised that the secretary was after all only the tool to be used by those who had ideas as to how things should be done. Thirteen years ago Leicester raised 2,500 guineas to pay for an aeroplane and they got no change. [The reference here is to subscriptions raised by various communities to buy aeroplanes for the Royal Flying Corps. As a rule these machines were crashed within a week or two by some reckless young flying officer, so the givers got but little commemoration or advertisement out of them.—C. G. G.]

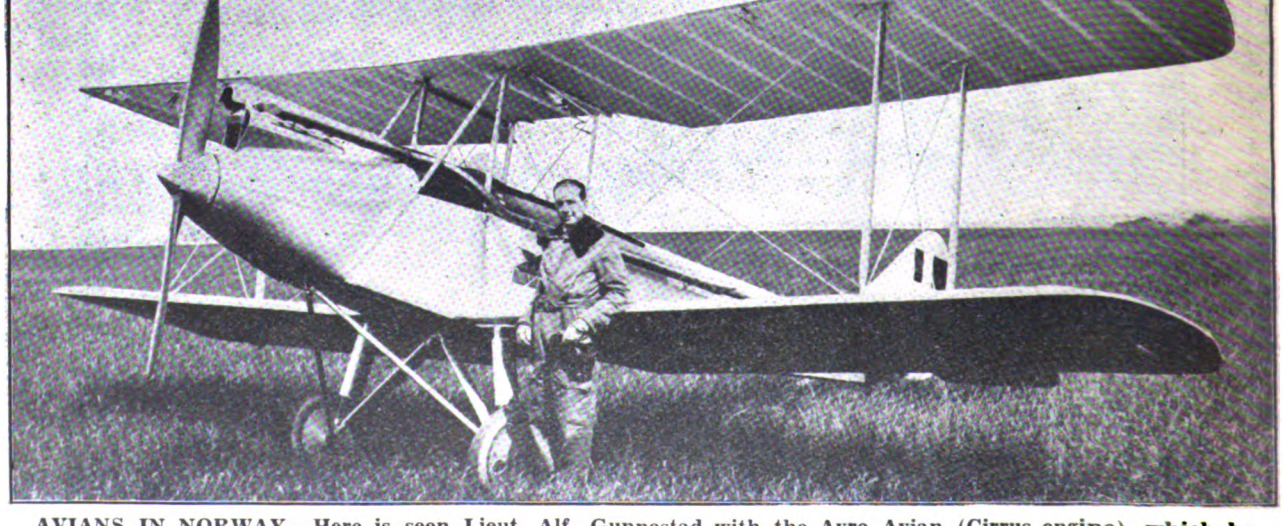
The same sum, he said, would now put the club on a firm financial footing and he appealed to the people of Leicester to come forward and provide men, money and machines. There was every hope of their having three machines before long and this would give them an earning capacity which would put them on their feet.

The Lord Mayor (Alderman H. Hand), proposing the Chairman, said that it was a pity that some members of the Council were not very farseeing, as they could not stay behind much longer, and now that they had the Club they must go on and have their own municipal aerodrome as well. He thanked their chairman, Mr. Lindsay Everard, for the admirable lunch and for the sporting way which he had backed up the club. Leicester, he said, had always played a part in progress and she must not be backward now. He hoped to see the time when goods and newspapers were carried everywhere by air.

The Chairman then thanked everyone for all they had done and asked them to continue the good work.

OUT INTO THE WEST.

On July 25, Mr. G. F. Storey, of Hythe, who was the first *ab initio* pupil trained by the Cinque Ports Club, left Lympne for Ballinrobe, County Galway, Ireland, in his Moth G-EBTZ. He went straight through in the day by Hooton and Baldonnell in weather which was sufficiently bad to stop flying on Club aircraft at Lympne during the afternoon. This is about the best performance yet put up by a member of the Club, and the other members would like to congratulate Mr. Storey on an excellent show. [But why should anybody want to go to Ireland?—C. G. G.]



AVIANS IN NORWAY.—Here is seen Lieut. Alf. Gunnestad with the Avro Avian (Cirrus engine) which he flew recently to Norway. He is associated with Lieut. Meyer, who also was formerly in the Norwegian Army Air Service, in handling Avian sales in Norway.

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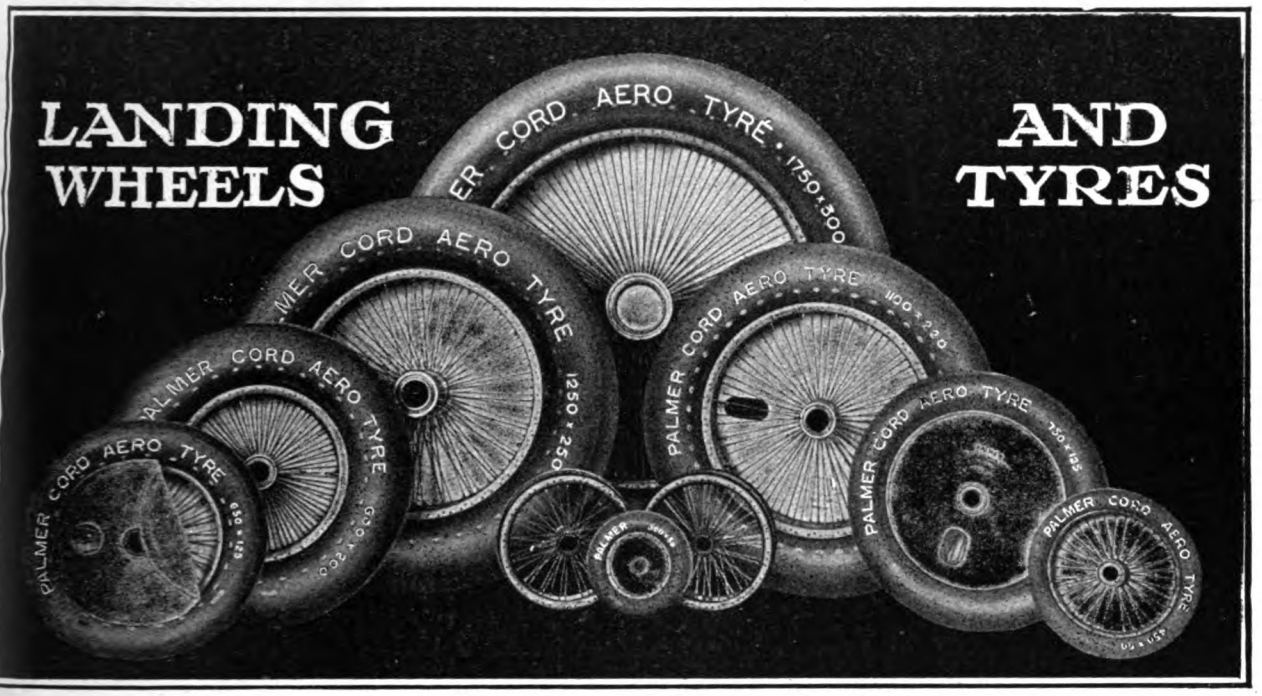
PALMER



STANDARD SIZES.

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
"	195	130.	38.09	Central
300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
"	172	130.	38.09	Central
575×60	21	160.	28.	Central
"	180	150.	38.09	104/46
"	186	120.	34.92	Central
"	190	150.	38.09	Central
600×75	21	160.	28.	Central
"	180	150.	38.09	104/46
"	186	120.	34.92	Central
"	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
"	79	178.	44.45	Central
"	100	178.	38.09	132/46
"	101	178.	31.75	132/46
"	196	178.	55.	Central
600×100	188	120.	34.92	Central
"	304	150.	38.09	104/46
"	333	120.	34.92	Central
700×100	77	178.	44.45	132/46
"	92	185.	55.	135/50
"	95	185.	55.	Central
"	99	178.	38.89	132/46

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700×100	112	150.	38.09	Central
"	176	178.	44.45	Central
"	179	178.	55.	132/46
650×125	119	178.	55.	132/46
"	147	178.	55.	Central
"	188	120.	34.92	Central
"	336	178.	44.45	132/46
750×125	77	178.	44.45	132/46
"	92	185.	55.	135/50
"	95	185.	55.	Central
"	99	178.	38.89	132/46
"	112	150.	38.09	Central
"	176	178.	44.45	Central
"	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
"	162*	185.	55.	Central
"	163*	185.	66.67	135/50
"	169†	185.	55.	135/50
"	177	185.	55.	135/50
"	183	185.	55.	Central
"	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
"	174	250.	80.	Central
"	182	185.	55.	Central
"	187	220.	66.67	Central
"	201	185.	60.32	125/60

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000×150	210	185.	60.32	Central
1000×180	148	220.	80.	Central
"	149	185.	55.	Central
"	155	220.	66.67	Central
"	166	185.	55.	125/60
900×200	107	185.	55.	Central
"	108	185.	55.	125/60
"	128	220.	66.67	Central
"	137	250.	80.	Central
"	157	185.	80.	Central
"	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
"	136	250.	80.	Central
975×225	192	185.	60.32	Central
"	194	185.	55.	125/60
1100×250	364	220.	60.32	Central
1250×250	314	250.	80.	Central
"	154	304.8	101.6	Central
1500×300	305	304.8	152.4	Central
"	306	304.8	101.6	Central
1525×325	197	304.8	101.6	Central
1750×300	139	400.	152.4	Central
"	191	350.	150.3	Central
1750×350	193	400.	125.	Central
2000×450	363	500.	152.4	Central

Wheels Nos. 161, 162, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings. Grease gun equipment is now a standard fitting on all wheels. (A/SL)

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THE AUCKLAND AERO CLUB.

The Annual General Meeting of the Auckland Aero Club was held at Auckland on June 27. The Report stated that the progress of the Club during its first year had far exceeded the expectations of the Committee in spite of delay in the arrival of the two aeroplanes on loan from the Government. The first had not been delivered until late in February. Major Cowper had been employed as organiser and the success was largely due to his energy and knowledge of commercial aviation. The Committee gratefully acknowledged the assistance obtained from the Australian Aero Club and their booklets.

In presenting the Balance Sheet as at April 30, 1929, the Committee said that the accounts were highly satisfactory especially when it was considered that flying (the most important source of income) had not started until Feb. 17. Adequate provision had been made for depreciation and replacement of plant.

The membership figures at the close of the year were Pilot Members 16, Pupil Members 67, Associates 326.

The Club hoped in future to be able to devote part of its resources towards social activities.

Instruction and passenger flying began on Feb. 17 with one D.H. Moth issued by the Defence Department. On Feb. 28 the *New Zealand Herald* had made the Club the magnificent gift of a D.H. Moth. On April 15, the Instructor had brought the second machine on loan from the Government back from Christchurch with him.

From Feb. 17 to April 30 the number of hours flown had been 198 hours 20 minutes. There had been no mishap whatever and consequently no repair expenditure.

The Committee wished to place on record its appreciation of the valuable work of Maj. G. A. C. Cowper (Instructor), Mr. R. J. Copley (Ground Engineer), and Mr. L. Anderson (Assistant Ground Engineer).

The Club had entertained Sq. Ldr. Kingsford Smith and the crew of the *Southern Cross* on their arrival in Auckland and the visitors had generously given £21 for the establishment of a fund to buy a light aeroplane.

On April 20 the Club had held its first Annual Pageant which had been financially successful and had possibly provided enlightenment to the public.

THE BOMBAY FLYING CLUB.

The first number of the Bulletin of the Bombay Flying Club contains the information that the membership of the Club is now 161, that 11 "A" certificates have been obtained by members and one "B" certificate. The number of flying members under instruction is 19 and 45 are on the waiting list. The Club owned two aeroplanes and two of the members were private owners.

The Club had been formally opened on Jan. 13, 1929, by Sir Victor Sassoon.

His Excellency the Governor of Bombay, Sir Frederick Sykes, had become Patron of the Club and had been a Guest of Honour at a Dinner at the Taj Mahal Hotel on March 21. His Excellency and Sir Victor Sassoon both made speeches, which were broadcast, and the guests and members contributed the cost of one Moth machine.

The machines have flown over 500 hours without accident.

A number of useful and valuable gifts have been made to the Club by various friends and members.

THE MIDLAND AERO CLUB.

The Midland Aero Club beat its record for flying time during the week ending July 20. The total time was 63 hr. 26 min., which is 13 hr. better than the previous record.

Mr. T. W. J. Nash, A.F.M., has been appointed Assistant Instructor to the Club under Mr. W. H. Sutcliffe.

MOTH NEWS.

On Aug. 3, Mr. Lief Lier, a well-known Norwegian pilot, left Stag Lane in a Gipsy-Moth for Norway. His machine will be used for whale-spotting, and will form part of the equipment of the s.s. *Kosmos*, the flagship of a fleet of Norwegian whalers leaving for the Antarctic on Aug. 10.

On Aug. 5, Lieut. R. R. Bentley arrived at Heliopolis in his D.H. Moth, with an American passenger, who has chartered the machine for a flight from Johannesburg to Berlin by way of Egypt, Syria, and Turkey.

A Gipsy-Moth forms part of the equipment of the British, Australian and New Zealand Antarctic Expedition, which under the leadership of Sir Douglas Mawson left the London Docks in the *Discovery* last week. An Australian pilot will be picked up at Cape Town, and the Moth will be carried on deck folded so that it can be hoisted over the side at a moment's notice.

It is fitted with floats, but an interchangeable ski undercarriage forms part of the equipment, so that the machine may operate from snow. The Gipsy-Moth carries full wireless equipment, and it will be used for making observations and for photographic work in the Antarctic.

THE FLYING CLUBS (MONTHLY REPORTS).

Bristol and Wessex Aeroplane Club Ltd.

Report for the month ending July 31, 1929.

[Sec.: Major G. S. Cooper, D.S.O., The Aerodrome, Patchway, Glos.]

Telephone and telegrams: Filton 53.

Instructors: E. B. W. Bartlett and L. A. Egglesfield. *Ground Engineer*: A. W. Webb. *Machines in commission*: 2 (TV, XF).

Flying Time for July: 124 hr. 15 min.; *Pupils Instructed and Hours Flown*: 30 (77 hr. 40 min.); *Soloists and Hours Flown*: 6 (9 hr. 5 min.); *Licensed Pilots ditto*: 16 (29 hr. 30 min.); *Passengers Carried and Hours Flown*: 44 (11 hr. 20 min.).

The items of chief interest for the month were (a) addition to the Club staff of Mr. L. A. Egglesfield, who joined us as additional Instructor, and (b) the increase of our machines to five with an additional Moth XF. YH has been out of commission for complete overhaul the whole month and the extra machine has been invaluable. The cost of the machine is being raised by voluntary subscriptions, the total now promised or received having now passed £25

Mr. Leaver, the Hon. R. Westenra, Mr. W. H. Amory, Lady Somer and Mr. F. D. Butcher passed their "A" Licence tests.

The event of the month was the King's Cup Race. Judging by the complimentary letters of thanks we have received from competitors we feel we coped successfully with the occasion. In spite of the rac passing here on a Friday the Club profited financially. The aerodrome organisation was in the very capable hands of Mr. C. Holmes, as last year. We were fortunate in having the very willing and able assistance of the recently-arrived R.A.F. details, and addition the Rev. Mr. Gay and his Boy Scouts.

Mr. Bartlett emulated his victory at Blackpool last year by winning the Club Aerobatic Competition at Heston.

The Club official holiday is the latter half of August, but flying will continue during that period under Mr. Egglesfield.

We are intending to hold an Aerial At Home on Sunday, Sept. 8. Details are not complete, but it will be worth attending. This will wind up our stay at this aerodrome as we are due to move to the new Bristol aerodrome on Oct. 1. Plans for the Club House have been approved and we shall have the best in the country.

The Hampshire Aeroplane Club.

Flying Time for the month ended July 31, 1929.

Total Time for the Month: 165 hr. 25 min.; *Dual*: 91 hr. 35 min. *Solo*: 25 hr. 25 min.; *"A" Pilots*: 38 hr. 45 min.; *Instructors' Solo and Passengers*: 9 hr. 40 min.

The Club has purchased a new Gipsy-Moth, which will be collected after the holidays. The veteran OH is also ready, so we shall have four machines.

Members are again reminded that the Club has chartered the Isle of Wight steamer *Prince of Wales* for the use of members and their friends on Sept. 7, the date of the Schneider Trophy Contest. Tickets are now available and those who desire them should get in touch with the Secretary as soon as possible. Tickets, exclusive of refreshments, are £1 1s. each and all applications must be accompanied by a remittance.

The Nottingham Aero Club.

Report for July, 1929.

Analysis of Flying Times.— *"A" Pilots*: 48 hr. 30 min.; *Soloists* 9 hr. 55 min.; *Instructor—Tests*: 3 hr. 10 min.; *Passengers*: 6 50 min.; *Dual*: 51 hr. 55 min.—61 hr. 55 min.—120 hr. 20 min.

INDIA'S FIRST AVIATRESS.—Mrs. Petit of Bomb and the Club Instructor, Mr. Cummings.

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"A" Licence pilots who flew during the month were Lord M. Douglas-Hamilton, Sub-Lieut. Cliff, R.N., Messrs. Ball, Bradley, Granger (F.), Kay, Hutchinson, Selvey, Shipside, Taylor, Warren, Winn (Chairman of the Leicestershire Aero Club), and Wynn of Derby. Messrs. Hurst and Gallimore, both ex-Service pilots, completed their time early in the month for their "A" Licences.

Mr. Gallimore returns shortly to India, where he threatens to stir up a state of airmindedness amongst his friends on rejoining them. Mr. Hurst is a member of the Committee of that newly-formed and "go ahead" club at Leicester. We fear we shall not be seeing much more of him as our neighbours shortly expect to begin operations.

Soloists who turned up during the month were Messrs. Cudlip, Gallimore, Hurst, Sail, Smith, Granger (J.), and Nicholson. Our orgy of first soloists did not materialise, but those of them who did complete their first solos, namely Messrs. Sail, Smith, Granger (J.), and Nicholson, all put up remarkably good efforts. Excluding ex-Service pilots our record for minimum dual prior to solo was twice beaten this month. Mr. Smith went off in 5 hr. 20 min., thus lowering Mr. F. Granger's record, which had so long stood at 7 hr., but Mr. J. Granger, a younger brother of the old record holder, set out to recover this for the family fold, which he did ten days later, going off solo in 3 hr. 20 min.

General.—The Lord Mayor of Nottingham, Alderman A. R. Atkey, honoured our Club twice during the course of the month by flying to Gosport. First he went with Mr. Wynn to attend a conference at Portsmouth, returning most of the way by air, despite very adverse weather, which finally compelled them to land when within 20 miles of the city. On the second occasion, in company with our pilot instructor, he flew to Stag Lane to collect the licence for the city's new airport at Tollerton, which he declared open upon his return the same day. On this last occasion Alderman Atkey flew in his robes of office in order to pay homage to the Under-Secretary of State for Air (Mr. Montague) and the Director of Civil Aviation (Air Vice-Marshal Sir Sefton Brancker).

Our flying time is good this month when realising that out of the 24 days on which we flew, only for 10 days were both machines in action together. This reflects great credit on our members whose enthusiasm is unbounded, and one ventures to think what might have been possible had the Club been in the fortunate position of having its own Club House and ground. At the moment we await a favourable answer to an application to stay on just one more month at Hucknall!!—R. Lee Bateman, Flt. Lt.

The Phillips and Powis School of Flying.

[Managing Director: C. O. Powis, Reading Aerodrome.]

Report for month ending July 31.

Flying Time: 91 hr. 50 min.

Instructors: Flg. Off. R. T. Shepherd, Mr. H. B. G. Michelmore.

Notes.—We have taken delivery this month of our new demonstration Gipsy-Moth, which is greatly admired, and has been kept very busy.

Mr. A. L. Hill has taken delivery of a second-hand machine from us this month.

We are installing a Moth Showroom on the aerodrome and will keep a new Gipsy-Moth in stock for immediate delivery.

On July 11 an R.A.F. Squadron from Farnborough used our aerodrome for exercises and reported very favourably of the site.

Capt. and Mrs. Pim have joined the School and are making very satisfactory progress.

THE STAG LANE ACCIDENT.

The inquest on the bodies of Flt. Lt. A. S. White, chie demonstration pilot of the De Havilland Aircraft Co., Ltd. Mr. F. L. Knight, and Mr. G. F. Boyle, who were killed i an air collision near Stag Lane aerodrome on July 29, wa held at the Hendon Town Hall on Aug. 1.

Mr. A. J. Brant, service manager of the De Havillan Aircraft Co. Ltd., said that both machines involved wer Gipsy-Moths. The machine owned and flown by Mr. Boyl was a new single-seater in perfect condition, and the two seater was a demonstration machine owned by the compan and was only a week old. Mr. Boyle was making a tria flight and Mr. White was giving a demonstration for Mr Knight.

Two witnesses said that the left wings of the tw machines came in contact.

Major Cooper, the Air Ministry's Inspector of Accident said he was of the opinion that the right-hand wings of on machine came in contact with the right-hand wings of th other machine. When asked by the Coroner how he ex plained the fact that two witnesses saw the left wings com in contact he said that this was explainable by the fac that both witnesses were some distance away.

Evidence showed that one machine was in a right-han turn and that the other was flying straight. A good man things could have caused the accident and it was possib that both pilots misjudged their position.

The jury returned a verdict of "Death by misadventure

THE HANWORTH ACCIDENT.

The inquest on the body of Jack Harley Caulfield, a pil employed by National Flying Services Ltd., who died hospital from injuries received in an accident on July at Hanworth, was held at Hounslow on Aug. 2.

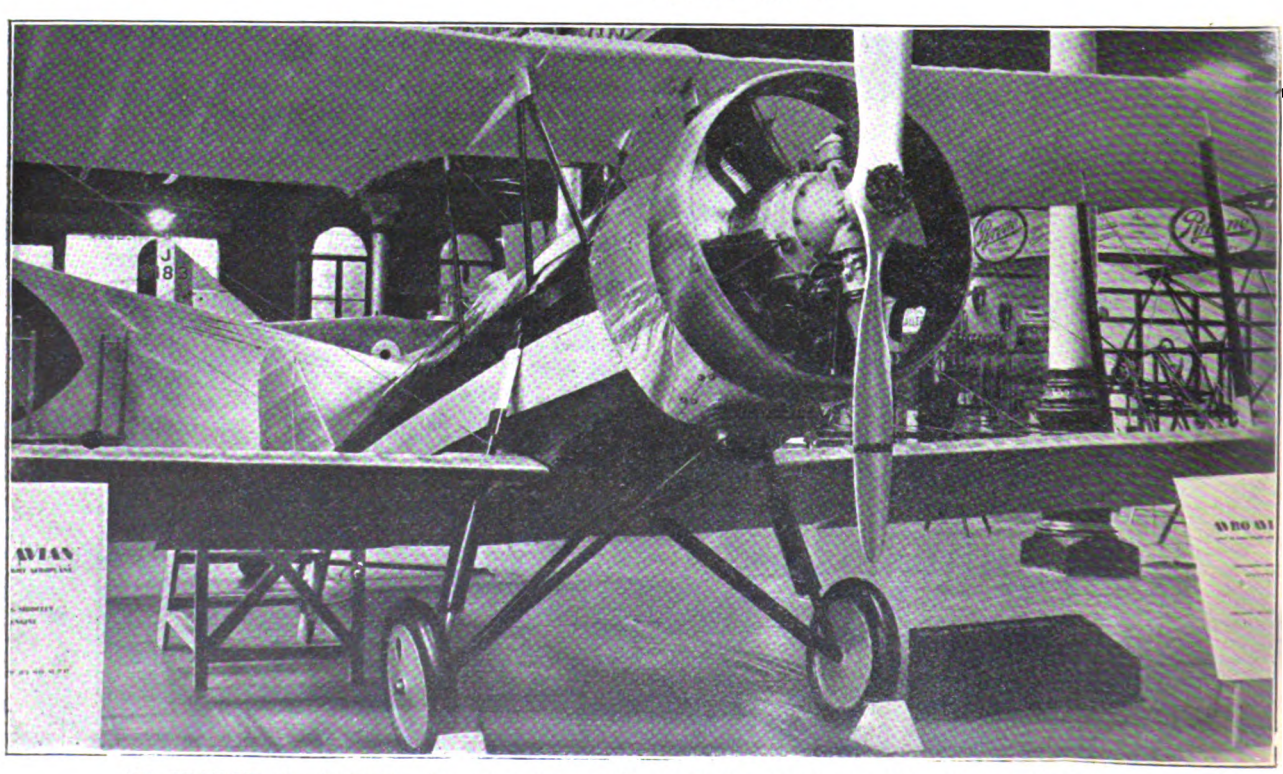
Mr. T. N. Stack, giving evidence, said that Mr. Caulfie was flying at about 300 ft. He rolled his machine, made bad recovery, lost speed, and then dived in what appe to be part of the first turn of a spin into the top of so trees, which were about 60 ft. high. The firm's regulati was that there was to be no stunting below 1,000 ft., a their pilots have complied with this regulation except this occasion.

Mr. Caulfield, who had been engaged primarily as "stunt" pilot, had been warned and ordered not to stu below 1,000 ft.

Mr. James Rodney, an official of N.F.S., said that he hi self had warned Caulfield, who was rather in the habit flying low, from doing so, and the witness said that he h had complaints from people in the neighbourhood.

Major J. P. C. Cooper, the Air Ministry's Inspector Accidents, said that an examination of the machine reveal no defect in the structure or controls.

The jury, without retiring, returned a verdict of "Dea by misadventure."



IN SEARCH OF SPEED.—An Avro Avian (Genet Major, 110 h.p.) with a Townend ring.

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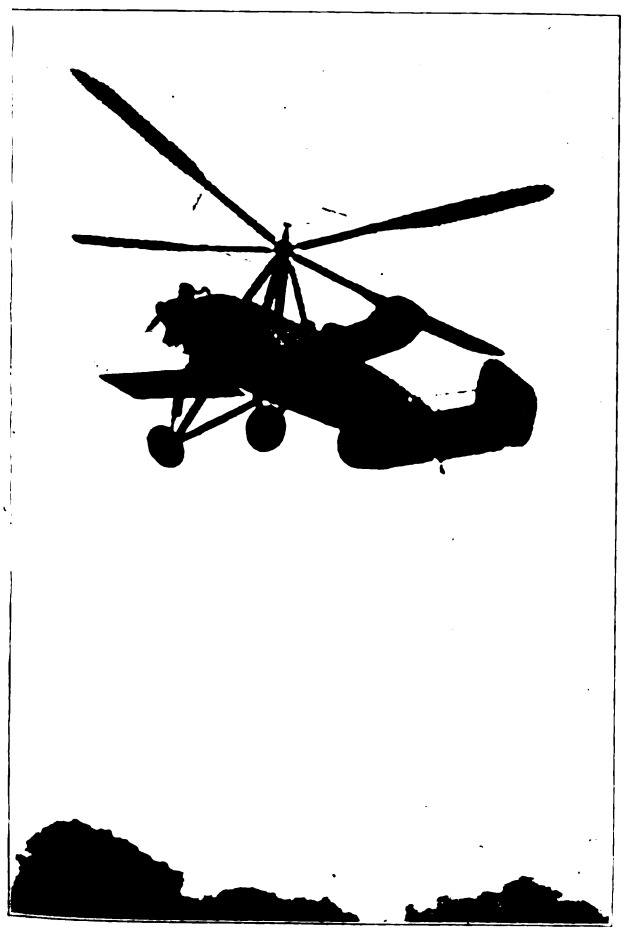

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PRACTICAL flying at a reasonable cost is one of the principle advantages to be derived from membership of the N.F.S. organisation. For the avarage member, it is estimated that £25 will cover the cost of learning to fly. When competent, the member has the privilege of hiring modern light aircraft for his business and pleasure journeys, at rates starting from 30s. an hour, scaling down to 27s., 24s., and 21s., an hour (i.e. from 4½d. to 3¼d. a mile), according to the amount of flying done in the year. These rates include insurance of the machine, fuel and oil, and free service at all the N.F.S. stations; besides embracing the fullest use of the N.F.S. clubs, of which the London Air Park and Country Club at Hanworth is the first to commence operations.

**Write to-day for the N.F.S. brochure that will give you complete information regarding the services offered by the N.F S. to all who wish to fly. A trial instructional flight is provided at a small inclusive charge for the benefit of those who are still unconvinced of their ability to control an aeroplane.

A limited number of members are now being admitted to the Hanworth Club at the following rates: Flying members, 5 gns. entrance fee, and 5 gns. annual subscription; Non-Flying members, 3 gns. in each case For this year, two-thirds of the annual subscription is rebated. Membership of one Club confers Honorary Membership of all other N.F.S. Clubs.

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COMMERCIAL AERONAUTICS.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 31; Monday, 54; Tuesday, 58; Wednesday, 46; Thursday, 44; Friday, 49; Saturday, 50.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 110, passengers 844, freight 53¾ tons. India Route: Inward, passengers 4, mail 436 lbs.; outwards: passengers 3, mail 657 lbs.

AIR UNION:

Paris—London and return: Machines 100, passengers 474, freight 55 tons.

K.L.M.:

Amsterdam—Rotterdam—London and return: Machines 57, passengers 323, freight 19 tons.

SABENA:

Brussels—London and return: Machines 10, passengers 71, freight 4 tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London and return: Machines 26, passengers 56, freight 6 tons.

MISCELLANEOUS:

British machines 23, passengers 16.

Foreign machines 6, passengers 18.

Total number of trips by British machines 133, carrying 860 passengers. Foreign machines, 199, carrying 912 passengers.

COMPARATIVE FIGURES.

Week ending Aug. 3:
Machines, 332; Passengers, 1,772; Crews, 731; Total personnel, 2,503.

Corresponding week, 1928:
Machines, 242; Passengers, 1,711; Crews, 465; Total personnel, 2,176.

Corresponding week, 1927:
Machines, 193; Passengers, 1,248; Crews, 322; Total personnel, 1,570.

Corresponding week, 1926:
Machines, 192; Passengers, 1,220; Crews, 237; Total personnel, 1,457.

Corresponding week, 1925:
Machines, 169; Passengers, 941; Crews, 242; Total personnel, 1,183.

Corresponding week 1924:
Machines, 181; Passengers, 930; Crews, 225; Total personnel, 1,155.

Corresponding week, 1923:
Machines, 146; Passengers, 682; Crews, 233; Total personnel, 915.

Corresponding week, 1922:
Machines, 209; Passengers 734; Crews, 342; Total personnel, 1,076.

Corresponding week, 1921:
Machines, 155; Passengers, 462; Crews, 144; Total personnel, 606.

Corresponding week, 1920:
Machines, 115; Passengers, 240; Crews, 144; Total personnel, 384.

Croydon Notes.

It has long been the custom of our newspapers, just before holiday week-ends, to give us accounts of the terrific rush—always greater than ever before—of holiday travellers. It may be thought something of a compliment to commercial aviation that Croydon is now regularly included in these accounts, and takes its place alongside Waterloo, Victoria, and Paddington. But, nevertheless, and despite the reports of an overwhelming rush of air travellers, and the interesting accounts of holiday incidents, those who are constantly in touch with the Air Port know that the holiday week-end makes very little difference to the amount of traffic.

Aircraft on all the lines were filled to capacity. Every available machine was on service. But that has been the happy state of affairs for quite a long time past, and is not merely a holiday boost. On an average, the authorities handle about forty-five machines a day.

The A.N.T.-9 monoplane belonging to the Union of Socialist Soviet Republics, which arrived at Croydon during the early part of the week, continued on its way, leaving Croydon for the Continent on Sunday. Most people who saw it were pleased with its general lines and the comfortable interior arrangements. The installation of the three Titan engines is neat, but they give the impression that a machine of that size and load requires a larger reserve of power. [One is moved to wonder whether the machine is fitted with Communist controls, so that all the passengers pilot it at once.—ED.]

Another visiting aeroplane which was keeping people from their work and wives was the Ford monoplane (three Pratt and Whitney Wasps). It came from the Aero Show at Olympia and set out for a tour of Europe on Saturday afternoon. Its ground manœuvrability appealed most.

As an instance of this, it came along down wind on Saturday morning from the compass base, and to the horror of those unaccustomed to wheel brakes, charged at a terrific speed down the incline before the factory hangar, through a number of other machines. It then turned completely round in its own length and stopped exactly where its pilot wanted it. When they had recovered from the shock the onlookers gathered round and made a rare fuss of it.

It was rather unfortunate for the Russian that the Ford, resplendent in its shining armour, should park itself alongside, for although people did not lose sight of the fact that the Russian had been doing a long tour, they felt that a cask of metal-polish included in the spares for such an emergency would have shown admirable foresight.—C. A. S.

Scenes as heartrending as those witnessed when an infant loses the key of its clockwork aeroplane were witnessed at Croydon Aerodrome recently. A father, in answer to his small boy's inquiry why the big aeroplane would not go was heard to reply that a naughty man had sent all the keys they wound it up with to Paris.

Volleys of abuse were showered on helpful-minded persons who proffered watch keys or staggered up to the perspiring crowd round the machine with hydrant keys and those huge keys with which hangar doors are opened and shut. A total stranger, happening to whistle "I've got the key of the door, never been twenty-one before," was expeditiously slaughtered and buried with full military honours at the edge of the tarmac at about 2 p.m. The Aerodrome idiot, his eye fixed apprehensively on a huge mechanic wearing a dark scowl and a very big spanner, refused to discuss the incident.

Quoting somewhat sagely from Old Moore's Aeronautical Almanac, he said, "Them as names no names, butters no parsnips" (for application, soothing like, to thick ears). He further remarked somewhat cryptically that all was not always gold wot glittered, especially when the blinking latch-key had gone missing.

On Monday night, between 10 p.m. and 10.30 p.m., three or four night landings were made. First came a K.L.M. Fokker, then a Luft Hansa plane, and finally a big silver Argosy.

The Aerodrome at night with its grass turned silver by the landing light, its endless rows of ruby-coloured boundary and obstruction lights, its lit wireless masts like slender Christmas trees and the glare of the almost scarlet neon beacon is a subject for an artist. We do not mean one who gets his impressions of life by hanging head down from a taxi roof on boat-race night just before being violently unwell, but what our Fathers of old simply called "An Artist."

Some amusing comments were found recently written in two separate feminine hands upon a "Notice to Passengers" dropped in the cabin of a commercial plane. Certain clues will probably lead the reader to guess the nationality of the fair ones.

A. Why aren't you riding with the pilot? B. I took one look at him and decided to be where I am.

A. Is he so awful? I haven't seen him yet. B. The one I saw was short, fat and maybe bald.

A. Maybe he has the fat man's disposition, and after all that *is* a help. (Organ P. Golley was the pilot surely, the description is too apt to admit of any mistake. B. (changing the subject) Coffee and sandwiches, how's that for a nice "airy" luncheon?

A. Celestial fare. B. (suddenly mistrusting the English cuisine) Maybe they have *tea*. They *have* lunch boxes probably cold lamb, cabbage and boiled potatoes.

A. (apparently some time later) I have changed my mind (oh coffee!) about reading this trip. B. We'll probably feel the change from 4,000 to 3,000 feet.

A. (not too bright) You said a mouthful, Queen.

A recent advertisement of a well-known Air Transport Company describes the steward as serving refreshments whilst flying. Probably he has become expert in serving drinks during those downward bumps which leave him hovering in mid-air over his customer like a beneficent angel.

A stranger of retiring disposition at Olympia came up to the three-engined Avro 5 and peered at it nervously. An attendant sprang briskly forward and asked whether he could give any information about this new type of aeroplane.

"No, thank you," said the stranger edging away towards one of those too-handy bars. He had been with K.L.M. very nearly ten years, and sort of thought the "new" type was vaguely familiar to him.

AIR MAILS FOR NEW ZEALAND.

The Postmaster-General announces that the Air Mail service which was recently established between Perth and Adelaide in Australia is now available for correspondence for New Zealand.

The latest times of posting are the same as for ordinary mails for New Zealand via Suez and the air fee is 3d. per *half* ounce.

Correspondence for New Zealand sent by this air service will gain about a week over that sent by the ordinary route via Suez.

AIR MAILS FOR N. AND W. AFRICA.

The Postmaster-General announces that owing to a revision of the charges made by the French Post Office separate rates of air fees are now charged for (a) letters and postcards and (b) printed and commercial papers and samples. The revised fees are as follows:—

For letters and postcards.—For Algeria, Tunis and Morocco, 4d. per half oz. For West Coast of Africa, 1s. per half oz. (as at present).

For printed and commercial papers and samples for Algeria, etc. 4d per oz. For West Coast of Africa, 8d. per oz.

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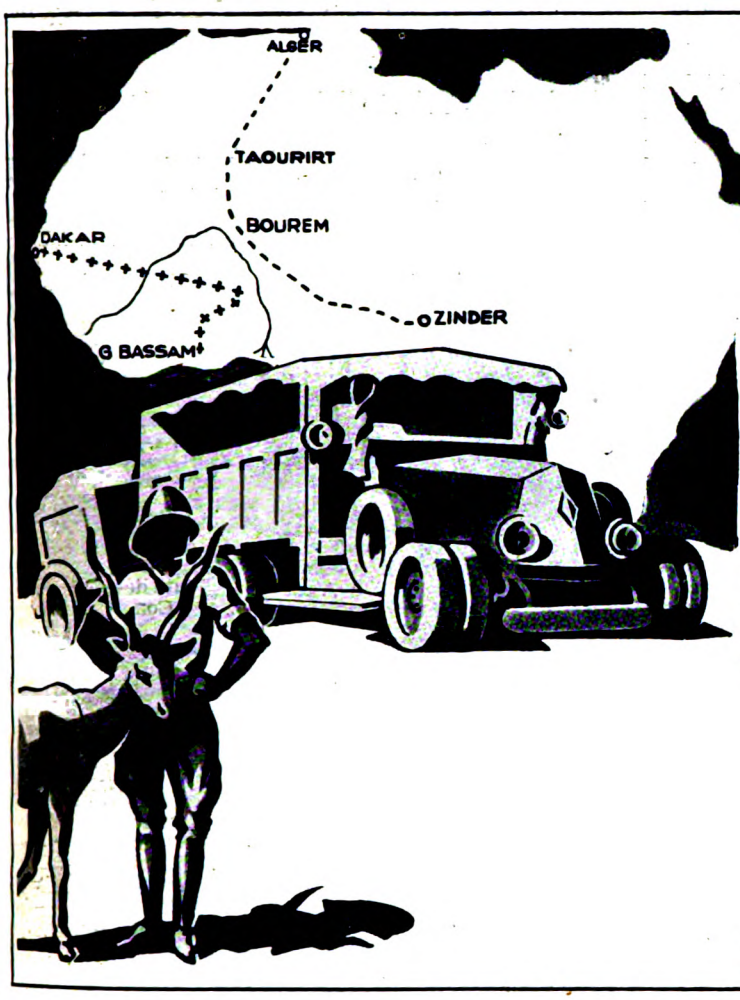

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ALGER - TAOURIRT
BOUREM - ZINDER
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DAKAR - GD BASSAM
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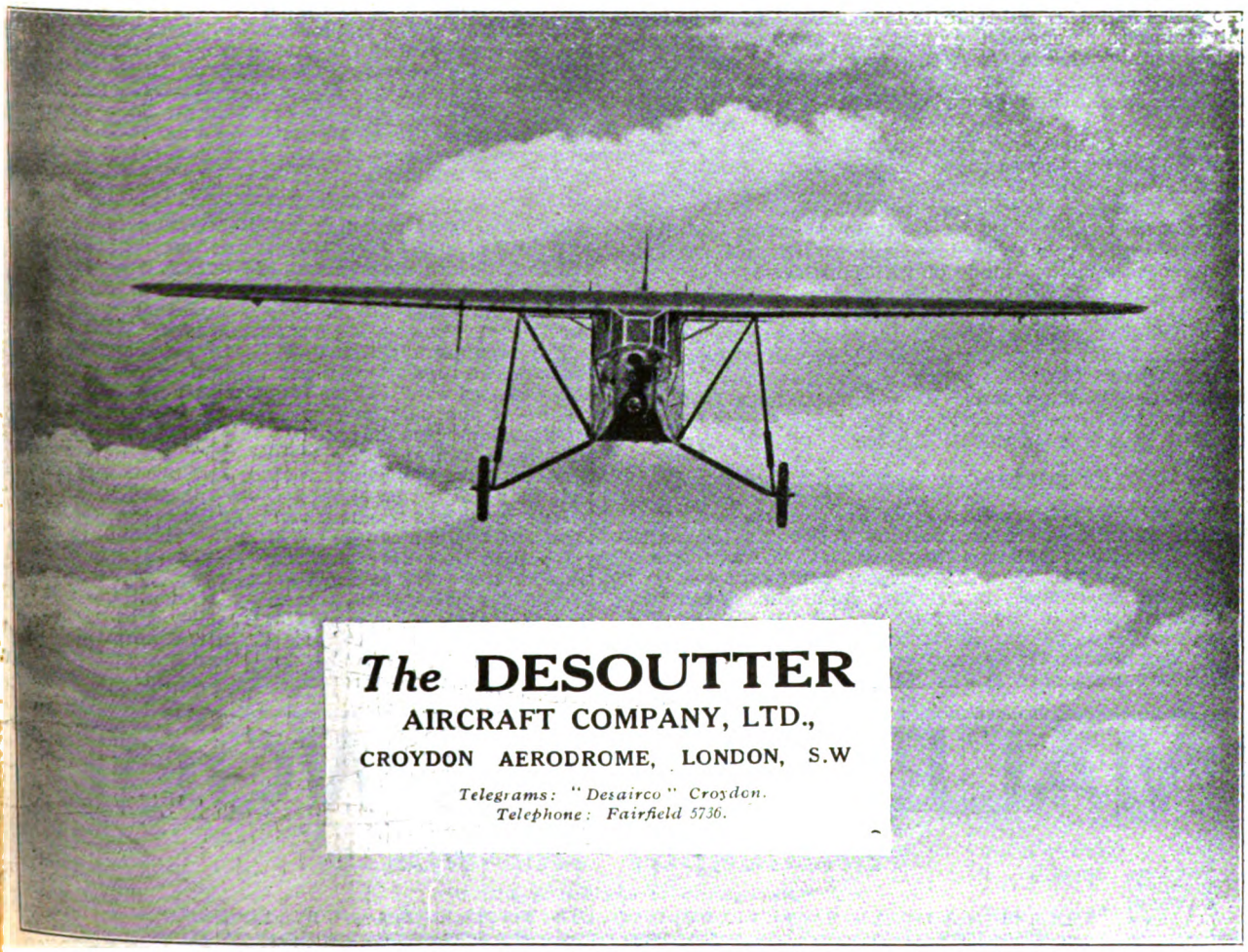

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THE MUNICIPAL AERODROME AT NOTTINGHAM.

On July 27, as reported in THE AEROPLANE of July 31, Alderman Atkey, the Lord Mayor of Nottingham, flew from Nottingham to Stag Lane Aerodrome in a Moth belonging to the Nottingham Aero Club. At Stag Lane the Lord Mayor was met by Sir Sefton Brancker, the Director of Civil Aviation, and Mr. F. Montague, our new Under-Secretary of State for Air.

The latter handed to the Lord Mayor the Air Ministry licence for the use of Tollerton as a civil aerodrome, and the Lord Mayor was then flown back to Tollerton,—which is Nottingham's new municipal aerodrome.

The aerodrome was then officially opened by the Lord Mayor, who, arriving from Stag Lane in his robes of office, handed the licence to Sir Albert Ball, who is chairman of the Nottingham Municipal Aerodrome Sub-committee.

After the inaugural ceremony a lunch was held at the Tollerton Country Club, with Sir Albert Ball, who is the prime mover of the scheme, in the chair. Sir Alan Cobham, who was to have been present at the inaugural ceremony, in his D.H. Giant-Moth, was unable to arrive. A mishap at Doncaster had forced him to go to Stag Lane for spares. He flew down in a Moth from Stag Lane in time for the lunch and then continued his journey by air to Doncaster, whence he returned later in the day with the repaired Giant-Moth.

Sir Alan proposed the toast of Nottingham's Municipal Aerodrome, and congratulated the City on being the first to open a permanent municipal aerodrome.

Sir Albert Ball replied and said that flying was no longer a pastime for the wealthy but a commercial proposition. The City Council realising they could not lose money by the venture had bought Tollerton Aerodrome but were refraining, however, from putting up extravagant buildings.

He said how much the Council was indebted to Mr. Wallis Gordon, the City Engineer, and Mr. A. Stone, of Stoke Farm, for the way they had levelled the aerodrome.

Later in the afternoon the Giant-Moth arrived from Doncaster. Sir Alan Cobham then took the Lord Mayor and members of the City Council for a trip over the City. The Lady Mayoress and Miss Ivette Atkey were also taken for a trip. From then onwards Sir Alan Cobham was busy taking up parties of school children.

Nottingham is to be congratulated on its enterprise. The city has secured close to the city and in open country a fine aerodrome. Only half a mile away is the Country Club of Tollerton, where those who come down from the air in aeroplanes may rest and recreate in comfort,—and Tollerton Hall claims to be one of the finest, and quite the most up-to-date country club in Great Britain.

As the Nottingham Aero Club is moving from Hucknall to Tollerton, the new ground will soon be full of aerial activity.

The City has now an airport only a flying day's journey from the Continent, and the capitals of Berlin, Amsterdam, Brussels and Paris. This means that buyers of Nottingham's products can reach their goal comfortably and speedily without the tedious business of train journeys and boat journeys, together with the frequent breaks and Custom-nuisances that such a mode of travel involves.

Quite apart from feathering its own nest Nottingham deserves to be congratulated on the step it has taken to popularise civil flying. As the advent of mass-motoring has necessitated re-making all roads so flying will require good ground organisation. The proper way to do this is for each town, village, borough or city to acquire suitable land and get it licensed. Agents, Service people, Clubs, Petrol and Oil suppliers, and Schools will do the rest.

THE SINGAPORE AERODROMES.

At a recent meeting the Straits Settlements Legislative Council agreed to a motion providing $50,000 for the acquisition of a piece of land as a reserve for a Civil Aerodrome.

At the present moment, in Singapore, aeroplanes can only land at the Racecourse, on Balestier Plain, and, by courtesy of the authorities of the Air Base, some have been allowed to land at the aerodrome at Seletar. The first two sites are in the way of town development, and the Service aerodrome at Seletar cannot, of course, be indefinitely open for civil use.

THE COUNCIL OF THE SOCIETY OF BRITISH AIRCRAFT CONSTRUCTORS.

The following have been elected as Officers of the Society of British Aircraft Constructors Ltd. for the year 1929-30:—

Chairman—Mr. F. Handley Page, C.B.E. (Handley Page Ltd.).

Deputy Chairman (Aircraft)—Mr. R. A. Bruce (Westland Aircraft Works (Petters Ltd.).

Deputy Chairman (Engines)—Mr. A. F. Sidgreaves (Rolls-Royce Ltd.).

Hon. Treasurer—Mr. John Lord (S. E. Saunders Ltd.).

THE CIVIL AVIATION CONFERENCE.

On August 7 a Conference took place in London between the French Air Minister, M. Laurent Eynac, and our Secretary of State for Air, Lord Thomson. The object of the conference was the discussion of co-operation between the French and Civil Aviation interests in those parts of the World where French and British air lines run together. M. Laurent Eynac was accompanied by M. Camerman, Director of Civil Aviation in France, and Lieuts. Bos and Pequeur. Lord Thomson was assisted at the conference by Sir Sefton Brancker.

On the evening of August 6 a dinner party was given at the Ritz when, in addition to those officials already mentioned, the party included Mr. Macdonald (the Prime Minister), the French Ambassador, Lieut. de Vaisseau Sala (the French Naval Air Attaché), Air Commodore Newall (Deputy Chief of the Air Staff), Sir Walter Nicholson (Secretary of the Air Ministry), and Mr. Oldfield (Assistant Private Secretary to the Secretary of State for Air).

One gathers that among the precise points to be discussed are the following:—(A) A linking system between the Cape-Cairo line and the line which the French are organising across the Sahara to join the Belgian Congo route which now reaches the Rhodesian Congo frontier, with a cross-line to Madagascar. (B) Co-operation between the French air route which will run along the Mediterranean to Palestine, and so across to the upper waters of the Euphrates and down to Baghdad, with the existing Imperial Airways line by way of Egypt,—which incidentally ought not to go to Egypt at all but ought to go by Malta and Cyprus to Jaffa. The French line, which must obviously follow the Imperial Airways route from Baghdad to Calcutta, would then extend to the French possessions in Indo-China. There is no doubt that a double air-line to the East with French and British co-operation will ultimately be of great strategic value to us when the struggle comes for the command of the Pacific and the possession of Australia.

(C) Finally there is the question of co-operation in the line which the French are already running to South America. This line at present runs from Paris to Dakar on the West Coast of Africa whence the mails are taken by fast steamers to Port Natal in Brazil, whence they are flown all the way down the East Coast of South America to Buenos Aires. There are many ways in which British co-operation would be valuable on this route.

SKY-TALKIES.

An advertising organisation is proposing to introduce a new form of aerial advertising to this country. Loud-speakers will be built into the fuselages of five D.H. Gipsy Moths, and messages delivered into a microphone and amplified by a 260-watt amplifier will be plainly audible over an area of two to three square miles from a height of 1,500 ft.

The organisers claim that they have ascertained that there are no regulations which will prevent the project from being carried out. [There seems some hope that the perpetrators of the outrage may have to be carried out, when infuriated citizens have dealt faithfully with them after they have landed.—ED.] But if they propose committing this new form of hate over cities and towns they will find that they will not be allowed to do it at 1,500 ft.

This device was tried out over New York some considerable time ago, but one cannot recall having heard of its success.

Whether New York was discerning enough to object, or whether there was so much noise caused by people hustling that it was not noticed, one does not know. One does venture the opinion, however, that it will not be popular over here. If only scientists devoted their attention to making things silent instead of making everything talk, scream or roar life would be very much more pleasant.

MALLITE PLYWOOD
USED BY THE LEADING AIRCRAFT MANUFACTURERS
THROUGHOUT THE WORLD.
Telephone: BISHOPSGATE 5641 (4 lines)
Manufactured to Specification 2.V.3 by
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At the

AERO EXHIBITION, OLYMPIA

ESAVIAN
Folding & Sliding
DOORS

proved a great attraction. Many enquiries from abroad were received for Doors of forty and fifty feet in height. The Winding Gear (Patented) enabled the Doors to be opened and closed by boys.

The Doors are hinged to the sliding upright (Patented). These uprights slide with the greatest ease, being fitted with purposely made ball bearing runners which carry the weight of the Doors with safety.

Doors of 25 feet high and upwards stand at an angle, the position being regulated by hinged stays, and are thus able to withstand the greatest wind pressure.

We shall be glad to send you pamphlets and detail prints immediately on request.

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Quick, Simple, Clean, Efficient.

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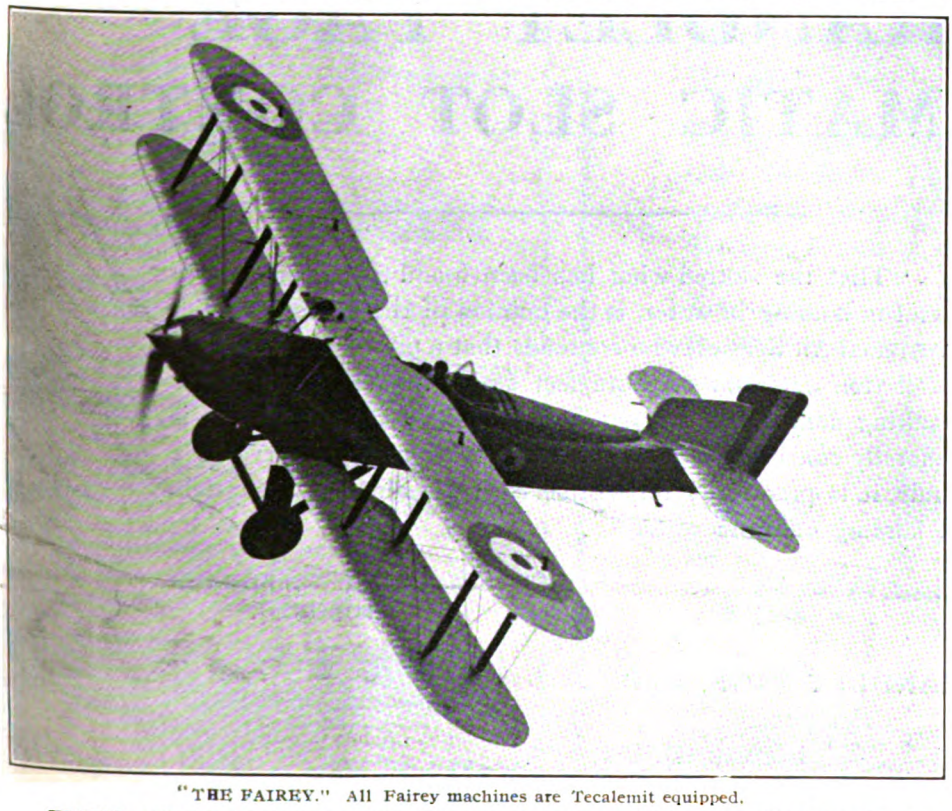

"THE FAIREY." All Fairey machines are Tecalemit equipped.

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Tecalemit is standard on Armstrong Siddeley, Avro, Beardmore, Blackburn, Boulton & Paul, Bristol, De Havilland, Fairey, Gloster, Handley Page, Hawker, Short, Simmonds Spartan, Supermarine, Vickers and Westland machines, also on Bristol Jupiter, Bristol Cherub, Bristol Mercury, Beardmore and Cirrus A.D.C. engines.

Lighter than Screw-down Grease Cups. *Adopted by the Air Ministry.*

TECALEMIT, LTD.,
Lubrication Experts,
MITRE HOUSE,
SCRUBBS LANE,
LONDON,
N.W.10.

'Phone : Willesden 5961-2-3

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A letter has already appeared in *The Times* from a habitué of one of the best clubs protesting against this new form of advertising horror, in which he rails at the pollution of the sky on fine days with trails of smoke in the form of letters advertising various goods. If we are to innoculate the country with "airmindedness" we must not disturb even the most respectable clubman with objectionable noises, or else we must make everything else so noisy that flying to Paris in an Argosy will be recommended by doctors as a nerve sedative

But why drag in sky-writing? The sky over England is so often polluted by masses of rain clouds that a bit of blue sky, even if it is momentarily decorated with a fluffy representation of the name of somebody's patent soap, is very welcome, and cannot possibly disturb even the most irritable member of Clubland who happens to be suffering from post-prandial insomnia.—L. B.

BUG-DUSTING IN CANADA.

In Canada millions of dollar's worth of damage is done annually to field and orchard crops, forest and shade trees, stored products, etc., by insects. For a good many years efforts have been made to control these pests. One of the chief agencies in the campaign is the Entomological Branch of the Department of Agriculture.

A division of the work of growing importance to Canada is that engaged in the suppression of forest insect pests.

The Forest Insects Division of the Entomological Branch in co-operation with the R.C.A.F. has been endeavouring for some time to provide a method of controlling outbreaks of defoliating insects by distributing poison dust by aeroplane over the infested areas.

During the Summer of 1927 the Forest Insects Division in co-operation with the R.C.A.F. and the Forest Services of the Dominion and of Nova Scotia made a number of experimental dusting operations with calcium arsenate in Cape Breton Island and Antigonish County, in Nova Scotia.

The experience gained in that experiment justified a continuation in 1928. Severe infestations of the spruce budworm in Northern Ontario were attacked under conditions more favourable for such experimental work. In both seasons a large number of relatively small plots was treated. Information of much value was secured and the work will be continued in Northern Ontario this year on a larger scale.

The operations will be under the direction of the Fore Insects Division, and the R.C.A.F. will provide a three-e gined Ford monoplane specially equipped for the distrib tion of poison dust. The Ontario Forest Service will supp the dust and will otherwise assist in the ground operatio

The proposal is to dust several areas between half a m and a mile wide, using poison of several degrees of strengt and the experimenters hope to obtain from this seaso operations definite data on the effect of this method on commercial scale and the cost of the operations under su conditions.

In the Muskoka region of Ontario during the last thr seasons extensive injury has been done to hemlock stan by defoliating insects. The Ontario Government For Service is providing a special aeroplane and the necess dusting material for control operations in co-operation w the Forest Insects Division.

The Division have been investigating present extensive o breaks of hemlock looper in stands of balsam fir pulpw on the north shore of the St. Lawrence river below Saguen This is the same insect which is causing so much dam to hemlock in the Muskoka region.

Experimental dustings which have been made by Division of Forest Insects working in co-operation with Nova Scotia Forestry Branch in 1927 and the Ont Forestry Service in 1928 indicate that when certain pra cal difficulties incident to the application of the poison d have been overcome, small outbreaks of insects may checked by this method before they have reached the demic stage in which they cause such tremendous fo damage.

Once these outbreaks have gained full momentum, h ever, artificial control is almost if not quite impossible. is also considered at present that the cost of aeroplane d ing would prohibit the use of this method on a very tensive scale but that the present method will prove p ticable and of use commercially for the protection of more valuable stands of pulpwood when threatened infestation.

CENTRAL AFRICAN ENTERPRISE.

The Angola Diamond Company has decided to buil aerodrome at Loanda, Angola, and to establish aerial nections with the S.A.B.E.N.A. Belgian Congo air se and the future Cairo-Cape route when it is opened.

HANDLEY PAGE
AUTOMATIC SLOT CONTROL

"That the slotted wing has been found to be particularly useful in landing in water, is the opinion of the Director of the Provincial Air Service, who contends that a pilot is thus enabled to 'flatten out' ten or more feet above the surface, without resulting damage, in a 'pancake' landing. Among fliers it is generally conceded that unless there is a ripple to serve as a guide, it is practically impossible to judge distance accurately in landing on calm water."

"EVENING TELEGRAM,"
TORONTO.

HANDLEY PAGE, LTD.,
Cricklewood,
LONDON, N.W.2.

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SUPERFLEXIT TUBING

¶ This flexible tubing which has been so successfully developed on the Continent has been adopted by the French, Italian and Swiss Air Services.

¶ The Italian machine S.64 belonging to S.I.A.I. in which Commanders Carlo Del Prete and Ferrarin set up the World's Record Duration and Long Distance Flight in June, 1928, was fitted throughout with Superflexit Tubing.

Advantages.

A Lining having Absolute and Permanent Imperviousness to Petrol, Benzol and all Hydro Carbon Oils.

Extreme Flexibility. Light Weight.
Great Strength. Smooth Bore.

Unaffected by Continual Vibrations.
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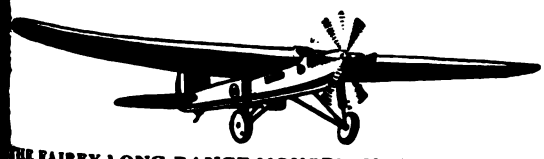
Capable of Withstanding High Pressures.

¶ The tubing is covered to meet all conditions of service, and special lightweight unions have been developed for the Air Services.

Superflexit Tubing was awarded 1st Prize at the Paris Exhibition organised by the Society of Aeronautical Propaganda in conjunction with the Aero Club of France held in 1928.

SUPERFLEXIT, Ltd.,
Sales Office: 110, Cannon Street, LONDON, E.C.4
Telephone: Mansion House, 5794.
Works: Trading Estate, Slough, Bucks.



THE FAIREY LONG-RANGE MONOPLANE (Napier engine).

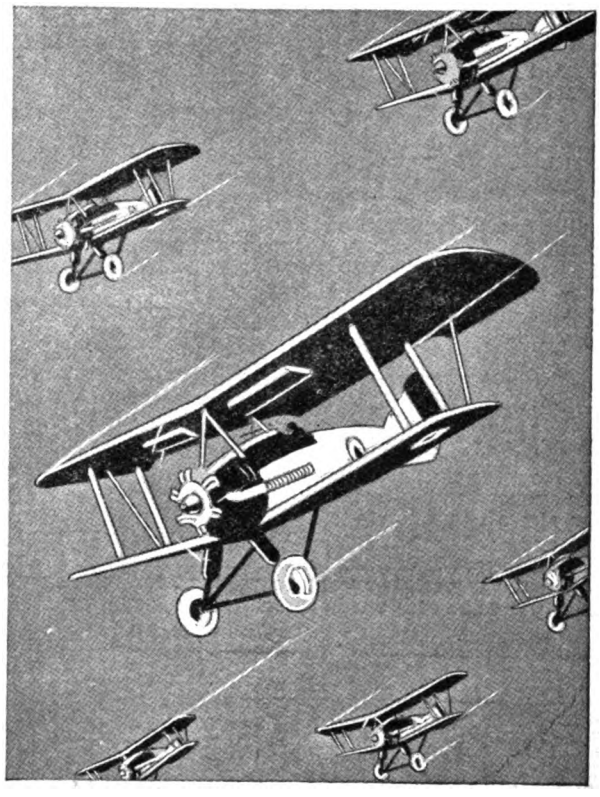
FIRST NON-STOP FLIGHT TO INDIA.

RUBERY, OWEN BOLTS AND NUTS WERE USED ON THIS MONOPLANE.

OTHER TRIUMPHS PROVING THE QUALITY OF R.O. ACCESSORIES.

Sir Alan Cobham's Australian Flight.
Lieut. Webster's Schneider Cup Victory.
Capt. Hinkler's Australian Flight.

RUBERY, OWEN & Co.
REGISTERED TRADE MARK
DARLASTON, SOUTH STAFFS.
PHONE: DARLASTON 130.



Perfect formation

Perfect formation is the secret of the extraordinary success of the new "BP."

Every quality demanded by the modern high efficiency engine is present, and no good feature is absent.

Try the new "BP" to-day. It will put new life in your engine.

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British Petroleum Co. Ltd. Britannic House, Moorgate, E.C.2
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BROADENING THE OUTLOOK.

Readers of THE AEROPLANE who do not happen to be subscribers, and therefore did not receive the Special Issue of this paper published on July 12, are hereby informed that a limited number of copies of this issue can be had for 1s. post free, from THE AEROPLANE, 175, Piccadilly, W.1.

This Special Issue contains illustrations and full specifications of all the aircraft and all the aero-engines which were shown at Olympia. With these appears a brief historical note concerning each firm. Also the issue contains the names and addresses of, and a note on, the goods produced by, all the makers of accessories, components, materials and so forth who had stands at Olympia. Thus the Special Issue is in itself a complete directory to the British Aircraft Industry and to its ancillary firms.

The number of copies of this Special Issue is limited and they will be sent strictly in order of application.

THE NOTCHED INGOT.

The Notched Ingot is the name given to a booklet issued periodically by The Hoyt Metal Co. of Great Britain and described by them as a "Miscellany of Mechanical Topics." It contains some good photographs of modern power-plants and their application to present-day forms of transport,—ranging from aircraft to a steam-tug.

A number of useful hints on lining bearings is being given, in serial form. This number contains much useful information on the correct temperature required for melting white metal and some rough tests which will serve in the absence of a thermometer. This should be particularly useful ground engineers and to R.A.F. engine-mechanics,—even Henlow.

The Notched Ingot understands the value of history, a so gives an account of metal-working as practised a hund and more years ago. Here we learn that pewter, which rather fashionable just now, has been used domestic since Roman times, and regulations for the craft o pewterer were drawn up in England in 1348.

In the *Queries and Answers* section worried corresp dents who want information are soothed with the answer. Such queries range from the historical to severely practical one of the best way to re-metal bear of some unusual type.

There is much more of interest, including an accoun the Indian Airway.

The Notched Ingot takes its name from the familiar i of *Hoyt Number Eleven* antifriction metal, which help give the engines of the R.A.F. and of Imperial Airways t remarkable reliability.

Copies may be had from the Hoyt Co., Deodar Wo Putney, by mentioning THE AEROPLANE.

A SERIOUS OMISSION.

By an unfortunate oversight, the advertisement of Su flexit Ltd., of 110, Cannon Street, E.C.4, was omitted f the last issue of THE AEROPLANE.

This Company has produced a new form of flexible tu which has a lining which is permanently impervious petrol, benzol and hydro-carbon oils.

The tubing can be obtained in any length and is extre flexible, very light and very strong. Moreover, it is affected by continual vibration and high temperature a capable of withstanding very high pressure.

The Superflexit Stand at Olympia attracted much a tion and more is likely to be heard of Superflexit in country in the near future. It is already in general on the Continent and has been fitted to many record-b ing machines.

WELDABLE TUBE.

One or two readers of THE AEROPLANE seem to have understood a sentence written with humorous intent i Show Report on the exhibit of the Reynolds Tube Co. The writer of the report said:—

> The tube makers and the tube users are really getting do brass tacks, or,—in this case, chrome-molybdenum.

Some people have expressed surprise that chrome-m denum should be used,—and, as a matter of fact Reynolds Tube Co. do not use chrome-molybdenum. intention of the sentence was to indicate that tube m and tube users in these days knock chrome-molybd verbally, as one knocks brass tacks physically.

One of the great features of Reynolds tubing is tha made of a high-grade steel which, unlike chrome-m denum tubing, does not harden and become britt exposure to air after welding.

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The Brooklands School of Flying have for sale a (240 h.p. Siddeley Puma) in excellent condition co with C. of A. This type carries a pilot and four p gers in a roomy and comfortable saloon and has a c speed of 100 m.p.h., and makes an ideal machine f taxi work.

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MORTGAGES AND CHARGES.

SAFETEX SAFETY GLASS LTD.—Charge on freehold factory at dated July 16, 1929, to secure £5,000. Holders: Safetex Glass Company Ltd., 21, Great Portland Street, W.1.

PERSONAL NOTICES.

DEATHS.

BOYLE.—On July 29, while flying near London, George Boyle, late Capt., Royal Scots Fusiliers, aged 36 years

CAULFIELD.—On July 30, at Hounslow Hospital, as the re flying accident, Jack Harley Caulfield, aged 25 years.

SMITH MARRIOTT.—On Aug. 3, at Saskatoon, Canada, an aeroplane crash, Ernest John Bosworth Smith Marriott, monden Rectory, aged 27.

FORTHCOMING MARRIAGES.

DAVIES—BAVIN.—The engagement is announced betwee Davies (late Capt., R.A.F.), of 63, Harrington Gardens, S.W.7, son of the late Mr. and Mrs. G. F. Davies, and Margaret daughter of Major and Mrs. J. T. Bavin, of Berkhamsted, H

GUNTON—BROOKS.—A marriage has been arranged, shortly take place, between H. Desmond Gunton, formerly R son of Major and Mrs. H. C. Gunton, of Rathgar, Gerra Bucks, and Gwen, only daughter of Mrs. Charles Brooks, Chalfont St. Peter, Bucks.

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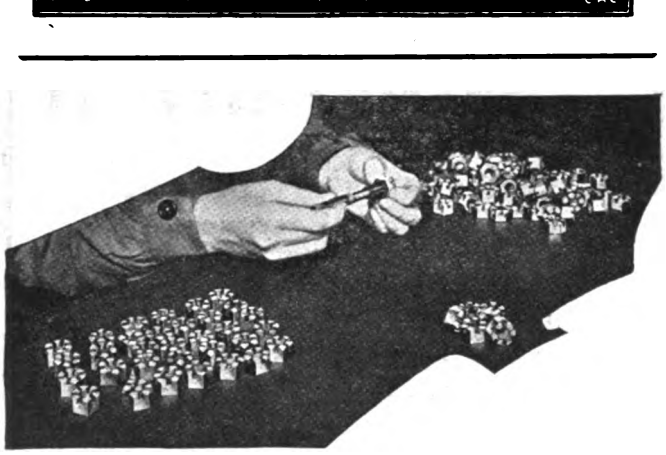

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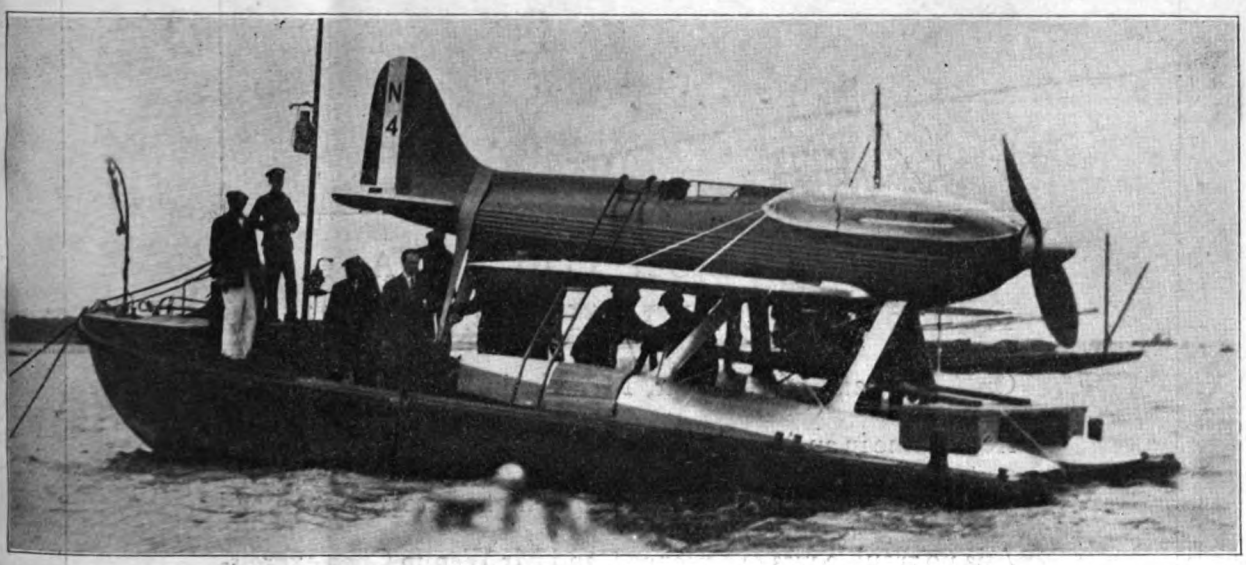
THE AEROPLANE

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. G. Grey

Vol. XXXVII. No. 7. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

"HANG OUT OUR BANNERS ON THE OUTWARD WALLS; THE CRY IS STILL 'THEY COME.'"—(SHAKSPEARE—*Macbeth.*)



A DEFENDER:—The Supermarine Rolls-Royce S.6 on its R.A.F. float, starting for Calshot.

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Incorporating

Aeronautical Engineering

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ON AN IMPERIAL LESSON.

No one flight in the past has done quite so much to prove the practical possibilities of aviation in relation to the British Empire as has the flight made by Her Grace the Duchess of Bedford and her crew, Mr. C. D. Barnard and Mr. R. F. Little, to India and back. And the Empire owes a debt of gratitude to this distinguished lady for the lesson which she has taught us.

Quite a reasonable number of great flights have been made by British pilots, though unfortunately owing to lack of financial support from the wealthy people of this country, and owing to lack of Government support, caused by the economy forced upon us by our habit of paying our international debts, such flights have not been numerous in proportion to the size and importance of the British Empire.

The great pioneer flights, such as the first non-stop flight across the Atlantic, the first flight to Australia and the first flight to the Cape, showed that air communication between the different parts of the Empire was possible. Much in the same way the early flights of the Wright Brothers and of Glenn Curtiss in America showed that some day human beings would fly.

The recent non-stop flight to India was an indication of what can be done in the way of producing a long-range aircraft capable of carrying big loads efficiently, though the actual non-stop flight to India as such was just as purely a stunt as was the great Italian non-stop flight to the coast of Brazil, and did not demonstrate anything useful in itself.

The flights which have shown the practical usefulness of the aeroplane are much fewer. Of them the most important have been Mr. Bert Hinkler's lone-hand flight to Australia in 15½ days, Lieut. Bentley's flight to the Cape and back, and Lady Bailey's flight to the Cape and home round the West of Africa. These have demonstrated immediate usefulness, and we may leave out of the question flights of a more pioneering nature, such as Sir Alan Cobham's great flights, and that of the two Moths piloted by Messrs. Stack and Leete to India, in the early days of light aeroplanes.

While we have been doing so little in the way of demonstrating the every-day possibilities of aircraft our friends in Holland have been flying to and from their Eastern possessions in the Oil Islands so often as to have almost established a regular air-line. In fact they would have established an air-line but for the fact that for political resaons, not altogether dissociated one imagines from our own Imperial air-way, we stopped the Netherlanders for some months from flying over the desert to 'Iraq, although our own machines were flying over the route regularly.

Recently we have overcome, with a vast flourish of trumpets, the difficulties of flying across Persia, which difficulties might never have arisen if we had distributed a few bags of gold in the right quarters a few years ago, or alternatively had allowed Junkers machines to fly from Teheran to Baghdad.

But even now the time which our air mails take to reach Calcutta is merely grotesque, considered alongside of the average speed of the American trans-Continental mails. We have made the mistake, which ought to have been obvious from the start, of thinking that we are going to carry passengers to India in paying quantities in slow machines when with the lessons of six years in America before us we ought to have concentrated on high-speed mail machines. That is the worst of trying to run anything with a board of directors instead of letting one man have a free hand,—as Colonel Paul Henderson had in the States.

Now the Duchess of Bedford has come along and completely taken all the shine out of our Imperial air-line to India by showing that an aeroplane which is itself almost ancient history can go to India and back in only a few hours more than our precious air mail takes to get to India. Whether Her Grace the Duchess had in mind a deliberate attempt to show up our Imperial error one does not pretend to know. But at any rate she has done it very effectually.

The machine which she used was a standard Fokker cabin monoplane, built in 1925. For some time it was used on the regular K.L.M. service between Amsterdam and London. Later Mr. W. B. Leeds bought it, named it the *Princess Xenia*, and lent it to Mr. McIntosh, who in 1927 tried to fly the Atlantic from an aerodrome near Dublin, with an Irish passenger, and returned after flying over the Atlantic for about 300 miles.

Early in 1928 Mr. McIntosh and Mr. Bert Hinkler tried to fly the same machine non-stop from England to India, but after flying for more than 24 hours and penetrating somewhere over Russian territory, they were forced to return and land in Poland.

After this the machine passed under the control of the Duchess of Bedford, who in June 1928 employed Mr. C. D. Barnard and Mr. A. H. Alliott to try to fly to India and back. At that time the machine had an ungeared Jupiter engine.

After flying to Bushire in three days some part of the engine blew up or blew in, owing to the supply of unsuitable fuel at one of the stopping points. The machine was then shipped to Karachi, where a new engine was fitted. Mr. Barnard and Mr. Alliott flew back from Karachi in just under five days, and the Duchess of Bedford came home by boat.

For the flight which has just been done the old Fokker, now renamed *The Spider*, was fitted with a geared Jupiter engine Mark VIII. The success of the flight proves definitely that the geared Jupiter engine is as reliable as the well-proved ungeared type,—which is to say that it is as good as the World's best.

HOME AGAIN.—The return of the Duchess of Bedford to Croydon after having been to India and back in seven-and-a-half days.

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To give credit where it is due, the gasolene used was supplied by the British Petroleum Co. Ltd. (which is Anglo-Persian), the lubricating oil was that of C. C. Wakefield and Co. Ltd., and the plugs were K.L.G.s.

The time-table of the flight is as follows:—

Friday, August 2, left Lympne 5 a.m., arrived Sofia in the evening (1,350 miles).

Saturday, August 3, left Sofia, arrived Aleppo, Syria (850 miles).

Sunday, August 4, left Aleppo, arrived Bushire, Persia (1,090 miles).

Monday, August 5, left Bushire, and arrived at Karachi at 6.55 p.m. (1,060 miles).

Tuesday, August 6, left Karachi 6.30 a.m., arrived Bushire.

Wednesday, August 7, left Bushire for Aleppo.

Thursday, August 8, left Aleppo, and arrived at Sofia.

Friday, August 9, left Sofia at 4.20 a.m., reached Croydon Aerodrome at 5.30 p.m.

Primarily this successful flight is entirely due to the energy and initiative of the Duchess of Bedford, who thus adds another of the debts of gratitude which British Aviation owe to the women who have interested themselves in flying in the right way and not merely for publicity.

The Duchess of Bedford was born in September, 1865, at Stockbridge, Hants., and was the second daughter of the Venerable Archdeacon Tribe. She was educated at Cheltenham and Zurich. She married Lord Herbrand Russell, now Duke of Bedford, in 1888. Besides being addicted to fishing and shooting as sports, Her Grace is given to serious pursuits. Her specialities are natural history and radiography, and she has contributed on ornithology to Scottish papers.

Much praise is certainly due to the crew of the machine. Mr. C. D. Barnard, the pilot, was in the R.F.C. and R.A.F. during the War, and became one of the first commercial pilots soon after the War. He distinguished himself particularly by bringing down safely, with passengers, a machine which had caught fire in the air when he was joy-ride flying at Blackpool. Since then he has done a large amount of cross-country flying, practically all over Europe, mostly in the employ of the De Havilland Co. He has long been recognised as a pilot of quite the first class though he has not had the opportunity of making any historic flights.

Mr. R. F. Little was a young man who came into aviation after the War and having some money of his own tried pluckily for some time to run a joy-ride concern on the North-West Coast, at Morecambe and thereabouts. He learned to fly, but never took to piloting seriously, preferring to devote himself to the mechanical side of aviation. He first came into the public eye as one of the engineers who accompanied Mr. Frank Courtney on his attempted trans-Atlantic flight, and since then he has been closely associated with several well-known pilots. This great flight to India and back assures for him an important place in British Aviation.

Altogether the flight must always stand out in history as the finest possible demonstration of the uses of air communication within the British Empire. Admittedly the course taken was over foreign territory which might in another important war be hostile, though as a matter of fact Turkey is much more likely to be our ally than our enemy in the next war. To that extent the actual distance was shorter than any which would normally be covered by an Imperial airway based as far as possible on British possessions or mandated territory.

But the slight difference between going North of Switzerland to Sofia and thence across Turkey, and going to the South of France and straight along the Mediterranean with high-speed flying-boats is so slight that the difference between the cruising speed of a modern aeroplane and the cruising speed of this ancient Fokker monoplane, even with its thoroughly modern Jupiter engine, would more than make up the difference in time over the whole journey.

Also, be it remembered, the Duchess of Bedford's machine flew only by day, whereas anything which pretended to be an Imperial air-mail line would fly by night. Our particular air-mail route to India is peculiarly suited to night-flying because we can fly by night either along the Mediterranean, or over the desert from Palestine to 'Iraq, or down the Persian Gulf. In this we have even greater advantages than has the American trans-Continental line, which covers some of its worst country at night, and hardly ever kills a pilot, because of its perfectly organised system of landing grounds and landing lights.

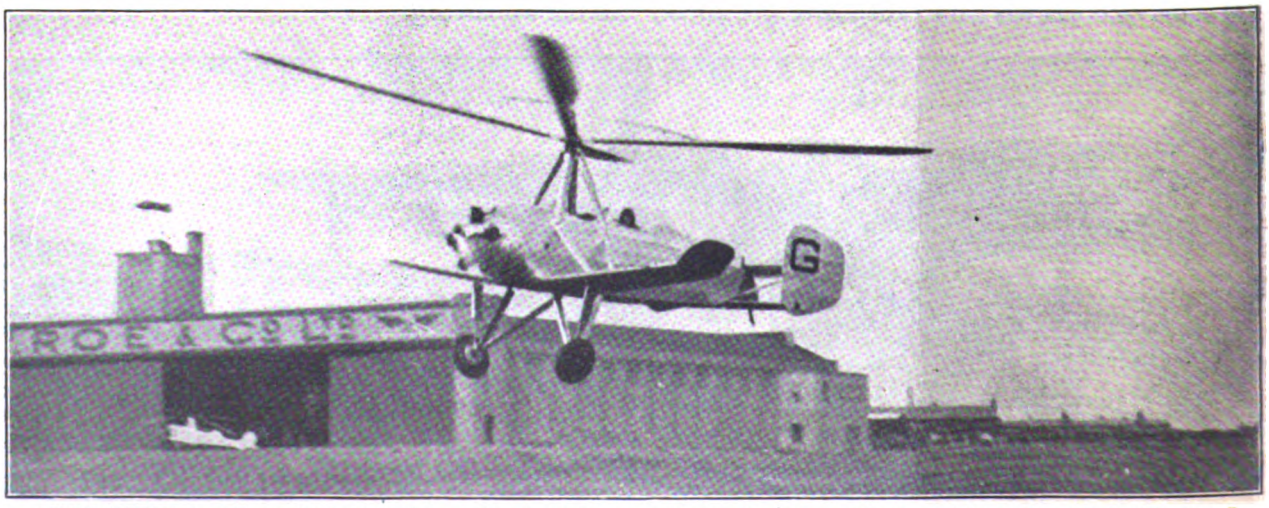
When at last we do have an air-mail line to India carrying the mails in about 36 hours, as we could have perfectly well to-day if as a nation we had any initiative and energy, the credit for that line will belong first of all to Colonel Paul Henderson, who showed America six or seven years ago how to lay out an air-mail route, and secondly to Her Grace the Duchess of Bedford who, as a sportswoman, has shown our so-called business men what can be done with Imperial Communications.—C. G. G.

ON BEARING FALSE WITNESS.

So much happened in the month of July, what with the Rotterdam Meeting and the R.A.F. Pageant and the Aero Show that there has been no time or space in which to deal faithfully with an article which appeared in the July issue of *Air*,—the Official Organ of the Air League. But, in the interests of historical accuracy, one must deal with it because it is so full of misrepresentations and false statements. The article bears the title "The Outlook,"—And a Case for Inquiry." It is signed by Brigadier-General P. R. C. Groves, C.B., C.M.G., D.S.O., Honorary Secretary-General, Air League of the British Empire, and it is apparently his swan song on abandoning his grandiose title. As usual, it consists of an attack on those who have been responsible for the re-building of the Air Force since it was cut down in the interests of national economy at the end of the War 1914-18. Also it contains certain statements about The Aeroplane newspaper which are entirely untrue. To a certain extent it is an attempted answer to the article on Brig.-Gen. Groves and his mismanagement of the Air League which appeared in The Aeroplane of June 12.

Most of it is so weak as not to deserve a reply. But in his counter-attack Brig.-Gen. Groves makes statements which, if they were true, might be to a certain extent damaging to the Air Ministry, though they would from one point of view give people the idea that The Aeroplane is in even a stronger position than it is in fact.

Like the last article which Brig.-Gen. Groves wrote in *Air* attacking the Air Ministry, this article also takes the form of an address to Lord Thomson, the present Secretary of State for Air, upon whom Brig.-Gen. Groves calls to investigate personally what would be, if Brig.-Gen. Groves's allegations were true, a gross public scandal.



AUTO-GIRING.—The latest Autogiro, with Armstrong Siddeley Genet. This type blows its windmill round by deflecting the slipstream with its tail-plane, and so shortens by minutes its time in leaving the ground.

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The Subsidy Charge.

After lamenting that what he conceives to be the work of the Air League is hampered by the opposition of what he calls the "Old Guard" of the senior Services "and the opposition of a deeply entrenched clique in the Air Ministry itself" which, he alleges, has bitterly opposed the League's efforts to enlighten the public, he says:—

A recent example is a vituperative attack upon this journal by a contemporary, which is subsidised by the Air Ministry to the extent of being distributed at public expense to the Royal Air Force. In an abusive article this tool of the *clique* referred to, challenges our statement in the last issue of *Air* that this country has sunk from being the second Air Power to the position of fifth during Sir Samuel Hoare's tenure of office.....

Hitherto we have ignored the attacks of our contemporary for two reasons: Firstly, because, as in the present instance, their venom has been neutralised by their obvious bias and spleen and by their equally obvious display of childish, almost laughable, jealousy of *Air*. Secondly, because we felt that it would be useless, so long as the late Administration was in office, to draw attention to what is really a public scandal, namely, that the journal in question is officially subsidised.

The Air League is by no means the only recipient of poisoned bouquets from this yellow press flunkey of the *clique* we have mentioned. These floral offerings have been showered at one time or another upon every great daily newspaper which has presumed to criticise the air policy pursued. We noticed in recent numbers derogatory remarks about *The Daily Telegraph, The Manchester Guardian* and the Rothermere Press. For this latter, which has done more for British aviation than any other section of the Press, our contemporary has always reserved its choicest store of invective.

The reason, of course, is that Lord Rothermere, when he was Air Minister, took a course of action which was highly distasteful to a departmental Bismarck, still in the Air Ministry, whom our contemporary regards as its *fidus Achates*. Subsequent events, which we reviewed in our last issue, have decisively proved the soundness of Lord Rothermere's judgment. In connection with that affair it is only charitable to suppose that the disgraceful abuse subsequently rained upon Bismarck's successor (who now occupies one of the highest appointments under the Crown) was a coincidence; but, if so, it was a coincidence which would be vetoed in the realms of fiction.

It is quite clear that in abusing the Air League our contemporary is merely earning its pay with goodwill. But that is beside the point; the real issue at stake and the reason why we are now drawing attention to this matter is the principle involved. *Has any department or section of a department the right to subsidise a periodical out of public funds?*

That is a question which clearly concerns the new Air Minister. We have raised it in the public interest, and we venture to suggest that it calls for Lord Thomson's personal investigation, particularly in view of the obvious fact that official subsidy of a publication implies endorsement both of its policy and of its contents—even when the latter comprise catchpenny scurrility, deliberate misrepresentation, and venomous innuendo.

The Truth, the Whole Truth.

If The Aeroplane or any other newspaper were subsidised by the Air Ministry, or by any Government department, the editor of such a paper would necessarily find his hands tied in the free expression of opinion. And no regular reader of The Aeroplane will ever charge this paper with lack of freedom in this direction.

Readers will notice that Brig.-Gen. Groves, having said just once that this journal is subsidised "to the extent of being distributed at public expense to the Royal Air Force," afterwards refers to it as being "officially subsidised." Then he calls it a flunkey of the clique. Then he writes of it as "earning its pay with good will." And finally, he says "Official subsidy of a publication implies endorsement both of its policy and its contents.'

Now, if The Aeroplane were subsidised by the Air Ministry, obviously it would be in an immensely strong position in its relations with the Aircraft Industry, for the Aircraft Industry—until this sudden growth of Civil Aviation within the last twelve months—has depended entirely on the Air Ministry for its livelihood, and so would see the wisdom of itself subsidising The Aeroplane heavily in the form of advertisements.

Unfortunately, from this particular point of view, The Aeroplane does *not* happen to be subsidised by the Air Ministry, and the Trade knows it. So what support this paper gets from the Trade is due entirely to the fact that the Trade knows very well that everybody in the Air Force, officers and airmen alike, read The Aeroplane because it has been devoted to the interests of the Flying Services through thick and thin ever since Service flying and The Aeroplane began, practically simultaneously, more than eighteen years ago.

To this extent The Aeroplane is the Unofficial Organ of the Royal Air Force. And because it has devoted itself to the interests of the people who do the flying and not to any clique, either political or Service, The Aeroplane can claim to have quite considerable influence in the Royal Air Force.

But to say that The Aeroplane is subsidised would be untrue, even if it were "distributed at public expense to the Royal Air Force," as Brig.-Gen. Groves says,—which it is not. The Aeroplane, like almost every other paper, loses money on every copy it sells, simply because each copy costs more in paper and printing than the price for which it is sold. Newspapers, as Brig.-Gen. Groves ought to know, as Editor of *Air*, exist on their advertisement revenue.

That, however, is merely by the way. The essential fact is that The Aeroplane is *not* distributed at public expense to the Royal Air Force.

A Matter of History.

Some ten years or so ago the Air Ministry issued to all R.A.F. units a list of approved technical publications which those units were allowed to buy for themselves, with permission to charge them up to the Air Ministry. That is to say, they were not to be bought out of Mess funds but with Air Ministry money. These included various engineering papers, electrical papers, and aeronautical papers, of which The Aeroplane was one.

A few years later there arose a violent controversy between the Admiralty and the Air Ministry because the Admiralty tried to cut the Fleet Air Arm adrift from the Air Ministry and to re-establish in effect the old Royal Naval Air Service. If such a thing had happened at that time the Royal Air Force would have been considerably weakened and the end would have been the break-up of the Air Ministry and the splitting up of the Air Force between the Navy and the Army. Then our Flying Services would have become mere auxiliary services to the Navy and Army under the Old Guard of each Service, and incapable of independent air action or development.

The Aeroplane at that time said several rather rude things about the way in which the Navy had mismanaged naval aviation during the War. Consequently the Admiralty took such a dislike to The Aeroplane that official representations were made to the Air Ministry—from Minister to Minister, as it were,—protesting against public money being spent by the Air Ministry on a paper which thus abused another Government department and the Service it administered.

The result was that the Air Ministry very sensibly, by way of proving definitely that it did *not* endorse the policy and contents of The Aeroplane, removed The Aeroplane from the officially approved list. And so what Brig.-Gen. Groves is pleased to call the subsidy to The Aeroplane ceased.

One has no idea how many units of the R.A.F. did in fact buy The Aeroplane out of public funds at that period. In fact one neither knew nor cared at the time. But one was, even before then, very much concerned that every R.A.F. unit should have The Aeroplane regularly. And, knowing the careless ways of Mess Secretaries and such people, one assured the delivery of The Aeroplane to all R.A.F. units by the very simple process of putting them all on the Free List of The Aeroplane. The result has been that for many years, and until quite recently, The Aeroplane has been a free issue to all R.A.F. units. But *not* at the Government's expense

Brig.-Gen. Groves will assuredly be sorry to hear that so far from The Aeroplane being subsidised by the Air Ministry, the Air Force has in fact been subsidised by The Aeroplane to the extent of twice as many copies per week as there were units in the R.A.F. at any given time during the past ten years or so,—for one copy was sent to the Officers' Mess and one to the Sergeants' Mess.

One may add, and one's pride will be forgiven, that this subsidy began at a time when The Aeroplane was losing money heavily during the post-War slump and continued through all the years when it was making no profit, until a year or so ago when the financial balance of The Aeroplane began to trickle onto the right side.

Mixed Motives.

All motives in this World are mixed, and the Directors of The Aeroplane sanctioned this subsidy for various reasons. Partly it was given because of a genuine belief in and affection for the Royal Air Force. Partly the papers were sent to assure that the British aircraft constructors who advertised in The Aeroplane had their advertisements put directly in front of the users of their products, namely the flying officers and mechanics of the Air Force. And partly the Directors took the long view that by accustoming the personnel of the Air Force to reading The Aeroplane they would build up a permanent circulation among the people from whom would ultimately spread what Sir Samuel Hoare has called the airmindedness of the Empire.

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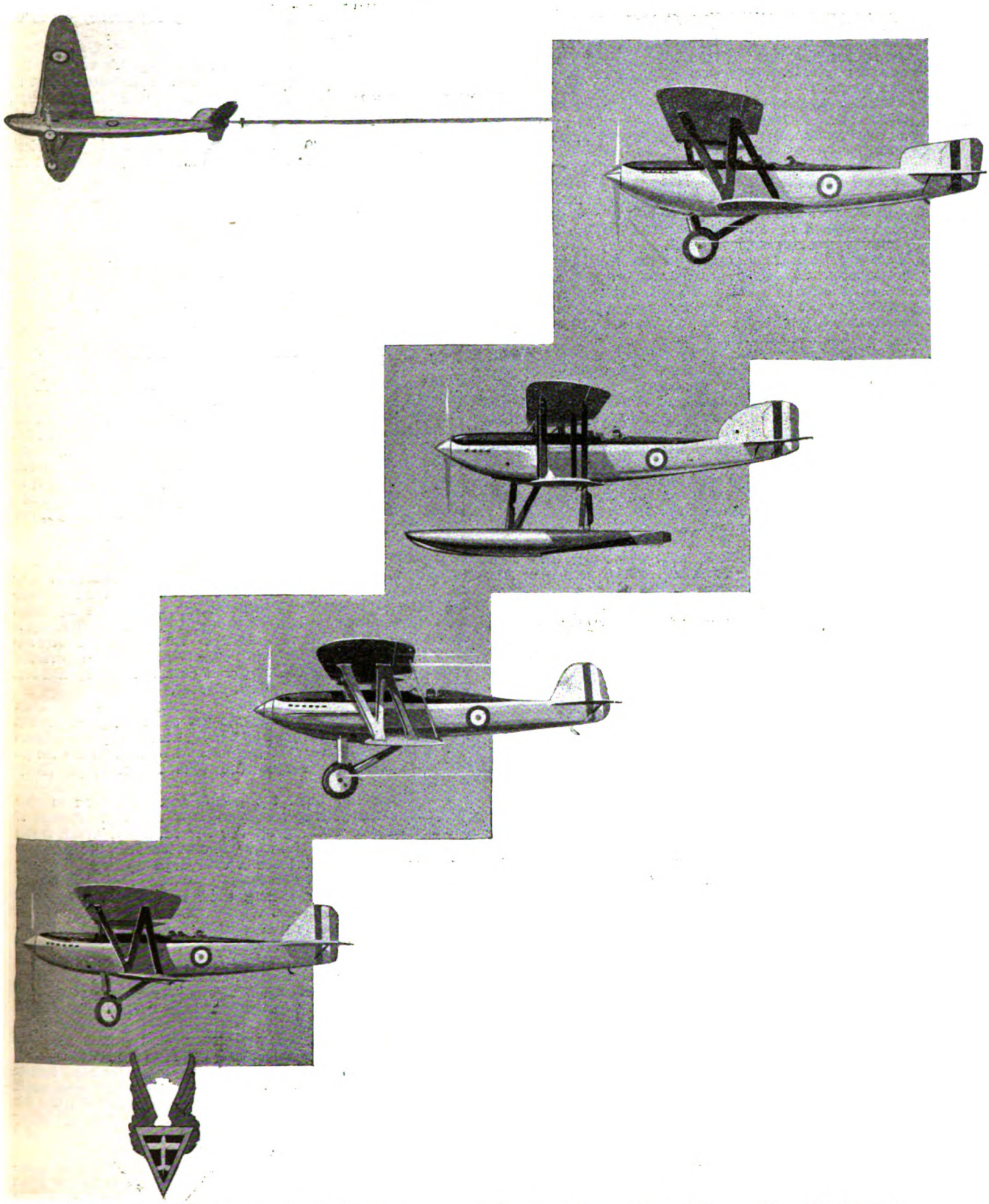

FAIREY AIRCRAFT

THE FAIREY AVIATION COMPANY, LTD., HAYES, MIDDLESEX

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A year or so ago, as the amount of paper and printing in The Aeroplane each week had grown to such an extent that the cost of all these free copies mounted to quite a considerable sum, and as by that time the Air Force had become accustomed to reading The Aeroplane, a letter was sent round to the recipients of free copies suggesting that they had been sent free of charge for so many years that the various units might now consider the matter of becoming ordinary subscribers, out of Mess funds,—which are not Government money but the personal affair of the people in the various units.

The result is that practically all these units are now ordinary subscribers. So The Aeroplane has ceased to subsidise the Air Force. And the Air Force does not subsidise The Aeroplane

When a Subsidy is Not.

However, if Brig.-Gen. Groves insists that the buying of a newspaper out of Government funds does constitute subsidising that paper one is prepared to admit that The Aeroplane is subsidised by the Air Ministry to the extent of seven shillings and sixpence per week.

Apparently certain departments in the Air Ministry find that they must have copies of The Aeroplane in the ordinary course of their official work. And therefore, so far as one can gather from the books of the Publishing Department of The Aeroplane, fifteen copies of The Aeroplane are bought each week by the Air Ministry.

Certainly the Military Intelligence Department at the War Office, and probably the Intelligence Department at the Admiralty and the Intelligence Department at the Air Ministry, buy copies of *The Daily Herald* and of all the Communist publications as well, so as to keep themselves informed on certain political aspects of Service work. But even Brig.-Gen. Groves would scarcely claim that buying those papers implies an official endorsement of their policy and contents. And so he can scarcely argue that the Air Ministry by buying fifteen copies of The Aeroplane for the sake of the information contained therein endorses its policy.

Probably where poor Brig.-Gen. Groves let himself down so badly was that he learned from some young and disgruntled officer in the Air Force some years ago that The Aeroplane was a free issue to R.A.F. units, and with his usual lack of intelligence jumped to the conclusion that it was a free issue by the Air Ministry, because neither he nor his informant knew that in fact it was a free issue by The Aeroplane itself.

A Personal Matter.

Brig.-Gen. Groves' reference to "A departmental Bismarck" ought perhaps to be passed over without comment, as it is no affair of The Aeroplane's. But one cannot do so because of his reference to that other officer whom he calls Bismarck's successor

Considering that the great Bismarck was the greatest statesman Germany ever had, the epithet is certainly no insult to the present Chief of the Air Staff. The successor to whom Brig.-Gen. Groves refers is obviously Sir Frederick Sykes, now Governor of Bombay. And one denies absolutely ever having referred to Sir Frederick Sykes in terms which could by any rational person be called "disgraceful abuse."

One has known Sir Frederick Sykes since he first joined the Royal Flying Corps as a cavalry major some time in 1911. One has the greatest admiration for his vision and his ability in many directions, and for his personal courage. One owes him a debt of gratitude for many kindnesses in the early days of aviation and during the War.

When Civil Aviation came into being Sir Frederick Sykes was made Controller-General of Civil Aviation, and later he became a Member of Parliament. Unfortunately one felt obliged to disagree from his policy and from certain of his actions, and one criticised those actions just as one would criticise those of any other public servant or politician,—in spite of one's personal regard for him. But never at any time did those criticisms approach abuse of any kind. One mentions this purely as an example of Brig.-Gen. Groves' habit of bearing false witness.

Why Be Jealous?

Lastly, so far as The Aeroplane is concerned, readers are asked to refer to Brig.-Gen. Groves' curious assumption that The Aeroplane is jealous of *Air*. So far from being jealous of the Air League's publication one asks for nothing better than the chance of working hand in hand with it and with the Air League. But one cannot do this so long as Brig.-Gen. Groves is allowed to use the Air League and *Air* as tools for his ridiculous policy and for his personal animosities. Over and over again one has said that the Air League ought to be what the Navy League used to be. And if the Air League were run by the proper people The Aeroplane would be its heartiest supporter.

Air ought to do very necessary work which The Aeroplane cannot and never will pretend to do. It ought to be the great organ for popularising aviation among the masses, whereas The Aeroplane is concerned with the technicalities and the higher politics of aviation.

Air, if properly conducted, would deserve the support of the Aircraft Industry just as much as does The Aeroplane and its excellent contemporary *Flight*, whose Editor, Mr. Stanley Spooner, deserves high honour for the years of work which he has given to the cause of British Aviation, when he might have been making big money out of the motor-mongering trade.

"Air" and the Trade.

The Trade does not support *Air* openly for reasons which one considers to be quite misguided. One gathers that the Trade collectively, or possibly the Council of the Air League, are afraid that if aircraft advertisements were to appear in *Air* the Pacifists and Communists and the Socialists would raise an outcry that the Air League is not what it pretends to be, a purely patriotic non-political organisation, but that it is subsidised by manufacturers of armament in their own interests. They seem to be afraid lest the Pacifists should say that it is an organisation formed to work up a war in the interests of the armament firms, and that it is not a patriotic defensive organisation.

This policy strikes one as merely silly. Obviously a patriotic organisation which preaches self-defence by strength of arms deserves to be openly supported by armament manufacturers, and by all manufacturers, as well as by everybody else who has anything, even if only personal liberty to lose. But anyhow, certain members of the Trade, who, quite apart from business interests and merely as patriotic Englishmen, believe in the possibilities of the Air League, have in fact been subsidising it on the quiet.

Some years ago, when the activities and the finances of the Air League were at a very low ebb, one of the minor personalities of the Trade, not himself a manufacturer, went round to practically every manufacturer of aircraft, engines, accessories and material asking each one to support the Air League either with a donation, or in the last resort by becoming a subscriber to the Air League's Bulletin. Quite a goodly sum was raised,—the amount was, according to common gossip at the time, about £4,000.

Whatever was the exact sum, it was placed in the hands of a prominent member of the Trade, who, without owning up that it was a donation from the Trade, offered it to the Air League with the sole proviso that a real live hard-working competent Organising Secretary should be appointed, with his approval, to use the money to the best advantage in spreading the Gospel of Aviation. Various people were suggested as possible secretaries, and ultimately the particular gentleman in the Trade to whose care the money had been committed fixed on Brig.-Gen. Groves.

The natural assumption is that, obeying the commercial instinct which bade him try to get something for nothing, he was strongly influenced by the fact that Brig.-Gen. Groves is a man of considerable means and offered to do the job without payment. Hence the title Honorary Secretary-General.

The result has been too painfully evident,—as so often happens after getting something for nothing. Instead of the Air League backing up the Air Ministry, which is still the best customer of the aircraft constructors, the Honorary Secretary-General let loose a campaign against everything that was done by the Secretary of State for Air and the Air Staff. Instead of upholding their hands as the hands of Moses were upheld in the Wilderness he did everything that he could to undermine their authority and to create dissatisfaction, in a way which would have been harmful to the discipline and moral of the Royal Air Force if any of the Service people had taken him seriously.

If, according to Brig.-Gen. Groves' own ideas, subsidising a publication implies endorsement both of its policy and its contents, then the Air Ministry has very good reason for getting its own back off the Trade at the first available opportunity. One can only plead with the Air Ministry that, in the words of the Scriptures, the Air Ministry may forgive them for they knew not what they did. And one would counsel the Trade that if they wish again to help the Air League to turn over a new leaf they see to it that somebody else shall handle the page.

The Political Attack.

So much for the matter of subsidies. The rest of Brig.-Gen. Groves' counter-attack consists of quite a feeble effort to refute the recent article in The Aeroplane by quoting isolated passages from speeches by Sir Samuel Hoare and Sir Philip Sassoon, on the good old principle of *lucus a non lucendo*.

This well-worked Latin tag has been called the last word in unscientific etymology. It probably originated as a joke by some Roman schoolmaster. Literally it may be translated "a grove (is so called) from not shining." In other words the word *lucus*, meaning a grove, was so called because it excludes the light.

Pluralise your grove and he still does not shine,—particularly when he tries to wriggle out of the charges of prejudice and inaccuracy and ignorance which one was com-

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England—Australia in 15½ days.
12,000 miles.
Sqdn. Ldr. Hinkler.

England—Australia.
12,000 miles. Capt. Lancaster.

England—S. Africa.
8,000 miles. Lt. Murdoch.

S. Africa—England
8,000 miles.
Lady Heath.

England—Gold Coast
5,000 miles.
Capt. Rattray.

England—India.
5,500 miles.
Mr. Leete.

England—S. Africa.
8,000 miles.
Lady Bailey.

England—S. Africa.
8,000 miles. Lt. Bentley.
(Cirrus II).

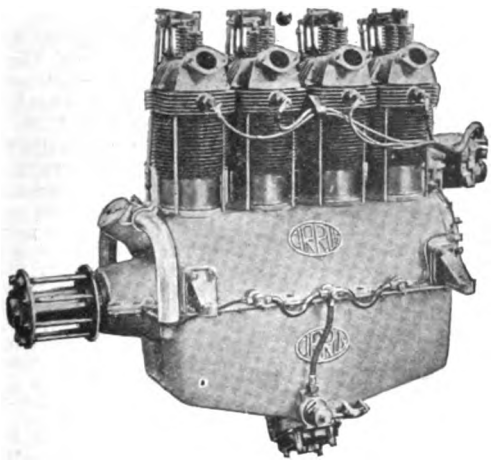
England—S. Africa.
8,000 miles. Lt. Bentley.
(Cirrus III).

King's Cup, 1926.
Capt. Broad.

King's Cup, 1927.
Capt. Hope.

Siddeley Trophy, 1928.
Miss Spooner.

Siddeley Trophy, 1929.
Lt. Richardson.



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pelled, in the interests of justice to the late air administration, to bring against him in THE AEROPLANE of June 12.

In that article, pointing out how entirely unjustified were his attacks on Sir Samuel Hoare and his advisors at the Air Ministry, certain absurd and elementary blunders of this self-appointed air expert were exposed. In his attempted answer he tries to fog the issue in a series of long-winded paragraphs which deal with one point alone and carefully ignore all his own mis-statements to which attention was drawn in THE AEROPLANE.

Probably the readers of THE AEROPLANE are as tired of Brig.-Gen. Groves as are the General Public, so one need only say that anyone who studies the speech of Sir Philip Sassoon in Hansard of May 7 as a whole, without concentrating on the isolated sentence quoted by General Groves (the gravamen of this charge is its isolation) will see that when our late Under-Secretary of State for Air said that we had sunk to the position of the Fifth Air Power he was simply comparing the number of first-line machines maintained by the various Powers, while expressly avoiding any suggestion that this was the true measure of relative air strengths.

Sir Philip Sassoon, in fact, later in his speech, developed just the line which was taken in THE AEROPLANE of June 12. He specifically pointed out, referring to what he said about first-line strengths that "man for man and machine for machine our Air Force can more than stand comparison with the air forces of any other country in the world." With his intimate knowledge of the R.A.F., Sir Philip Sassoon would be the last person in the world to think of reckoning our position in terms of first-line strength, and working up a scare on that basis without the qualification that he was so careful to make.

FIGHTING POWER.

Naturally THE AEROPLANE holds strongly that our numerical strength should be brought up to that of other Powers as soon as possible. But let us set about this task in a reasonable spirit, strengthening the hands of those at the Air Ministry, and not trying to engineer a panic by quoting figures which are either misleading or actually erroneous,—which is what the Air League has too often been led into doing by their so-called expert advisors, and in particular Brig.-Gen. Groves.

At this point comment is worth while on the curious ignorance which assumes that in writing of fighting power,—meaning of course combatant strength,—one was alluding to numerical strength in the type of aircraft known as fighters. Such misconception might be understandable in a member of the outside public, but such confusion of thought is at least odd in one who claims even a superficial knowledge of the Royal Air Force. The only reasonable assumption is that the misunderstanding is purposeful, so as to drag a red herring across the trail and start a discussion on the relative value of offensive versus defensive aircraft.

ENTANGLING FIGURES.

In his latest effusion Brig.-Gen. Groves proceeds with more than his usual caution, and avoids as far as possible quoting any of those figures which so invariably trip him up.

The only outstanding figure which he mentions is the £3,000,000 by which, he alleges, Lord Thomson was instrumental in increasing the Air Estimates. He tells us that this sum "was allotted for the construction of airships.' And, as usual, our expert Brig.-Gen. Groves has gone completely off the rails.

Firstly, coming into office so late in the financial year Lord Thomson naturally took over Sir Samuel Hoare's estimates virtually without change. Probably with the modifications of airship policy which Lord Thomson introduced there was a slight reduction on his predecessor's sketch figures, which may have been partly made good afterwards by the supplementary vote for airships.

Therefore, the credit for the increase in the Air Estimates of 1924 belongs directly to Sir Samuel Hoare. And thus Brig.-Gen. Groves's criticism of the late administration is shown once more to be grossly unfair and misleading.

Nevertheless we must all agree that Lord Thomson does deserve the nation's gratitude for having retained his predecessor's estimates instead of trying to reduce them wholesale,—as political considerations might well have tempted him to do. His sane and balanced outlook of 1924 gives us indeed high hopes of what his present administration may achieve.

In the second place, so far from £3,000,000 having been allotted for the construction of airships in 1924, as Brig.-Gen. Groves states, the total expenditure on airships has not even yet, so far as one can gather, reached the figure of £2,000,000, although five years have now passed since those estimates were introduced. Could ignorance and inaccuracy go further?

RECIPROCITY.

Finally one would remind General Groves of the old proverb that what is sauce to the goose is sauce to the gander.

He seems to claim the utmost liberty to criticise in unmeasured terms and by offensive personal attacks the late political air administration and the present air staff, both of which will go down to history as having achieved admirable constructive work and that under great difficulties.—basing his criticism moreover on elementary errors and definite misstatements of fact.

When however those misstatements are bluntly exposed and denied, he is shocked and sanctimoniously horrified that anyone should presume to criticise the Honorary Secretary-General of the Air League, who, during his tenure of that office, has not scrupled to give vent to his individual spleen, and to indulge a wholly imaginary personal grievance in a way which has done much harm to real air development, both Service and Civil, in this country.

Unfortunately, in the grove's subfusc obscurity not everyone can separate the wheat from the chaff and understand that even if the Honorary Secretary-General of the Air League has made himself a laughing-stock in the eyes of all thinking and fair-minded people, it does not follow that all those connected with the Air League are necessarily afflicted either with the same spite against the Air Ministry, or with the same over-weening egoism.

The Air League has certainly many capable and disinterested and honest supporters. The trouble is that their voices have been swamped by the malevolent persistence of a single individual with a grotesquely exaggerated idea of his own importance.

His attack ends with the announcement of his resignation from the post of Honorary Secretary-General. Apparently he intends to remain a Vice-President of the Air League. But as such let him enfold himself once more in the obscurity of his grove—*lucus a non lucendo*.—C. G. G.

THE SCHNEIDER TROPHY CONTEST.

The Aero Club de France has officially intimated that the French team has been withdrawn from the Schneider Trophy Contest. The announcement states that although the machines and engines have been built, they will not be ready in time to give the pilots adequate training.

The Times correspondent in New York in a message dated Aug. 11 states:—

The propeller of the Mercury racing seaplane which Lieut. Alford Williams hopes to enter in the Schneider Cup race, was slightly damaged on Friday during its preliminary trials. It was sent immediately to the naval air station at Anacostia for repairs, and it is hoped that tests will be resumed to-morrow. Lieut. Williams, who is trying his seaplane at Annapolis, said that he is taking the greatest care in guarding against accidents, as he realises that he is using high-speed engines of a type unknown in this country, and it would be extremely easy for the machine to get out of control. Nevertheless, he is confident that the new aeroplane can exceed the speed of 318 miles an hour achieved by Major de Bernardi.

The Italian team are expected to arrive at Calshot on Aug. 25. The pilots will be selected from Lieut.-Col. Mario Bernasconi, Capt. Guiseppe Motta, Lieut. Giovanni Monti, Lieut. Remo Cadringher, Warrant Officer Tomasco Dal Molin, Serjeant-Major Francesco Agello, and Serjeant-Major Dio Gorri.

THE RAILWAYS' ROAD TO PROSPERITY.

The following letter contains an idea which ought to be of value to Aviation and the Railways alike:—

Sir,—One views with serious misgivings the downhill trend of railways from a financial point of view. It seems to me that railways in the near future have potential advantages that will mean a great deal from a monetary point of view to them in a short time.

The point I have in mind is the fact that railways have in the big acreage covered by their stations, places like King's Cross, Euston, Victoria, etc., large open spaces which, if covered over with great landing stages, could be made centres for the arrival and departure of aircraft. These are in fact the only open spaces big enough for the purpose left in London.

There is little or no chance of any other method of flying from the centres of London. Some railways have recently taken powers to use aeroplanes and I think they have in their station areas a potential gold mine. It will be only a matter of a very few years before all the long-distance passenger traffic will be taken in aeroplanes and the stations roofed over with a flat landing stage on which aeroplanes can land and depart. (Signed) S. F. EDGE.

ROCKET PROPULSION.

The Times correspondent in Berlin reports that a Junkers W.33 single-engined seaplane was recently "rocketted" into the air.

The machine was taxied out on the Elbe and the engine throttled back; two groups of rockets, which were fixed one under each wing, were then ignited and the seaplane took off at great speed.

Further experiments are being made and it is hoped by this means to enable heavily-laden aircraft to get off easily.

THE GREEK FIGHTING SERVICES.

The Greek Government has decided to introduce a Bill to Parliament for the constitution of a Ministry of National Defence which will absorb the existing Ministries for the Army and Navy.

In the new Ministry there will be three Under-Secretaries of State, for the Army, Marine and Naval and Military Aviation.

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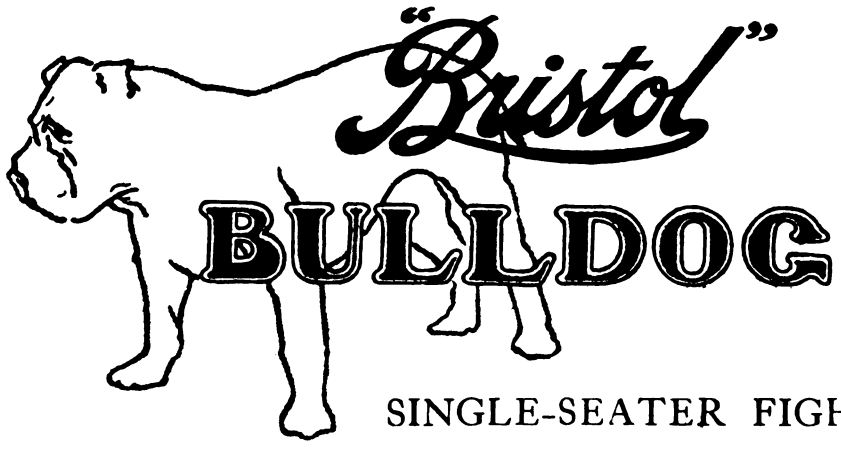
Notes on the Design and Construction of the



SINGLE-SEATER FIGHTER.

I. GENERAL QUALITIES.

Every effort has been made in the design of the "Bristol" Bu'ldog to give the best possible conditions for the machine's primary duty—that of a day and night single-seater fighter. The pilot is seated well forward and high up, and the wings and centre sections are so arranged to give the least possible interference with the view above and below. Two types of Jupiter engine are entirely interchangeable when desired. High speeds are maintained at altitude, whilst the rate of climb and the ceiling are exceptional. The stability and controllability of the machine is excellent, and the balanced portions of the elevators and rudder are shielded and give light control loads at all flying speeds. The ailerons are of the patented "Bristol" Frise type, which minimise yawing moments when operated. On the ground, the machine is easily and comfortably manœuvred by reason of long travel oleo legs attached to the top of the fuselage, and a swivelling tail skid. Detachable fairing panels and doors have been so arranged that every mechanical portion may be readily inspected.

THE BRISTOL AEROPLANE CO., LTD.—FILTON, BRISTOL.

Telegrams: "Aviation, Bristol." Telephone: Bristol 3906.

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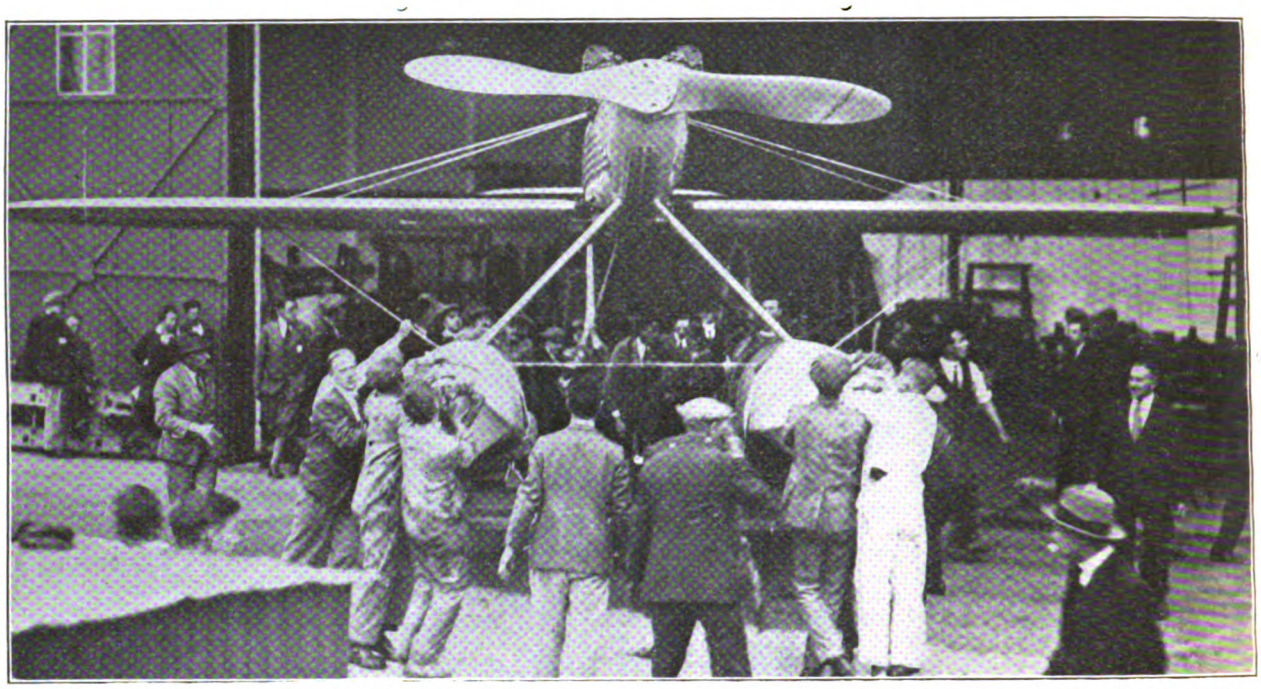
OUR SCHNEIDER TROPHY DEFENDERS.—I.



THE BIRTH OF A DEFENDER.—The first Supermarine Rolls-Royce S-6 coming out of the Supermarine Works for the first time.

On Aug. 12 a party representing the technical and general Press was allowed to visit Calshot Air Station to view the first of the new aircraft built to compete for the Schneider Trophy. Originally the idea was that one Supermarine Rolls-Royce S-6 and one Gloster Napier VI should be on view, but unfortunately the Gloster VI was not ready in time to reach Calshot on this date.

The party, as guests of the Supermarine Aviation Works Ltd., the Gloster Aircraft Co. Ltd., Rolls-Royce Ltd., and D. Napier and Son, Ltd., was transported from London to Southampton and from Southampton to Calshot by Southern Railway and chars-à-bancs respectively.

All the material equipment of the High Speed Flight, with the exception of the Gloster VI, was on view. A Fairey Fly-catcher (Jaguar) was in the air when we arrived, about 11.30 hrs., and the Avro Avocet (Lynx) was in one of the sheds. These two machines have been used as the initial training seaplanes of the High Speed Flight and are still used for general flying.

At the base of Calshot Castle were two Gloster IV biplanes (Napier) and at the head of the slipway alongside was the Supermarine S-5 (Napier). These machines, actually built as competitors for the 1927 Schneider Trophy contest, have acted and are still acting as the advanced training machines for the pilots of the High Speed Flight for this year's contest.

Between them the two Glosters and the S-5 have covered about 60,000 miles. This may give some idea of the amount of flying the team has been doing.

At the head of the main slipway was the Supermarine

THE BAPTISM.—The first S-6 takes the water for the first time.

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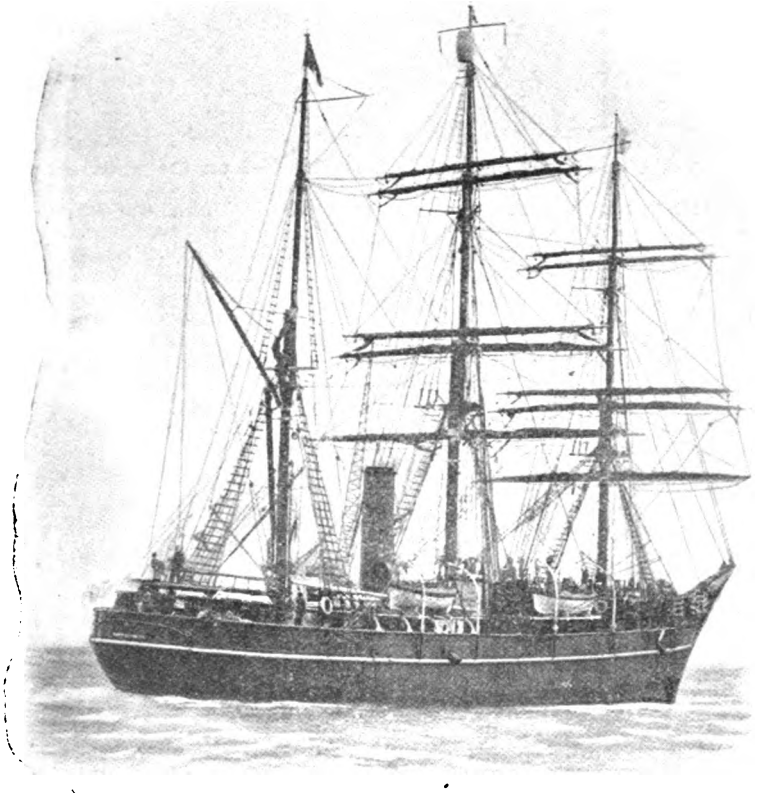
"The DISCOVERY" TAKES A MOTH WITH HER



The famous barque, "The Discovery," which has recently set out on a voyage to the Antarctic under the leadership of Sir Douglas Mawson, F.R.S., B.E., carries with her a Gipsy Moth Seaplane. The Machine will be used for observation and photographic work, and a quickly interchangeable ski undercarriage forms part of its equipment for operation on snow. There is a wireless receiving set installed in the Moth so that her crew may be called from "The Discovery" when she is out. Her selection for operation over some of the most hazardous territory in the world is yet another instance of the utter confidence inspired by the Gipsy Moth.

DH MOTH

GIPSY MOTH

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Stag Lane Aerodrome,
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Bay-Richmond Building, 372 Bay Street, Toronto 2, Canada
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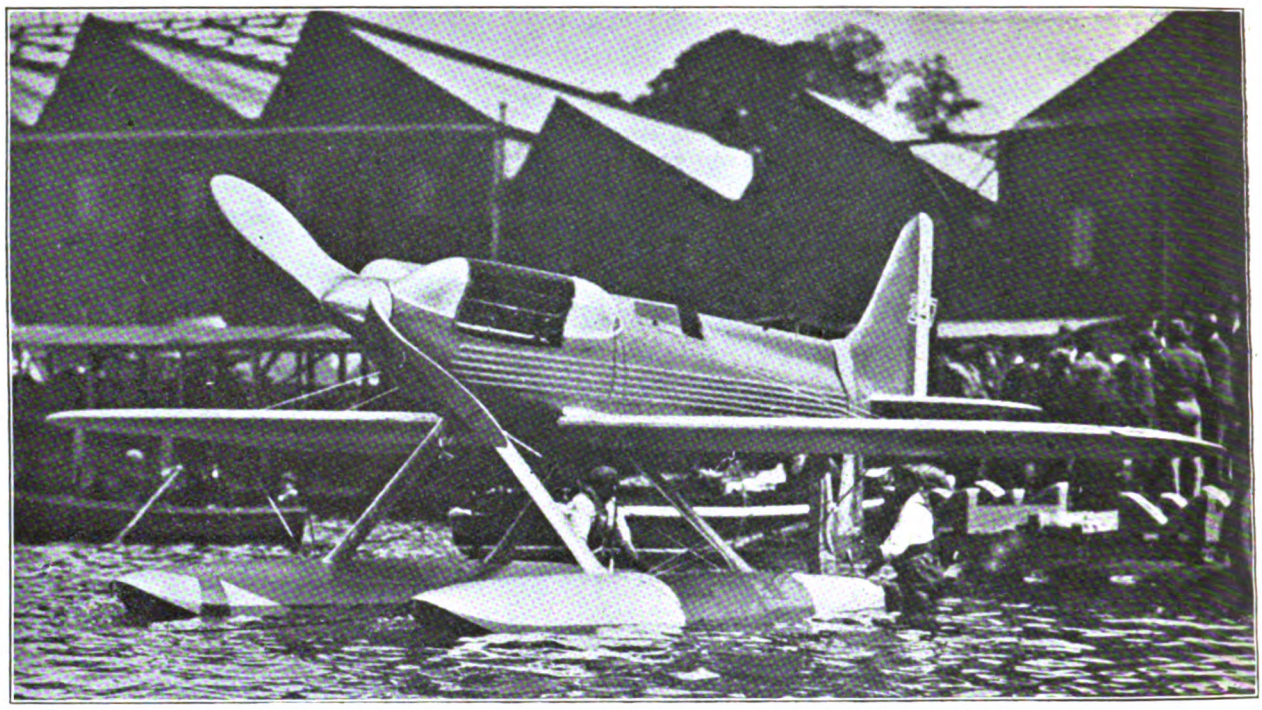


A DEFENDER AFLOAT.—The first S-6 on the water for the first time.

S-6 (Rolls-Royce). This is the first of this year's competitors to be seen in public,—and a very beautiful job it is.

The S-6 is a low-wing all-metal monoplane with a Rolls-Royce "R"-type engine, specially developed for racing purposes. It is a direct descendant of the S-4 which in 1925 put up a World's Seaplane Speed Record of 226.6 m.p.h., and of the S-5, which in 1927 won the Schneider Trophy contest at 281.65 m.p.h., and in 1928 averaged 319.5 m.p.h., the fastest speed ever recorded over the official 3 km. course,—though not a World's Record as it did not beat the F.A.I. record by a big enough margin.

Compared with the Napier Lion of 1927-28 the new Rolls-Royce engine is much larger and gives considerably increased horse-power. It is a 12-cylinder 60 degree Vee engine whereas the Lion, as is well known, is a 12-cylinder "broad-arrow," or W, type with three rows of four cylinders each. The S-6 is consequently heavier than its predecessor although its overall dimensions have not been greatly increased. As the present machine is slightly larger it should be more seaworthy without losing anything of its flying qualities or manœuvrability. Moreover, the ratio of weight to horse-power of the S-6 is appreciably better than that of the S-5.

The general lines of the fuselage differ from those of the S-5 owing to the different type of engine fitted, and these lines can be seen better in the photographs than they can be described. The flat top line of the fuselage and the curved line below are noticeable.

Constructionally the machine has many novel features of which the following are the most noteworthy.

Unlike the S-5, which had wooden wings covered with plywood, over which were placed the wing radiators, the S-6 has metal wings and the radiators, which consist of two thicknesses of duralumin with water-space between, are made as a wing covering to take torsional loads. These radiators have a perfectly flat outer surface and add no resistance to the machine. This method saves a considerable amount of weight over previous practice.

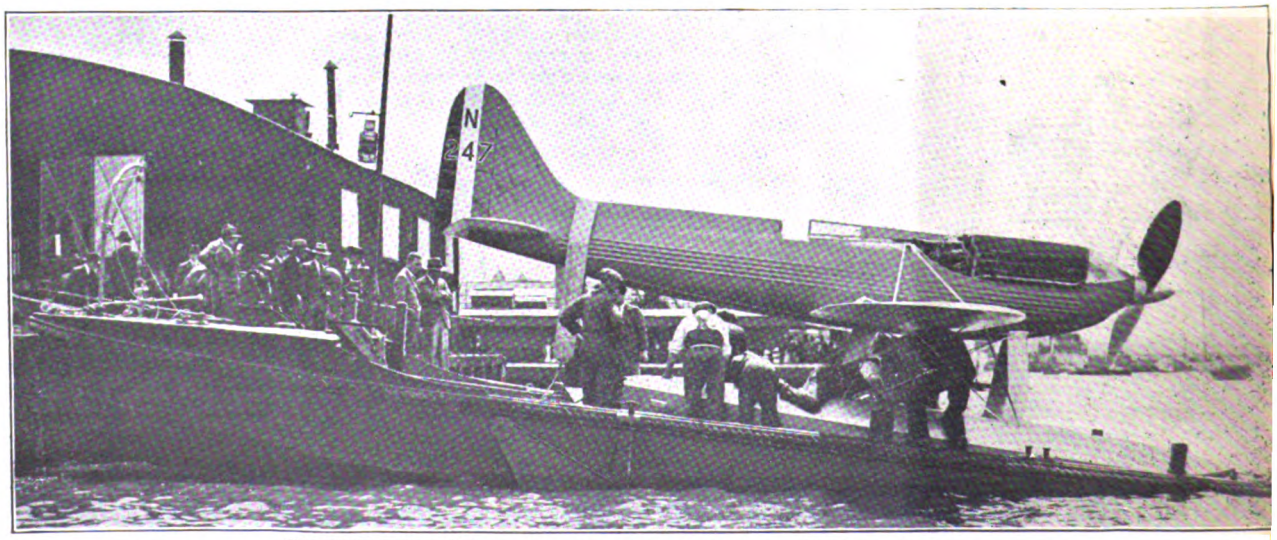
The fuselage is all of metal, and the skin takes practically all the stresses. The front portion of the fuselage acts as an engine-bearer and the skin in this region takes all the engine loads.

In place of the cantilever engine-mounting used on the S-5, the front float struts have been moved forward to provide a support and a substantial saving in weight has been made in this way.

The floats are of duralumin with the exception of the middle portion, which forms the petrol tank and is of steel.

This last-mentioned feature, which was also used on the S-5, rather defeated one newspaper correspondent, who wrote of it thus.—"Among the many novel features of the racing aeroplane is the designing of the floats. Actually they will be huge tanks. In some way which cannot be explained the engineers are floating the body of the S-6 on tanks of petrol."

The oil tank is in the fin. Oil circulates from the engine to this tank through specially-constructed oil-coolers on both sides of the fuselage and is returned to the engine along external ducts on the underside of the fuselage.



ON THE PONTOON.—The first S-6 on her own floating dock.

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India & Back Flight

The spirit supplies for the Duchess of Bedford's remarkable flight to India and back were provided at all points on the route, with the exception of Karachi, by the British Petroleum Company, Limited.

The machine was a Fokker with Bristol Jupiter Engine, piloted by Capt. C. D. Barnard.

"BP"

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ANGLO-PERSIAN OIL CO. LTD

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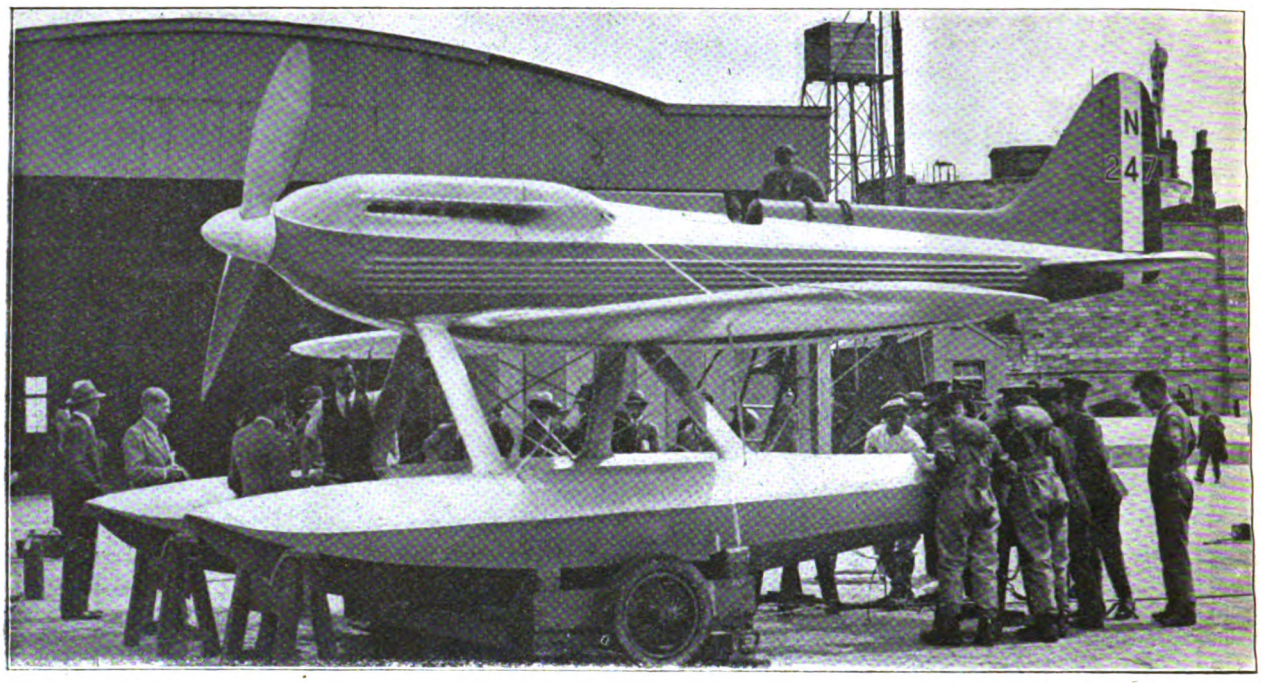
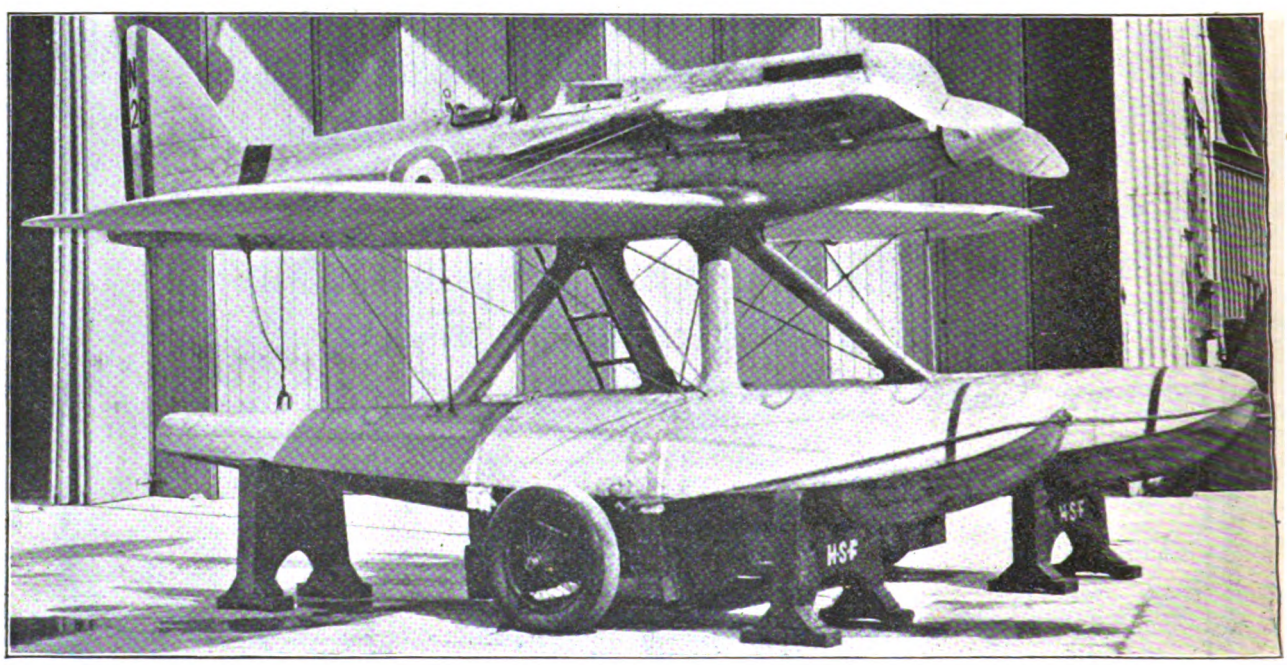
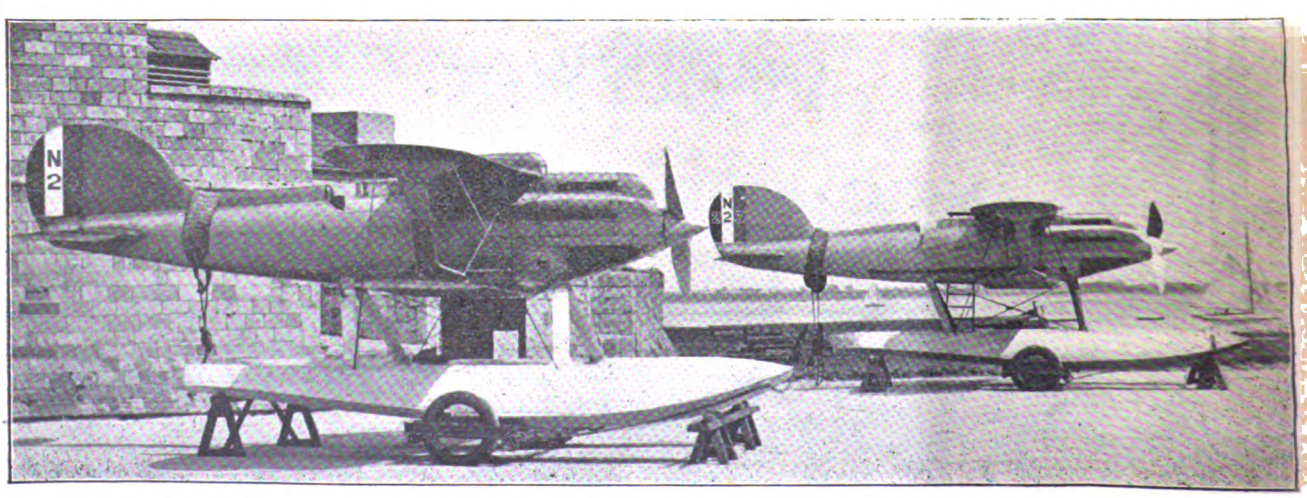


THE SUPERMARINE ROLLS-ROYCE S-6.—The first of the 1929 defenders at Calshot. —("Aeroplane" photograph.)



THE SUPERMARINE NAPIER S-5.—The 1927 winner which is now being used as a training machine. —("Aeroplane" photograph.)



THE GLOSTER NAPIER IV BIPLANES.—The two modified 1927 racing biplanes now being used as training machines. —("Aeroplane" photograph.)

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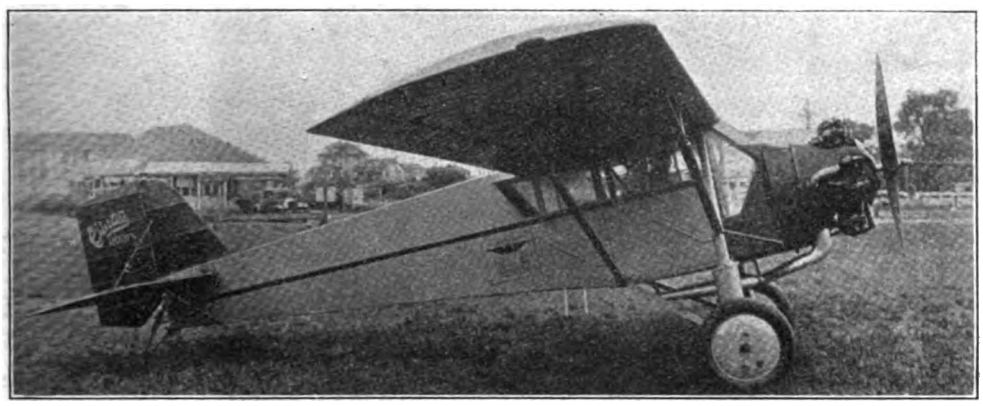

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having exceeded all previous records for sustained flight by more than a week, was functioning normally in all respects, and in good condition.

This world's record was made with equipment emblematic of the standard of

CURTISS products covering all types of civil and military aircraft and engines, that has maintained

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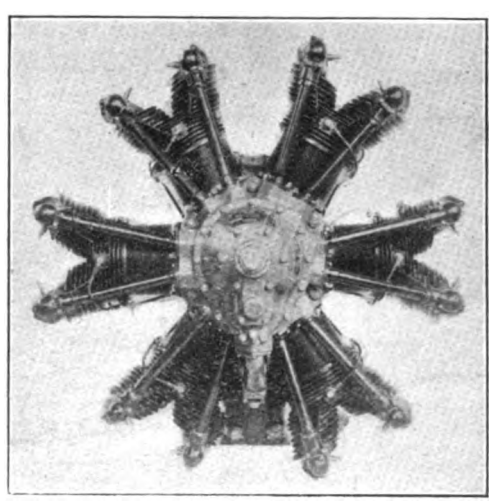
the leader for more than twenty years in the design and manufacture of aeroplanes and motors.



THE CURTISS "CHALLENGER" ENGINE.

The Curtiss Aeroplane Export Corporation,
27 West 57th Street New York City

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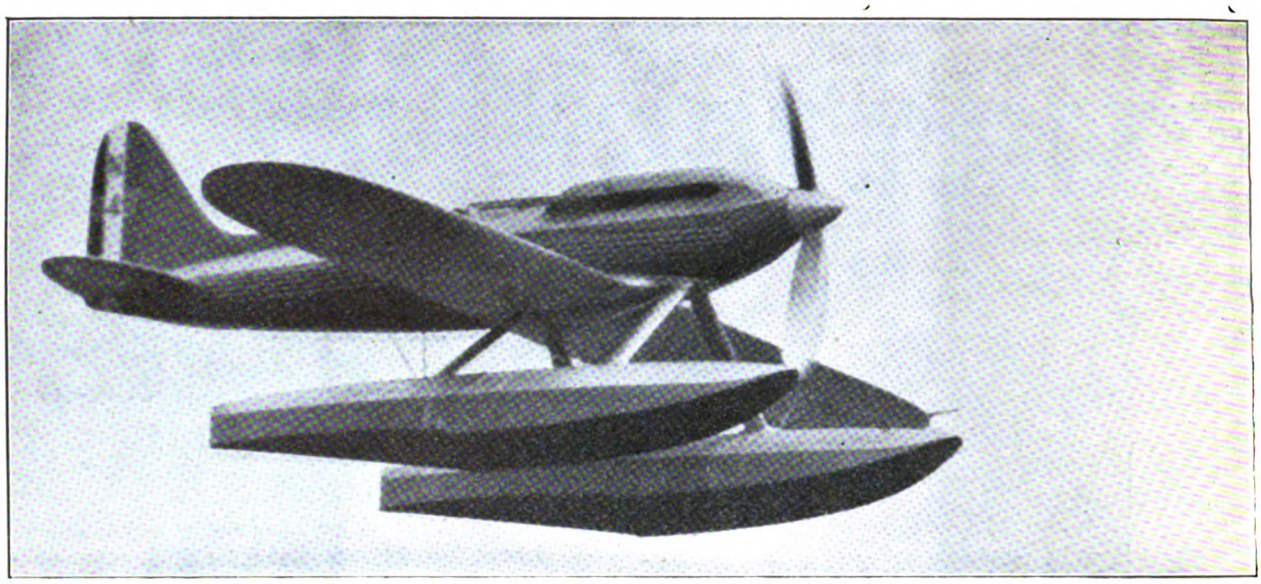

IN THE AIR.—The first S-6, photographed from Calshot Castle on Aug. 12.—(*"Aeroplane" photograph.*)

The Rolls-Royce "R" engine is a direct descendant of the "H" type but the normal output of 830 h.p. of the latter type has been considerably increased in the racing engine. This result has been achieved by, among other methods, the fitting of a special supercharger of new design.

Much has been done to reduce frontal area. The engine has been produced in the closest co-operation with the Supermarine Company and a fuselage shape has been adopted which, taking into consideration the power output of the engine, gives promise of lessening the head-resistance by a great deal, as compared with previous racing types.

The airscrews for use by the S-6 have been designed and constructed by the Fairey Aviation Co. Ltd., and also by the Supermarine Company under Fairey-Reed licence.

Special pontoons have been built to transport the seaplanes from the base at Calshot to any suitable piece of smooth water from which they can operate. These pontoons are like broad flat boats, so shaped that they tow easily, are built of steel and are 42 ft. long and about 14 ft. wide.

The bows are shaped like those of a fast launch and the remainder of the pontoon is somewhat like a floating dock, with a water-tight deck low down, and side walls.

Arranged in this open part is a steel platform running on rollers, at an angle to the water, so that, as it is rolled out beyond the stern of the boat, the platform sinks deep enough to allow the seaplane to be floated over it. When the seaplane is in position, the platform is hauled up by a winch till the machine is safely housed inside the pontoon.

The engine in the machine can be run up while it is on the pontoon, and when all is ready, the platform is run out and the seaplane is afloat with engine running ready to take off.

To withstand the thrust of the airscrew when the engine is being run up, heavy mooring gear and a powerful capstan to operate it are needed.

With the seaplane on board, the pontoon is towed to a suitable spot, the anchor is dropped, the engine in the seaplane is started again, and the machine is then put afloat. The pontoon remains at anchor ready to take the machine on board again and return it to its base.

The pontoons also carry a supply of fuel and lubricating oil, compressed air and other means of starting the engine, and all the accessories required for operating the seaplanes.

There is also a cabin in which the pilot can rest or change his clothing, and in which meals can be cooked and eaten in comfort.

When the visitors arrived Flg. Off. R. L. R. Atcherley was aloft on the practice Flycatcher. This comparatively staid aircraft—a single-seat fighter shipplane of considerable age as a type—was being handled in a manner which made one think that it had hitherto hidden its light under a bushel. With two long duralumin floats, which could not have helped it much, the machine was made to loop, roll, roll off the top of a loop, spin upwards and generally steal all the gags of the latest high-performance landplane fighters. It was a very pretty exhibition.

While the fly-catching exhibition was in progress Flg. Off. H. R. D. Waghorn took off on the Supermarine Napier S-5 and gave an emotioning exhibition of speed flying over the Supermarine Rolls-Royce S-6 and the neighbouring land and water, while the latter was having its engine run up.

In the meantime the S-6 in its resplendent Supermarine blue-and-silver finish was being submitted to examination by camera lens, movietone ear and "expert" eye. The result of this inquisition should have been fairly well broadcast by the time this appears in print.

ON THE WATER.—Sq. Ldr. Orlebar after alighting in the first S-6.

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A characteristic of

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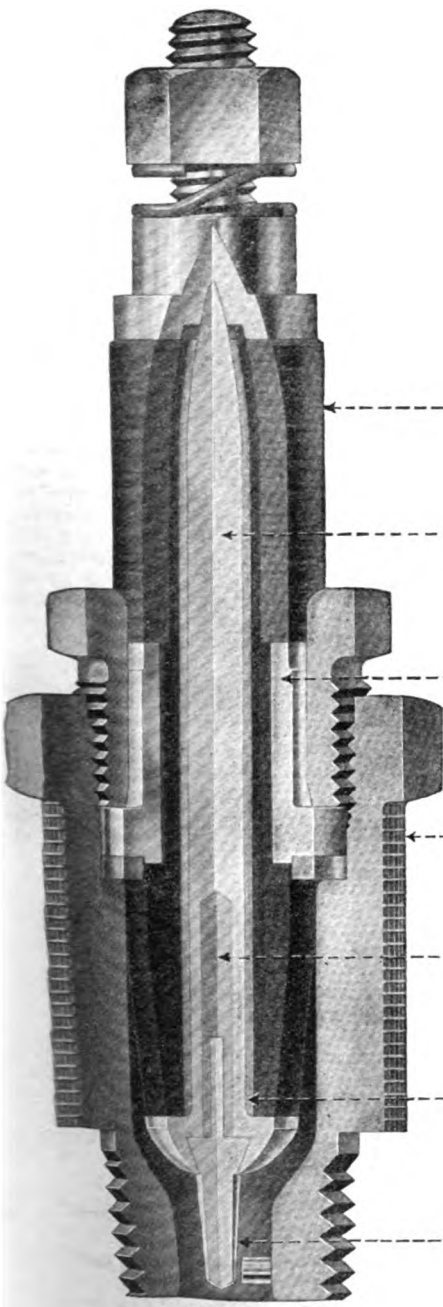
AVIATION PLUGS

is that they will withstand overheating of the engine for short periods without any detriment.

The patented construction incorporated in the Lodge A30 and A40 designs gives a wider range of resistance to heat and oil than is obtainable in any other make of plug.



PATENT 308435.

Illustration of the Lodge A40 partly sectioned to show the construction.

On A.I.D. Air Ministry Approved List.

Descriptive leaflet on request to:

LODGE PLUGS LTD., RUGBY, ENGLAND.

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After a short run-up the engine was switched off and Sq. Ldr. A. H. Orlebar, the officer commanding the High Speed Flight, climbed into the cockpit, which act led to further activity of the Press photographers.

The S-6 was then walked down the slipway, hitched-up to a motor boat and towed out into the fairway.

When well out of the shipping passage on the far side of Southampton Water the motor-boat unhitched and went alongside to start up the Rolls-Royce engine. In an incredibly short time the S-6 was under way and in from 25-30 seconds it was in the air.

Sq. Ldr. Orlebar flew round for about a quarter of an hour, giving a very convincing demonstration of the machine, although he had the engine nothing like all-out.

A comparison of the difference in sound between the S-5 and S-6 was interesting. The S-5 has a scream which is quite peculiar to itself. The S-6 has a much deeper-throated roar, and both machines emit that piercing whine after they have passed. This was more pronounced with the S-5.

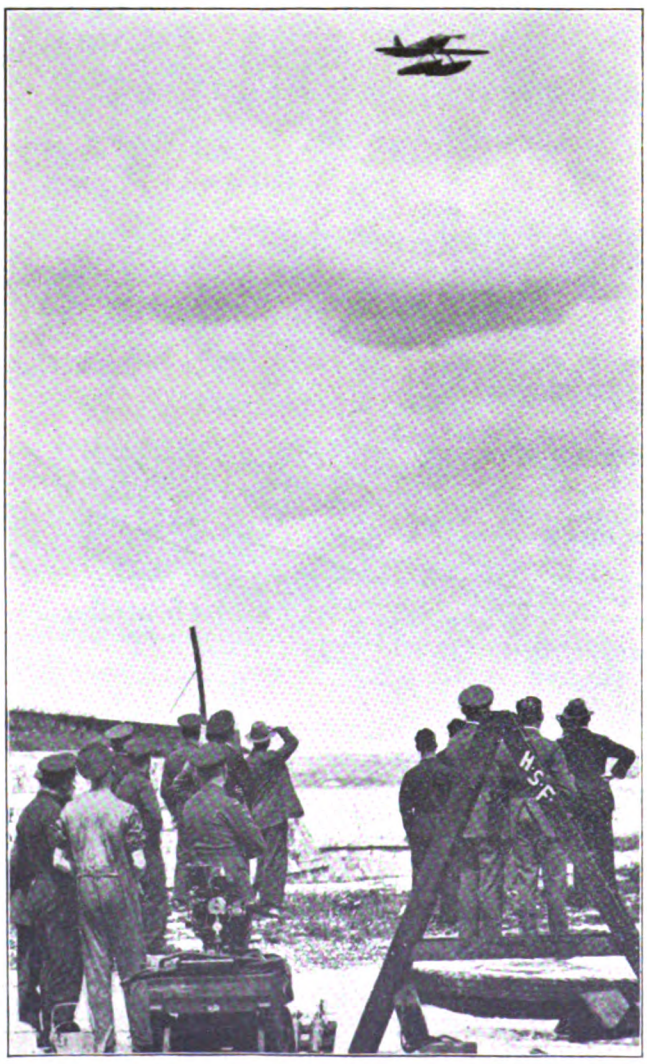
Both machines appeared to handle equally well in the air and are clean on the water both in taking off and alighting.

After the S-6 had alighted the visitors adjourned to a buffet lunch.

After lunch the two Gloster IV's took the air. The first machine to take-off was piloted by Flg. Off. Atcherley. Unlike the Supermarine method of being towed out to a take-off position, the Gloster biplanes were started up on the station and eased down the slipway by winch and taxied straight off their cradles.

By this time quite a smart breeze was blowing, but nevertheless the pilots showed no hesitation in taxying down and cross wind across the shipping lines and even dodging round shipping, which showed that the Gloster IV's are extremely manœuvrable on the water.

The Gloster IV's have been modified for practice purposes by having their top planes raised so as to rest on the cowling behind the central cylinder block, with splayed-out struts on either side to support a centre-section. This modification seems to have made little difference to the performance, whereas it has provided the pilots with a much better view.



THE UNKNOWN QUANTITY.—The first S-6 in the air.

A TAMED TERROR.—One of the Gloster IVs (Napi Lion) of 1927, now used as a practice craft.
("Aeroplane" photograpl

While the first Gloster IV was in the air an alien visito to wit a Vought Corsair two-seat shipboard seaplane, whic forms the aircraft equipment of the *U.S.S. Richmond*, a American light cruiser, moored above Calshot, came flyin over the station. This machine, however, showed conside ably more respect for the High Speed Flight and th Air Ministry order about flying in the vicinity of Calsh during practice, than a certain D.H. Moth (G-EBYZ), whic hovered about, almost in the literal sense of the term, ve low down immediately over the station.

The second Gloster IV, flown by Flt. Lt. Stainforth, p up one of the most spectacular exhibitions of the day. taxied away from the slipway in a lather of spray, fou itself baulked by a crowded cross-Channel steamer, na gated very skilfully round it and took-off with a very sho run. Flt. Lt. Stainforth's turns were the tightest and pr tiest of anyone's, although in saying this one is not dep ciating in any way the flying of any of the others.

There is no doubt that the High Speed Flight as a wh represent about the finest combination of pilots it is possi to find anywhere in the World.

What struck the more experienced visitors most was t way in which the practice machines, which in 1927 w treated with respect amounting almost to awe, are n handled merely as what our American friends call "c ships," which all members of the team fly impartially a familiarly. One of the Glosters has been looped and rol —after the pilot had carefully worked out its factors safety with the help of a technical officer. And all of th are thrown about in the air just as most pilots use standard single-seat fighter.

In every way the visit was most encouraging to those us who are keen on the success of our team. If only the new machines are up to the quality of the men who to fly them we need have little anxiety about our chan

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"The Survey biplane is in complete skeleton form and is an absorbingly interesting example of Gloster metal construction."—"*The Aeroplane.*"

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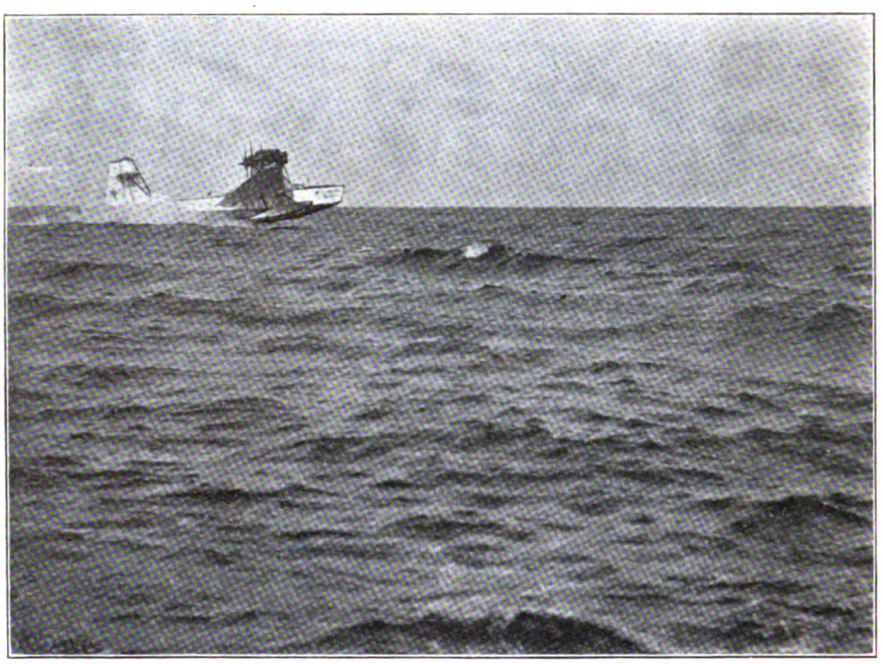

SEAWORTHINESS TEST OF "ROHRBACH-ROMAR."

SEAWORTHINESS !

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For quite a couple of years the Aircraft Industry has been unable to guarantee their Customers any reasonable figures of seaworthiness for flying-boats.

The Rohrbach Metall-Flugzeugbau G.m.b.H. was the first firm, ever since the construction of flying-boats was started by the industry all over the world, to guarantee, for the three "Rohrbach-Romar" ships then under construction seaworthiness in a sea up to force 5 (Beaufort).

On December 12th and 13th, 1928, the "Rohrbach-Romar" underwent her seaworthiness trials, under supervision and to the entire satisfaction of the "Deutsche Versuchsanstalt für Luftfahrt and Deutsche Lufthansa A.G.," who satisfied themselves of the excellent manœuvrability of the ship in rough waves.

ROHRBACH METALL-FLUGZEUGBAU, G.m.b.H.,
BERLIN, N. 65.

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THE ROYAL AIR FORCE.

The London Gazette.

Aug. 6.

Royal Air Force.

General Duties Branch.—Sq. Ldr. J. Everidge, M.C., is placed on the retired list (Aug. 5). Lt. J. D. Ainger, R.N., Flg. Off., R.A.F., relinquishes his temp. comn. on return to Naval duty (Sept. 7, 1928). (Substituted for the notification in the *Gazette* of Sept. 11, 1928.)

Reserve of Air Force Officers.

General Duties Branch.—The following are granted comns. in Class A.A. (ii) as Plt. Offs. on probation:—D. S. Clarke (July 17); C. Bland (July 18); F. H. Peers (July 22); G. U. Hayns (July 24). W. A. W. Fitzsimmons is granted a comn. in the Special Reserve as a Plt. Off. on probation (July 1). The following Plt. Offs. on probation are confirmed in rank:—W. H. Bigg (July 22); C. H. Carter, A. F. Fleetwood-Lawton (July 30); H. C. Usborne (July 31).

The following Flg. Offs. are promoted to the rank of Flt. Lt. (Aug. 6):—A. J. P. Hytch, W. A. Mackay, D.C.M., B. R. Millar, H. D. Davis, A.F.C., G. M. Cox, M.C.

Plt. Off. M. E. Morris of the Special Reserve is promoted to the rank of Flg. Off. (May 14); Plt. Off. B. N. H. Thornely is transferred from Class A.A. (ii) to Class C (Aug. 3); Flg. Off. L. G. A. Kirchner is transferred from Class C to Class A (July 17). The comns. of the following Plt. Offs. on probation are terminated on cessation of duty:—W. G. Eatherley (June 7); E. S. Kennedy (July 17).

Auxiliary Air Force.

General Duties Branch.—No. 600 City of London (Bomber) Squadron.—The following to be Plt. Off.:—G. W. Bennett (June 5).

No. 601 County of London (Bomber) Squadron.—The following to be Plt. Off.:—The Hon. George R. Ward (June 27).

Appointments.

Week ending Aug. 12.

General Duties Branch.—Wing Commanders J. T. Babington, D.S.O., to R.A.F. Depot, Uxbridge, 6/8. A. ap Ellis, C.B.E., to Air Ministry (C.A.S.), 27/7. A. C. Winter, O.B.E., to R.A.F. Depot, Uxbridge, 27/7. Flight Lieutenants B. K. D. Robertson, A.F.C., to H.Q., Coastal Area, 1/8. G. D. Daly, D.F.C., to No. 1 School of T.T. (Apprentices), Halton, 29/7. A. J. Warwick, to H.Q., Wessex Bombing Area, Andover, 1/8. H. A. Hamersley, M.C., to R.A.F. Base, Calshot, 1/8. F. G. Gibbons, D.F.C., to No. 5 F.T.S., Sealand, 1/8. R. A. B. Stone, to No. 1 Air Defence Group, 1/8. N. Carter, to Station H.Q., Donibristle, 1/8. C. J. Southam, to School of T.T. (Men), Manston, 1/8. W. A. Tattersall, to No. 21 Group H.Q., West Drayton, 1/8. A. E. Paish, to No. 2 F.T.S., Digby, 1/8. E. W. Broadberry, M.C., to Home Aircraft Depot, Henlow, 1/8. E. C. Dearth, to Home Aircraft Depot, Henlow, 1/8.

Flying Officers G. D. Green, to M.A.E.E., Felixstowe, 1/8. H. M. G. Parker, to A.A.E.E., Martlesham Heath, 1/8. J. H. McC. Reynolds, to M.A.E.E., Felixstowe, 1/8. D. V. Ivins and W. G. Cheshire, to Home Aircraft Depot, Henlow, 8/7. C. H. Tighe, P. S. Bloskey, H. E. Nowell, G. R. Beamish, L. W. Cannon, T. H. Carr, R. Costa and G. H. Shaw, all to Home Aircraft Depot, Henlow, 1/8.

Air Cadetships.

The following are declared by the Civil Service Commissioners to be the successful candidates at the competition held in June, 1929, for admission to the Royal Air Force College, Cranwell. Their admission is conditional on their having passed a medical examination.

The names are in order of merit:—

Oulton, W. E.; Evans, M. H. L., Diack, P. G. A.; Moriarty, D. W. R.; Drew, P. E.; Chesterman, H. W. A.; Johnstone, A. C.; Ingham, E. C.; Macnair, D. I. P.; Stainthorpe, W. W.; McIlwaine, A.; Berry, P.; Stokes, F. E.; Barnett, C. A.; Ling, C. W. M.; Macdonald, J. R.; Welch, W. P.; Turner, W. H. N.; Fawkes, E. H.; Andrews, L. V.; Brown, L. F.; Hooper, L. M.; Shearn, A. C.; Hutchinson, D. L. R.; Halliday, N. A. R.; Goring, C.; Fletcher, H. B.; Read, G. J. L.

Short Service Commissions.

The Air Ministry announces that during the next few months about 100 officers will be required by the R.A.F. for flying duties under the short service commission scheme. Applications are accordingly invited from well-educated candidates of good physique who are between the ages of 18 and 25.

Selected candidates are required to appear before the Interview and Medical Boards at the Air Ministry, London. If accepted they are granted short service commissions for five years' service on the active list and four years on the reserve.

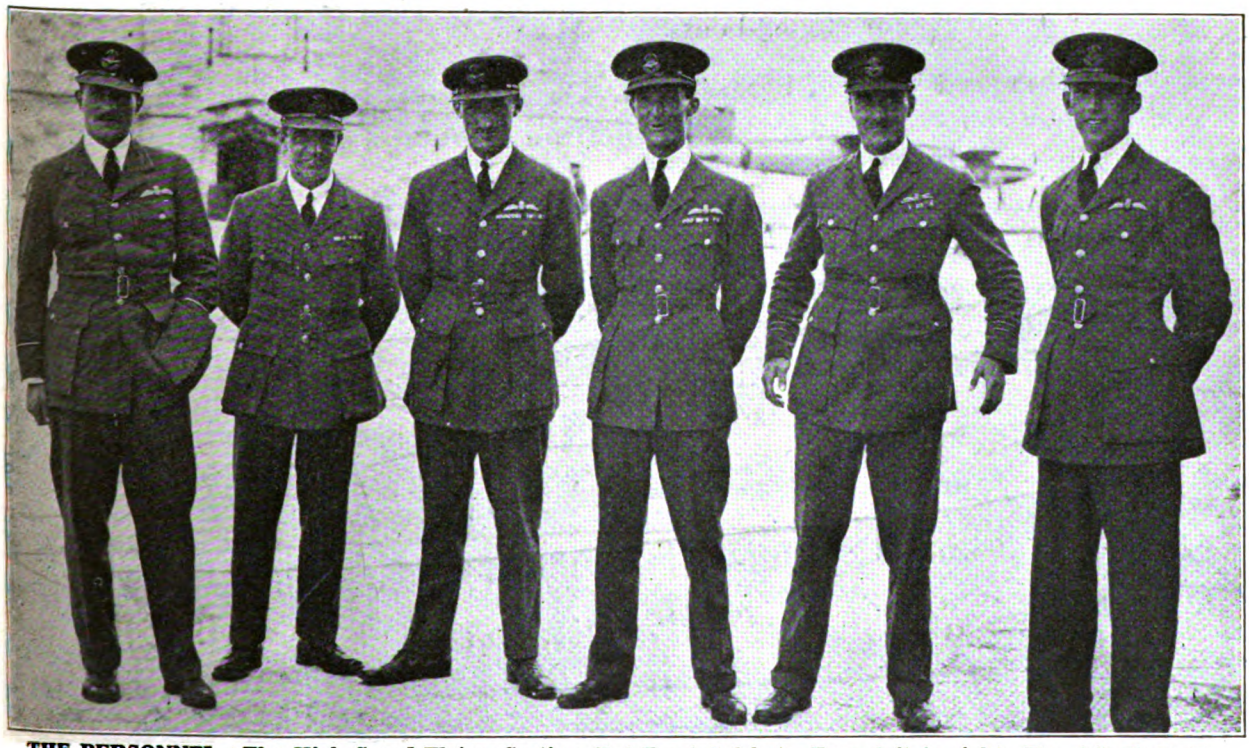
During their period of service short service officers have opportunities and facilities for study with a view to preparing themselves for civil life and assistance is given to them in seeking employment when they pass to the reserve. A competitive examination is also held annually and from this a limited number of short service officers are appointed to specialist courses in Engineering, Wireless Telegraphy, Armament, etc., with a view to obtaining permanent commissions in the Royal Air Force. About twenty appointments to Medium Service are also offered annually to short service officers, i.e., to serve for a second period of five years on the active list. During this period, however, they are ineligible for the grant of a permanent commission.

Application forms and full details of the conditions of service can be obtained from the Secretary, Air Ministry, Kingsway, London, W.C.2.

Air Communications.

His Royal Highness the Prince of Wales flew to Berck Plage from Hendon on August 9 in a Service Moth of the Communication Flight, R.A.F., piloted by Sq. Ldr. D. S. Don. He returned to London by air on August 14. [Some surprise may be felt that the Air Ministry, which supplies the aircraft which are used by the Prince of Wales, should allow the heir to the Throne to be taken across the Channel in a low-powered single-engined aeroplane without floats or flotation gear. The risk is unduly great, and is all the greater because so far no light aeroplane has yet fallen into the Channel while following the normal course, and such an accident is bound to happen soon, now that so many light aeroplanes cross every week.—C. G. G.]

The Prime Minister flew from Leuchars to Turnhouse in a Service aeroplane on August 10 to attend a conference in Edinburgh with representatives of the Cotton Industry. After the Conference he returned to Lossiemouth by air.



THE PERSONNEL.—The High Speed Flying Section, R.A.F., at Calshot. From left to right: Flg. Off. H. R. D. Waghorn, Flg. Off. T. H. Moon, Flt. Lt. D'A. A. Greig, D.F.C., A.F.C., Sq. Ldr. A. H. Orlebar, A.F.C., Flt. Lt. G. H. Stainforth, Flg. Off. R. L. R. Atcherley.

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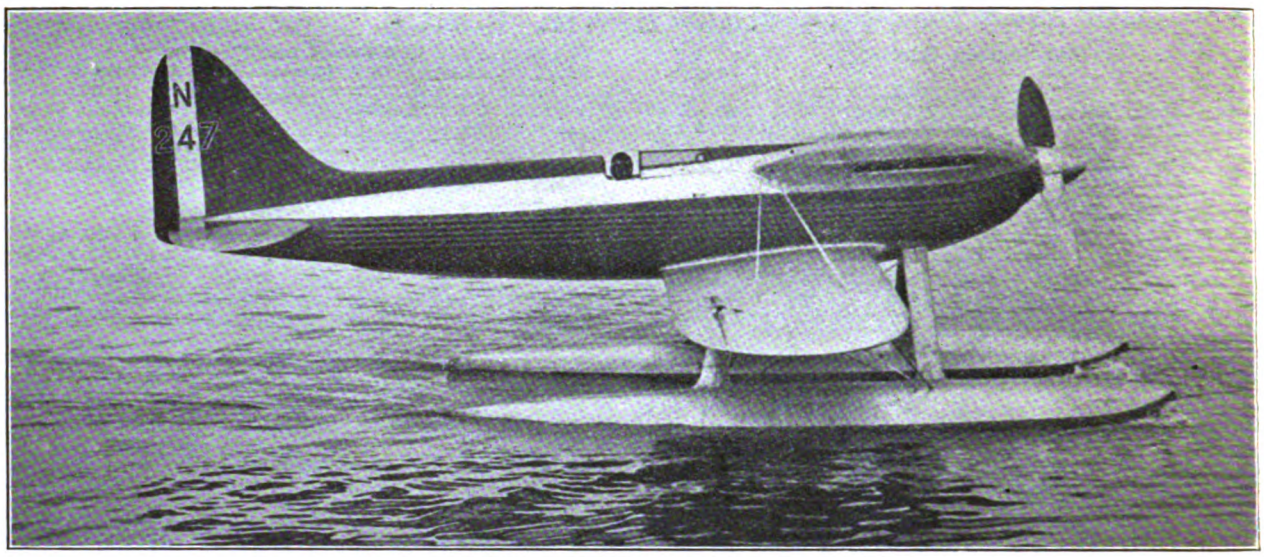


AFLOAT.—The Supermarine Rolls-Royce S-6 on the Solent.

The Schneider Trophy Contest.

Special arrangements to enable R.A.F. personnel to watch the contest for the Schneider Trophy are contained in an Air Ministry Weekly Order, extracts from which are:—

A special car park has been reserved in the immediate vicinity of Fort Gilkicker for holders of tickets of admission to the Fort. Car badges for the park can be had from Woolfe and Lucas, Piccadilly Circus, W.1, price 10s. Officers are advised to buy the badges in advance to facilitate progress through the traffic to the car park.

There is only room for 160 cars in the free car park at Fort Monckton Hutments, half a mile from Fort Gilkicker. When this park is full cars will be parked on the R.E. Recreation Ground at a charge of 2s. 6d. per car.

Admission to the two car parks will only be granted to cars bearing the appropriate car badge. These can be had free of charge on application by C.O.s of Units for the number required, direct to the Secretary, Gilkicker Committee, No. 10 Group, R.A.F., Lee-on-Solent. All applications must arrive by Aug. 1.

Arrangements have been made for free admission without a ticket of sailors, soldiers and airmen in uniform to the golf course 1s. enclosure on the foreshore between Fort Monckton and Stokes Bay Pier. Free tickets of admission to this enclosure can also be obtained by each airman for not more than three adult friends and also for any children under 12 years of age.

Application for the total number of tickets required should be made by C.O.s of Units direct to the Secretary, Gilkicker Committee.

There will be a free park for motor-bicycles at Monckton Hutments parade ground, for which no ticket of admission is required for men in uniform.

Sundays at Calshot.

In reply to a letter from the Bishop of Portsmouth expressing fear that the noise of the machines practising for the Schneider Trophy Contest will interfere with church services, the Lord Thomson, Secretary of State for Air, has stated that practice will not take place between 10.30 hours and 12.30 hours on Sundays, and if it should be necessary to hold the contest on a Sunday it will not begin before 14.00 hours.

The London Auxiliary Squadrons.

The two London Squadrons of the Auxiliary Air Forc started their annual summer training on August 3.

No. 600 (City of London) (Bomber) Squadron is trainin at Tangmere, Sussex, this year, the station of No. 1 (Fighte Squadron and No. 43 (Fighter) Squadron of the Regular A Force.

The City of London Squadron is under the command c Sq. Ldr. the Right Hon. F. E. Guest, C.B.E., D.S.O., and i strength in camp is nineteen officers and 101 other rank The Squadron is co-operating with the Regular Squadron and the general experience of all ranks is being increase by visits to the camp of machines from various units.

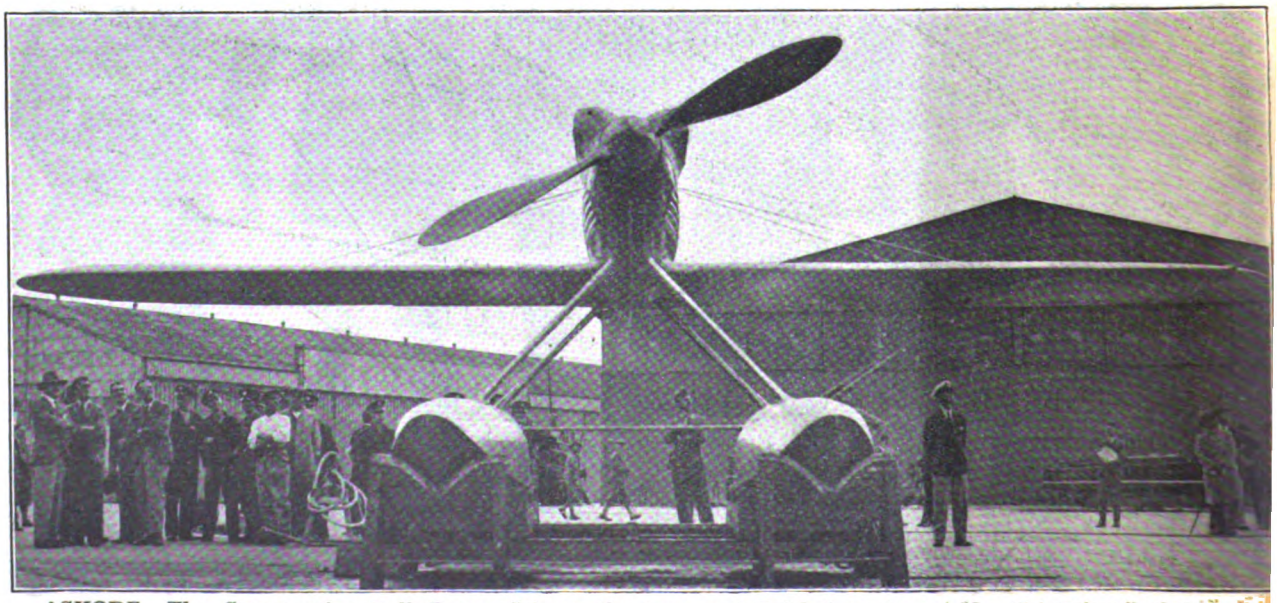
No. 601 (County of London) (Bomber) Squadron is trai ing at Lympne, Kent, and, in the absence of the Lo Edward Grosvenor, who is still on the sick list, is under th command of the Adjutant, Flt. Lt. Thornton, R.A.F. The are twenty-one officers in camp and 110 other ranks. Th Squadron is co-operating with Units of the Regular A Force, and is doing its practice bombing and wireless con munications at Eastchurch.

Both the London Squadrons, in common with the rest the Auxiliary Air Force, are still equipped with Avro Trai ing machines and with D.H. 9as, but the latter are short to be replaced by Westland Wapitis.

Forging the Links.

An officer of the R.A.F. arrived at Rangoon on Aug. 2 complete the arrangements for landing grounds at Mou mein, Tavoy, Victoria Point, and possibly at Mergui a Bassein, in connection with the establishment of an a service between Rangoon and Singapore, one of the air lin on the ultimate Imperial route to Australia.

The aerodrome at Rangoon will probably be complet next March.



ASHORE.—The Supermarine Rolls-Royce S-6 on the tarmac at Calshot on August 12.—(*"Aeroplane" photograph.*)

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Hendon and Olympia

FIRST the R.A.F. Display and then the Aero Exhibition disclosed the dominating position of Armstrong Siddeley aero engines. At these important events Armstrong Siddeley aero engines easily outnumbered other types, being widely fitted in fighting, training, civil, naval and military aircraft of all kinds.

The remarkable popularity of the Armstrong Siddeley engine is due to the excellent service it gives under the severest conditions and to the complete range of standardised engines offered.

In the Armstrong Siddeley range from 80 h.p. to 800 h.p. there is an engine of proved quality, endurance and performance to meet your particular requirements.

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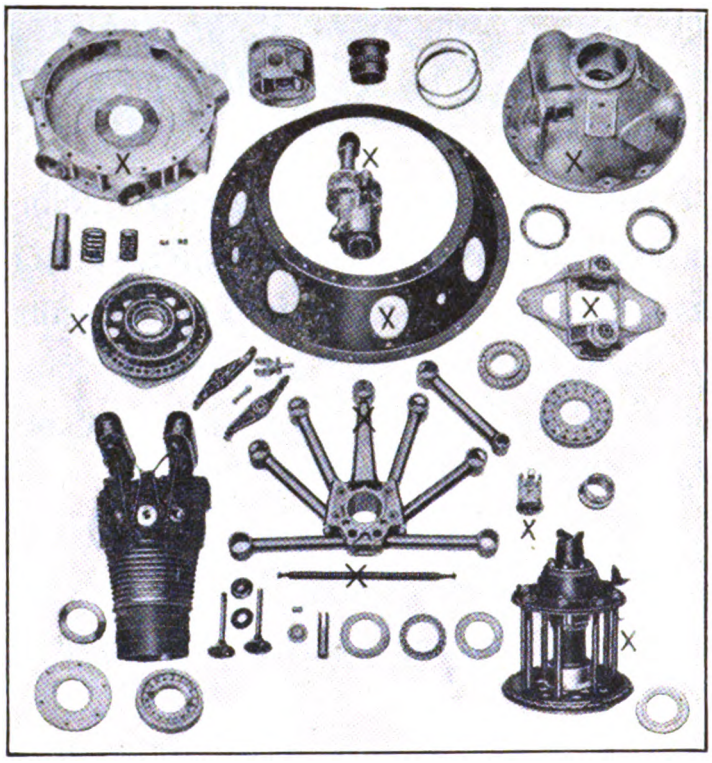

Supermarine 3 Jaguars.
Civil use.

Vickers Vellore-Jaguar,
Civil use.

Svenska Pirate-Lynx,
Sea Reconnaissance.

Nieuport-Lynx, Civil use.

Fokker VII 3M 3 Lynx,
Civil use.

The Value of Standardisation

BY varying the number of cylinders the Armstrong Siddeley Jaguar, Lynx, and Mongoose engines cover a wide field of applications with a high degree of standardisation and interchangeability of parts. The parts marked with a cross are interchangeable on the Jaguar and Lynx, the other parts being interchangeable on all three engines. The varied uses of these engines are shown by the illustrations of aircraft in which they are fitted.

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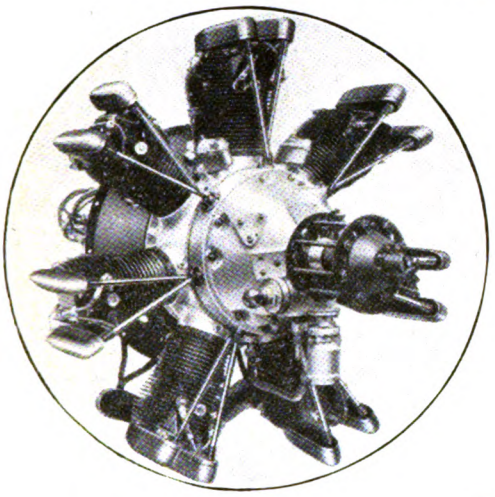
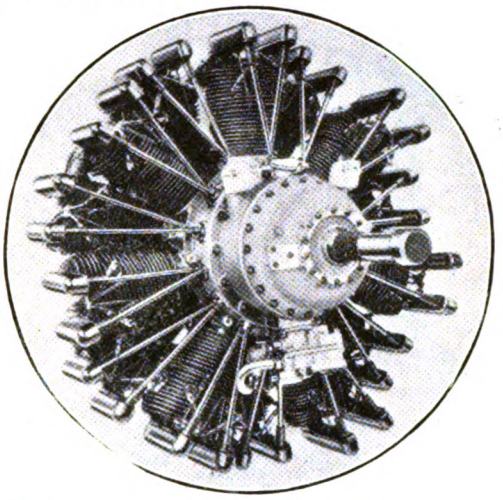
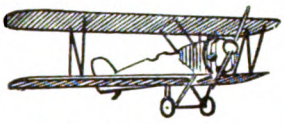
ARMSTRONG SIDDELEY
ENGINES



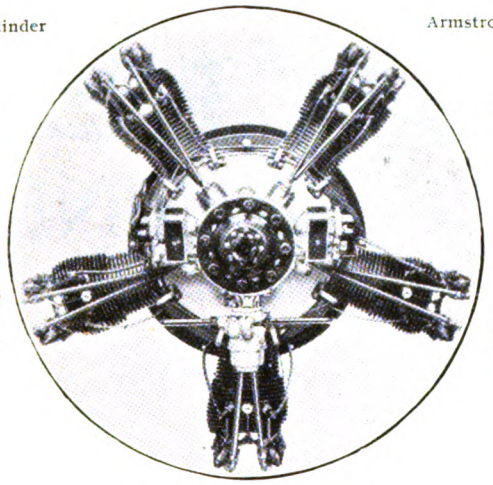
Armstrong Siddeley 7-cylinder
215-230 Lynx.



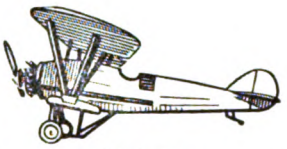
Armstrong Siddeley 14-Cylinder
385-440 Jaguar.



Hawker Tomtit-Mongoose,
Land Training.



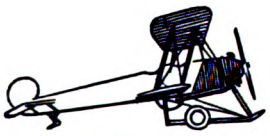
Armstrong Siddeley 5-cylinder
150-165 Mongoose.



Siskin-Jaguar,
Land Fighter.

Fokker-Mongoose, Land
Training

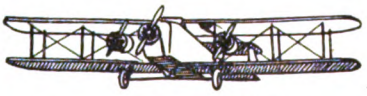
Atlas-Jaguar, Land
Reconnaissance.



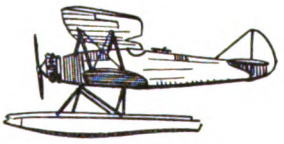
Avro-Mongoose,
Land Training.

Heinkel-Jaguar, Sea
Reconnaissance.

Blackburn Lincock Lynx,
Land Fighter.



Argosy 3 Jaguars, Civil use.



Atlas-Jaguar, Sea
Reconnaissance.

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in the

GLOSTER GREBE

flown by Flying Officer Atcherley won the King's Cup Race at the record speed of 150.3 m.p.h., thus proving its high performance and remarkable dependability under the most difficult conditions.

Armstrong Siddeley engines have won the King's Cup in 1923, 1924, 1925 *and* 1929, *making the fastest time on each occasion.*

ARMSTRONG SIDDELEY ENGINES have an equally remarkable reputation for dependability in civil use, their three years record of reliability on Imperial Airways Ltd. Argosies being unsurpassed by any engine in the world.

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The R.A.F. Display.

An interesting account and criticism of the R.A.F. Display appears in the August 3 issue of the American publication *Aviation*. The writer is Mr. Earl D. Osborn, Contributing Editor of *Aviation*, and recently the proprietor of that paper. He saw much War service in France, from 1915 to 1919, and has learned to fly since the War.

Extracts from the article read thus:—

Our shows are national merely in the sense that they attract fliers and men of the industry from all over the country. The R.A.F. Pageant is national in the sense that it is intimately tied up with national policies and national defense.

The program itself was excellent, giving the detail of what was to be done and why, a brief description of the equipment to be used and the personnel that was to fly it. The crowd was held back from the field by a low picket fence, and the rule that no one was allowed beyond the fence was strictly adhered to. There were no groups of pilots, officials and friends conspicuously blocking people's views. In short, the whole of the arrangements for the handling, placing, and comfort of the visitors was excellently done.

As the field is not a very large one it took good flying to bring in a formation and get it out of the way for the next event. Many English claim that our service squadrons have better planes than theirs, but there is no doubt that the R.A.F. as a fighting force is a machine of tremendous efficiency.

Probably the most impressive aspect of the Pageant was the absolute perfection of its operation. Those who have been in the flying game realise how easy it is not to start on time, but at the Pageant every event was begun exactly on schedule.

Frankly we are a little disappointed in the flying. It did not seem either individually or collectively as good as the show that the Navy staged at Los Angeles last fall. Team-work and discipline were perhaps more evident and it may have had a more practical aspect, but from the spectacular standpoint it was not up to Los Angeles. It is, of course, impossible to judge accurately by eye, but the majority of the pursuit planes did not seem to have the performance of ours either in climb or speed. Many seemed to be able to turn on a shorter radius than ours, but this again is hard to judge.

The Electrical and Wireless School.

The Headquarters of the Electrical and Wireless School closed at Flowerdown at 17.00 hours on Aug. 6, 1929, and re-opened at Cranwell at 10.00 hours on Aug. 7, 1929.

A care-and-maintenance party will remain at Flowerdown until the Station is finally closed.

Manston.

A Station Headquarters was formed at Manston as from July 1, 1929.

H.M.S. "Glorious."

Capt. D. F. Moir, D.S.O., R.N., was appointed on Aug. 7 to the command of the new aircraft-carrier *Glorious*, which is now completing at Devonport. H.M.S. *Glorious* is due to be finished in February, 1930, when she will join the Mediterranean Fleet.

A No. 27 Squadron Reunion.

A former member of No. 27 (Bomber) Squadron, R.A.F., is anxious to arrange a reunion of those who served with the Squadron in India. No definite arrangements have been made at present, but those interested are invited to write to Cpl. H. Adams, No. 1 Section, R.A.F., M.T. Depot, Harlescott, Shrewsbury.

Inter-Services Lawn Tennis.

The Inter-Services Lawn Tennis Championships were held at Wimbledon on Aug. 5 and 6. The Royal Navy won the Championship by beating the Army by one set. The final totals were:—R.N. 9 matches, 19 sets; Army 9 matches, 18 sets; R.A.F. no matches.

The R.A.F. team were:—

SINGLES.—No. 1, Wing Cdr. H. J. F. Hunter; No. 2, Wing Cdr. R. E. Saul; No. 3, Flg. Off. R. E. Hall.

DOUBLES.—No. 1, Hunter and Saul; No. 2, Hall and Flt. Lt. J. Dumny; No. 3, Flt. Lt. E. D. H. Davies and Flt. Lt. C. J. Williamson-Jones.

The R.A.F. Swimming Association.

The following officer has taken over the duties of Acting Hon. Secretary, R.A.F. Swimming Association, from Aug. 8, 1929: Flt. Lt. N. Keeble, D.S.C., D.F.C., R.A.F. Depot, Uxbridge, Middlesex.

A Service Contemporary.

The Planesman, a monthly journal for the Royal Air Force, gives all the latest news from R.A.F. Stations at home and abroad. It also gives comprehensive accounts of sports and athletics and has illustrated articles of topical and general interest. It only costs 6d. a month, and those officers and airmen of the R.A.F. who cannot buy it in their Unit should apply to the Editor, *The Planesman*, R.A.F., Eastchurch, Kent.

TWO NEW BOOKS.

The Air Annual of the British Empire. Sq. Ldr. C. G. Burge. li+734 pp., copiously illustrated. Gale and Polden. From THE AEROPLANE Book Department, Cannon House, Pilgrim Street, E.C.4. 21s. net.

This is the first issue of a reference book which will receive a generous welcome, first, because such a work is needed, and secondly, because the author has discharged his task with marked ability.

All the World's Aircraft deals, as its title indicates, with the aeronautical activities of the World in general, but, owing to the general scheme and intention of that work it does not deal with certain of the particular activities of the British Empire, as does this new annual. Herein lay Sq. Ldr. Burge's chance and right well has he seized it.

We all know that "a new broom sweeps clean" and that the first of a series is often the best. But in its present hands there need be no fear for the future for this book. Its conception is rightly not parochial but Imperial, and the author has succeeded in gaining the services of contributors who have a knowledge of the subject, and are not, let us be truly thankful, "air experts." We can only hope that in the future these will not manage to get their claws or pens into the pages. The author might have been wiser to have omitted his "messages" and "foreword"—a bad book is not improved by such matter and a good one does not need them.

The sections dealing with the Royal Air Force are most interesting, but surely the operational activities of the Service during 1928 deserved more than fifteen lines. If the *R.U.S.I. Journal* can devote considerable space to these each quarter this Annual should be able to do so.

The various technical sections are good and have not wrecked themselves as so many similar articles do—by being mere catalogues and laudations of manufacturers' products. They deal with such varied subjects—airships, insurance, photography, safety, metal construction, engines, wireless, instruments, and so forth. C. G. G. discourses entertainingly and suggestively on "light aeroplanes"—and Sir Alliot V. Roe's reminiscences are interesting—but are there no other pioneers besides "A. V. R."?

The illustrations are good, but was it really necessary to go to the expense of the rotary photogravure plates? The half-tones are good and the plates do not help, because of their thickness, with the binding,—and this is a book which will receive severe handling.

If one may make a suggestion for future editions it is that a bibliography should be included dealing with all the important books, papers and lectures which have been published during the year on aeronautics. Such a list is badly needed. One is published each year in America and is of great value, but it does not deal fully with British aeronautics.

For the rest one thinks that the author has steered clear of his many pitfalls and we wish him all success in his labours to come.—S. G.

Physics of the Air. W. J. Humphreys. xii+654 pp., many illustrations and diagrams. McGraw-Hill Publishing Co. From THE AEROPLANE Book Department, Cannon House, Pilgrim Street, E.C.4. 30s. net.

The first edition of Dr. Humphreys' valuable text-book has been out of print for some time, and so the appearance of a new edition of this original work is welcome, especially as in the meantime the distinguished author has added much new material.

Dr. Humphreys in his capacity as meteorological physicist to the United States Weather Bureau has published many interesting and valuable books on specialised aspects of meteorology, but in the work we have before us he treats of the mechanics and thermodynamics of the atmosphere, atmospheric electricity, meteorological acoustics (this an entirely new addition to the book and a most valuable one), atmospheric optics, and a most exhilarating section on factors of climatic control.

To attempt to review a book of this character, in the ordinary sense, is next to impossible, for the subject he covers is so vast. To appreciate the book in its entirety requires a knowledge of pure applied mathematics and science up to the standard of a Bachelor of Science degree. But this should not deter those who are not so equipped from dipping into the book and emerging richer from the immersion.

There is a great deal in the book which will be intensely interesting to the pilot and observer of aircraft—and the present reviewer, with due temerity, recommends that the Libraries of Squadrons of the Royal Air Force should add it to their collections. To the meteorologist Dr. Humphreys needs no introduction—except to say that this would seem to be the best book he has yet written.—S. G.

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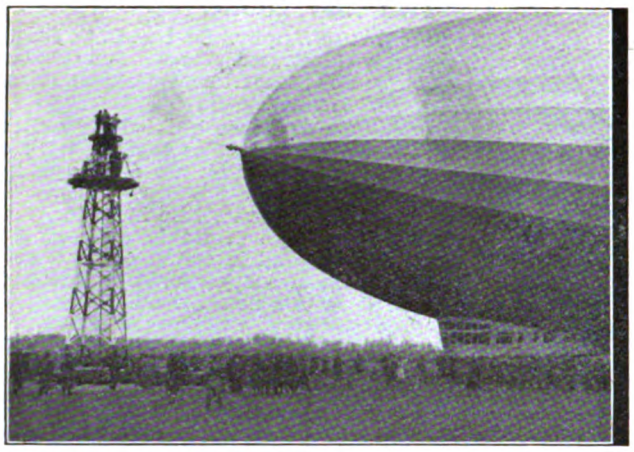


(Continued on opposite page.)

THE SAFETY FIRST COMPETITION.

Mr. Harry F. Guggenheim, President of The Daniel Guggenheim Fund for the Promotion of Aeronautics, announces the acceptance of six new American entries in the International Safe Aircraft Competition. At the same time two British entries—Vickers Ltd. and the De Havilland Aircraft Co. Ltd.—have been forced to withdraw on account of the extreme pressure of work in connection with British Government requirements.

The total number of entries in the Competition is now 16. The new entries, all of whom are American manufacturers, are as follows:—

The Cosmic Aircraft Corporation, Bridgeport, Connecticut; submitting a sesqui-type cabin plane, incorporating a special type of slot and flap in combination; Warner engine.

The Cunningham-Hall Aircraft Corporation, Rochester, New York; submitting a two-place, low wing, semi-cantilever monoplane; high lift wing with special flaps and special control; Genet engine.

This company was organised late in 1928, bringing into the industry a 90-year-old vehicle company, James Cunningham, Son and Co. It plans to produce six-place cabin, all metal, and four-place cabin planes.

The Dare Airplane Company, Detroit, Michigan; submitting an all-metal, two-place, low wing monoplane; Dare variable camber wings, capable of varying the camber in flight; Warner engine.

Fleet Aircraft Inc., of Buffalo, New York; submitting Fleet Model 2 biplane, specially streamlined, and with a newly-designed flap gear on the wing; Kinner engine.

This company is a subsidiary of the parent organisation—The Consolidated Aircraft Corporation of Buffalo—best known for its training planes.

The Pitcairn-Cierva Autogiro Co. of America, Bryn Athyn, Pennsylvania; an American-built Autogiro with such modifications as the Pitcairn Company may find desirable to install to improve the qualities of the plane; Wright J-6 engine.

This company is a subsidiary of Pitcairn Aircraft Inc., which manufactures five types of planes.

The Rocheville Aircraft Corporation, Los Angeles, California; submitting an externally braced, parasol type monoplane with variable camber and variable thickness wing; Hallett engine.

Of the 16 entries in the Competition to date 12 are from the United States, three from Great Britain and one from Italy. The manufacturers remaining in the Competition previous to this announcement are as follows:—

From the United States: Curtiss Aeroplane and Motor Company; Schroeder-Wentworth Associates; Charles Ward Hall, Inc.; Heraclio Alfaro; J. S. McDonnell, Jr. and Associates; and the Brunner-Winkle Aircraft Corporation.

From Great Britain: Handley Page; The Gloster Aircraft Company Ltd.; and Cierva Autogiro.

From Italy: The Societa Italiana Ernesto Breda of Milan.

Major R. H. Mayo, British representative of The Daniel Guggenheim Safe Aircraft Competition, writes as follows:—

I have received a cable from the Daniel Guggenheim Fund for the Promotion of Aeronautics, informing me that the Trustees have decided to close the list of entries for the Daniel Guggenheim Safe Aircraft Competition on September 1, 1929. They have also decided that the closing date for the Competition itself will be October 31, 1929.

You will remember that under the Rules of the Competition the Fund reserved the right to close the list of entries whenever in its opinion sufficient entries had been received to give a reasonable prospect that the object of the competition would be achieved. The decision to close the list of entries on September 1, 1929, has been taken accordingly.

With regard to the closing date of the Competition, you will remember that the Fund reserved the right to advance the date of closure, but the decision quoted above indicates that the Fund will not exercise this right. Any Competitor who presents his entry at Mitchel Field, Long Island, on or before October 31, 1929, will thus be eligible to compete in the Competition and sufficient time will be allowed for such entry to pass through all the tests.

THE GRAF ZEPPELIN.

On August 10 the *Graf Zeppelin* landed at Friedrichshafen at 13.00 hours on its return flight from America. This day was the 61st birthday of Dr. Eckener, the pilot of the ship, and the close friend of the late Count Zeppelin.

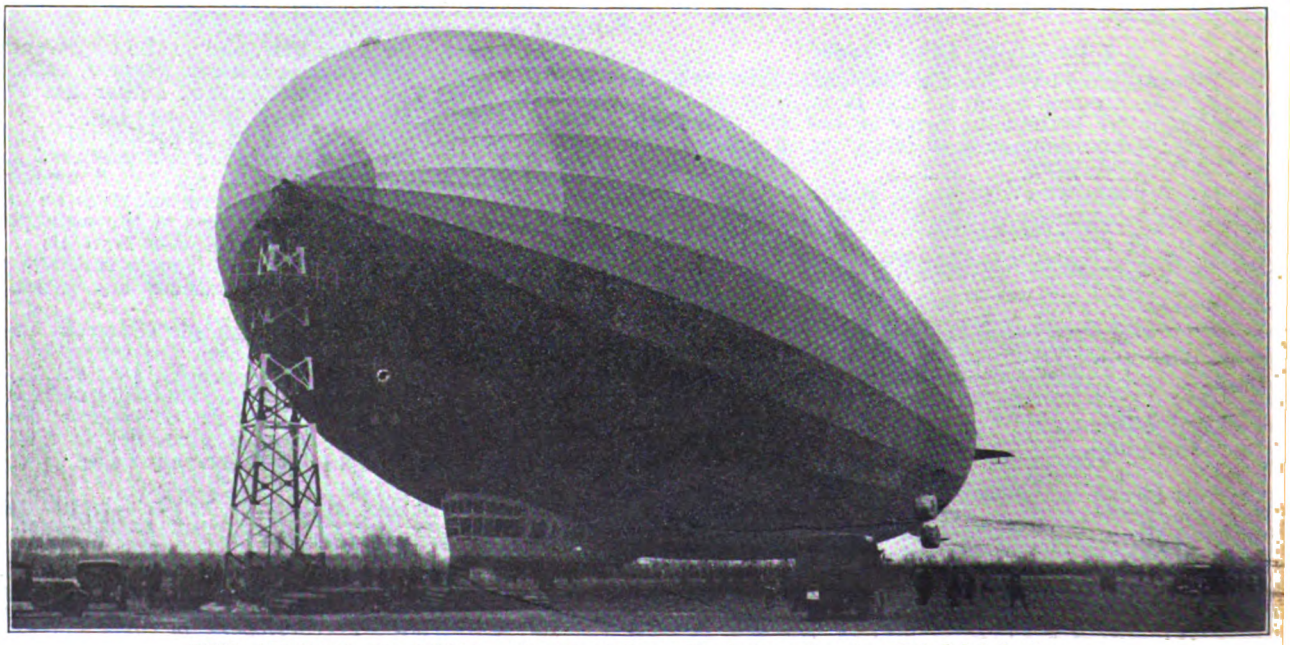
She covered the distance from Lakehurst in 55½ hours, which is the shortest time yet made for an airship crossing in either direction.

The course taken lay over the Azores, then over the Scilly Isles, finally over Paris and thence to Friedrichshafen.

The time taken for the double journey was just 10 days.

Dr. Eckener is making preparations for a World flight and hopes to leave for Tokyo on Aug. 15. His proposed course lays across Russia and Siberia to the southern end of Lake Baikal, and he hopes to reach Tokyo on Aug. 18.

After a few days there the flight will be continued to Los Angeles and Lakehurst, which should be reached by the end of the month.



THE AIRSHIP AT HOME.—The Graf Zeppelin before leaving Friedrichshafen.

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FRENCH AIR POLICE.

According to the Paris correspondent of *The Times*, the French Air Ministry has issued a bulletin warning aviators that there is in existence an aerial police force under the authority of the Ministry of the Interior, which is empowered to deal with infractions of the rules laid down for the proper conduct of flying.

The police machines have orders to prevent, as far as possible, such infractions, and to pursue offenders and call on them to land. Their summons, the equivalent to a shot across the bows, will take the form of harmless projectiles which, on bursting, give off a thick black smoke.

U.S.S.R.—U.S.A.

At 02.52 hrs. on Aug. 8 an A.N.T.-4 monoplane, which, it is believed, is fitted with two Jupiter engines, left Moscow in an attempt to fly to America. It landed at Omsk at 16.48 hrs., having covered a distance of 1,380 miles non-stop.

The machine will cover the following route: Omsk, Krasnoyarsk, Chita, Kharbarovsk, Nikolaevsk, the Aleutian Islands, Seattle, San Francisco and New York, which represents a total distance of approximately 12,000 miles.

At Kharbarovsk a float undercarriage will be substituted for the wheels and the wheels will be replaced at Seattle. The pilots are MM. Shestakoff and Bolotoff.

MODELS OF BRITISH AIRCRAFT.

Those who were unable to visit the International Aero Exhibition at Olympia will be interested to know that a selection of the best models of British aircraft from the Exhibition are being shown, until further notice, at the Royal United Service Museum, Whitehall, S.W.1, from 10.00 hours till 17.00 hours every weekday. The general public are admitted to the Museum for 1s. and members of H.M. Forces in uniform are admitted free.

THE VALUE OF WEATHER REPORTS.

The Daniel Guggenheim Fund for the Promotion of Aeronautics has recently made public its report of the complete success of the trial weather reporting system over the airway between San Francisco and Los Angeles.

The service was sponsored and financed by the fund for the year beginning June, 1928, in co-operation with the Pacific Telephone and Telegraph Company, the Army and Navy Air Services, the Department of Commerce, and the Weather Bureau.

The success of the experiment is indicated by the fact that during that time the crowded airway between Los Angeles and San Francisco was flown without a single accident attributable to weather. In contrast to its value, the cost of operating the entire system, of over 400 miles in length, was found to be nearly equivalent to the cost of one of the three-motored monoplanes carrying passengers over this route.

Final approval was stamped on the experiment by the order issued by the Bureau of Aeronautics of the Department of Commerce and by the Weather Bureau that from July 1, 1929, the service will be assumed and operated at Government expense, and that a service more or less similar will be organised for some of the other airways. The report says:—

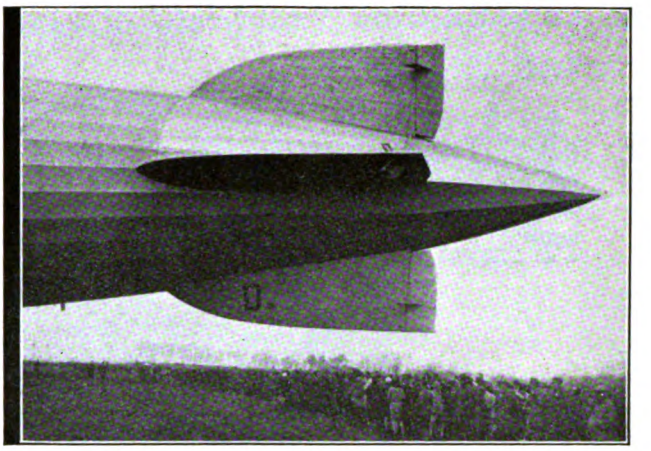
It is obvious that aviation faces the same problem in regard to roadways of the sky as the automobile in its early history faced in regard to the roads on land. The uncertainty as to whether the road ahead was good or bad has been holding back the use of the airplane and retarding the normal development of this industry.

The San Francisco-Los Angeles route was selected for the trial system both because of the variety of weather conditions prevailing in California, and because of the dense amount of air traffic—three passenger and express lines and an air-mail service—already connecting the two cities.

The system consists of four central weather bureaux, one at each of the terminal fields, and two at the intervening ports of Fresno and Bakersfield. These four centres are connected by wire with over thirty subsidiary stations scattered in such a manner as to give comprehensive information of conditions along all possible lines of flight.

By means of a ceiling light or ceiling projector, consisting of a concentrated beam of light which is focussed on the cloud layer, the height and nature of a fog may be measured at night. During the day a small pilot balloon, inflated with hydrogen and known to rise at a given rate per minute, is used for the same purpose by recording the time of its disappearance in the cloud ceiling. The balloon method is likewise used to determine the speed and variability of winds at the various levels, and by taking advantage of a following wind at a certain altitude a pilot can greatly increase the cruising speed of his plane.

Information at the various airports is supplied to the pilot in printed form reports, issued several times daily and designating the speed, height and direction of wind, the visibility and altitude of cloud ceilings, and the general weather conditions prevailing over all the intermediate regions of the route. In addition, maps are provided at the main airports giving a picture of weather and wind conditions in all regions. The pilot is thus enabled to select the more favourable route to his destination.



The Tail of the "Graf Zeppelin" concluded from the opposite page.

The report says further:—

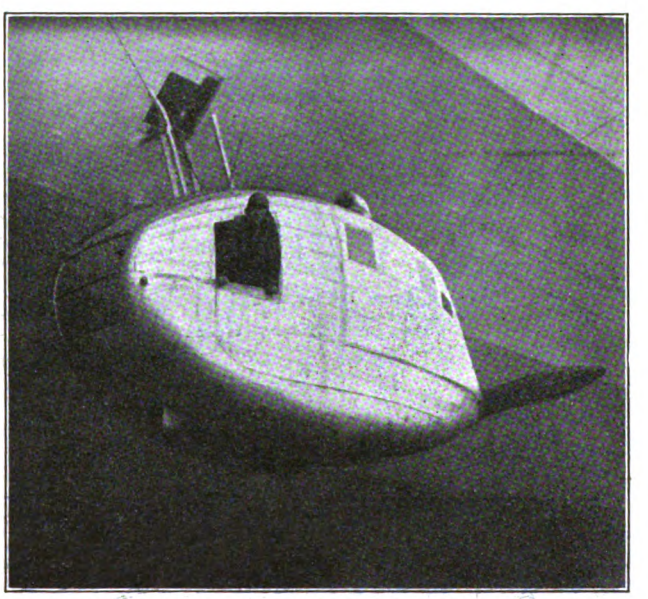
There are those who say that aviation has not yet developed sufficient traffic to justify an intensive meteorological service of this kind. The reply is that aviation during its early stages must have this type of meteorological service if it is to continue to progress. Later, when mechanical aids to aviation are developed to the point where a machine can be navigated in almost any kind of wind and weather, the service in this intensive form may not be so badly needed, but now it is; so much so, that passenger-carrying should be prohibited before a meteorological service is organised along the route or routes to be flown. The meteorological service and other aids should come before the scheduled flying.

As a matter of fact, information supplied by such a service could be used advantageously to aid many organisations and industries, and this has already been demonstrated in California. The information supplied by it has been used by the Automobile Club of Southern California to advantage in advising tourists of the weather and temperature likely to be encountered by them in going from place to place.

Also this system of weather-reporting has proved its usefulness in permitting the issue of accurate rain warnings in the late summer and early fall months when the unannounced coming of rains would destroy millions of dollars' worth of fruit being sun dried on trays in the open. A rain that would drench drying fruit would greatly decrease its grade and render much of it unmarketable. Stacking the trays prevents damage by rain.

Researches have proved that low humidity is a very important factor in the bringing out of high fire hazard and rapid spread of fires. Moreover, wind affects the rapidity of travel or spread of fires. It will be important and valuable information to those supervising the forces engaged in the suppressing of a large fire to know what changes are to be expected within the next several hours in wind, weather and humidity.

Such a service might also give to street and engineering departments in the cities advanced information as to snow-storms, calling for the expenditure of large sums of money for the snow removal. It might also supply valuable information for flood forecasts and could be used very effectively for giving ample warning of the approach of local thunder-storms and wind-storms of tornadic characteristics. It has, in short, a very general benefit for civilisation as a whole.



A POWER-EGG.—A side-gondola of the airship.

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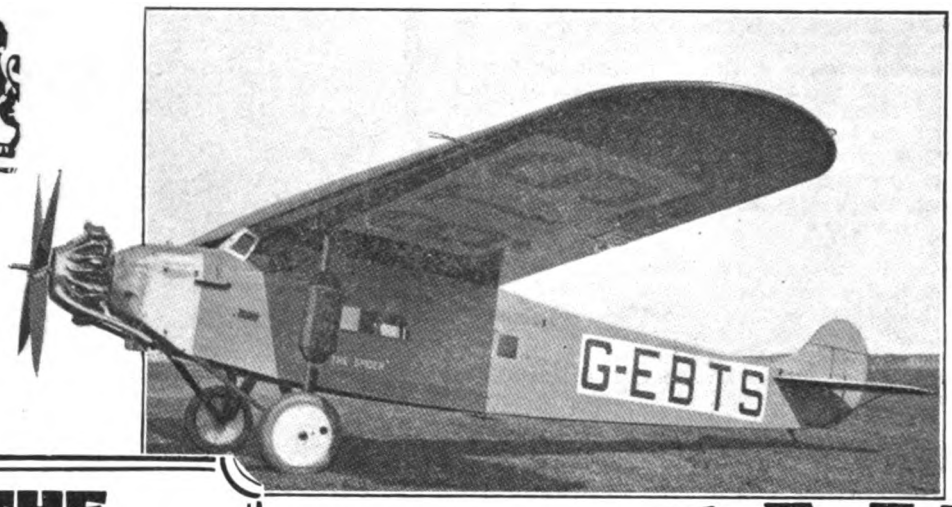

THE BRISTOL JUPITER ENGINE

of the Duchess of Bedford's Fokker Monoplane—"The Spider"—was lubricated with CASTROL during the whole of this record flight.

CAPTAIN BARNARD made his great Flight to INDIA and back

WAKEFIELD on

CASTROL

MOTOR OIL

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For the

Duchess of Bedford's

Flight

K·L·G

SPARKING PLUGS

were used in the Bristol Jupiter engine of the Monoplane "The Spider" piloted by

Capt.

C. D. Barnard.

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OLD SOLDIERS NEVER DIE.

The age of aircraft, more particularly of metal aircraft in military service, is an interesting subject. There must be a number of aircraft in service in this country of which the constructing firms have records. But unfortunately no information on this subject has ever been released.

There are in existence in France the first two Breguet XIX biplanes ever constructed, and it may be of interest to recount the activities of these two machines.

Breguet XIX No. 01, the very first of the long series of this famous aircraft, came out of the Breguet Works in 1921. After long testing, with various wings of different sections, the machine, in the Autumn of 1922, was submitted to a series of demonstrations at Villacoublay before various official bodies.

In January 1923 the machine proceeded to Madrid to compete in an International contest organised by the Spanish Government in Madrid. Equipped as an Army Co-operation aircraft No. 01 beat all other competitors, and was finally bought by the Spanish Army.

After two years of miscellaneous flying the 375 h.p. Renault engine was removed and one of 400 h.p. substituted and the tankage was increased. On Aug. 26, 1925, piloted by Capt. Jimenez, it beat the Spanish distance record by covering 1,640 kms. in 12 hours. Two days later the same pilot put up a Spanish duration record of 13½ hrs., covering a distance of 1,860 kms. On the following day Capt. Jimenez made a non-stop flight of 1,480 kms. The two last flights together represented a complete tour of the Iberian peninsula in 36 hrs. elapsed time, or 24½ hrs. flying time.

In October 1925 the machine made a flight from Madrid to Angoulême and back, a distance of 1,480 kms.

Hereafter the machine was fitted with larger tanks, and in April 1926 Capt. Jimenez took off with a total load of 3,800 kgs., in a preliminary test prior to attempting to break his own duration record, but was forced to land after being in the air for only half an hour. This he did safely with full load.

After this the engine was again changed. This time an Hispano-Suiza was fitted, and several further long cross-country flights were made over Spain and Spanish Morocco.

In January 1928 the Spanish duration record was again broken in a flight from Seville to Safi, Morocco. The landing at the latter place was made in the dark after being in the air for 14 hrs. 10 mins.

The machine is at present at Cuatrovientos aerodrome, Madrid, where after eight years' hard service it is still in good condition.

The second Breguet XIX was the first of a series of 70 ordered by the French Government and passed out of the works at the end of 1923. This machine differed from No. 01 in several details, notably in the interior arrangement as demanded by the new French Government specification for the *Corps d'Armée* type. In addition it was the first of the type to have the now characteristic Breguet undercarriage and internally-sprung wheels.

This machine in March 1924 was submitted to the *Commission d'Essais Pratiques de l'Aviation* for complete test and it remained at the C.E.P.A. for three years, during which it made 201 test flights, including tests for endurance, speed, consumption, manœuvrability, airscrew, radiator, and military equipment, in the hands of various pilots. In these three years the only modifications made to the machine were a change of engine and the recovering of the rear half of the fuselage.

It then passed out of the hands of the C.E.P.A. to the *Entrepôt Spécial d'Aviation No.* 1 and in January 1928 again passed into service. After a short overhaul the machine was flown regularly. From February to September 1928 it flew 100 hrs. in times varying from 20 mins. to four hours' duration.

This machine is also still in regular service. These two aircraft provide ample evidence of the durability of modern military aircraft.

Possibly the Fairey Co. could produce some similar figures for a IIID. They would be interesting.

FOR THE ULSTER T.T. RACE.

Pilots who wish to fly to Belfast for the Ulster T.T. Race on Aug. 17 are notified that the following arrangements have been made by the Automobile Association: A landing ground with a circle and a wind-stocking has been prepared at Lochans, two miles from Stranraer. Fuel can be got on the aerodrome if the pilot first circles the village of Lochans. The telephone at the Corner House adjoining the landing ground is placed at the disposal of pilots by Mr. Clanachan. Weather reports for the Channel Crossing can be obtained from the Coastgard Station at Portpatrick—telephone No. Portpatrick 9. Hotel accommodation is available at the King's Arms Hotel, Stranraer. Motor transport can be hired from Mr. MacWilliam, Engineer, Lochans.

The following approximate distances by air from Lochans should be noted: Aldergrove Aerodrome, Belfast, 50 miles; Wythenshawe Aerodrome, Manchester (via the coast), 180 miles. Cramlington Aerodrome, Newcastle, 140 miles.

The R.A.F. aerodrome at Aldergrove 2½ miles from the East shore of Lough Neagh, is the only one available for Belfast. Belfast is 12½ miles away. Motor transport can be hired from the following garages in Antrim: James Bird, 'Phone Antrim 30; Franklin Young, 'Phone Antrim 28; Joseph Barr, 'Phone Antrim 26.

Mr. MacWilliam, Engineer, Lochans, can telephone to Antrim for cars to be ready on the aerodrome against the arrival of pilots.

FLYING SAFER THAN RAILROADING.

The following editorial, headed as above, appeared in the July issue of *Aero Digest*, published in New York:—

In commenting on the English Channel accident of the Imperial Airways passenger transport on June 17 in which seven passengers were drowned, the New York *Herald-Tribune* says:—

"Commercial aviation in England has had other serious disasters. A French airliner crashed in flames at Penshurst, Kent, on October 2, 1926, and five passengers burned to death. On Christmas Eve, in 1924, an Imperial Airways liner crashed just after leaving Croydon and eight were killed. On September 14, 1923, five were killed on a London-Manchester air express at Ivinghoe."

To show how false is the impression with regard to the safety of flying given by this and many other stupid comments of like nature, the following facts may be of value:

Up to the end of December, 1928, paying passengers travelled by the British regular air transport services operating from England to the number of 118,816, with a loss of 13 passengers, in four fatal accidents in the course of 7,050,000 miles of flying. This gives a rate of one fatal accident involving passengers for every 1,762,500 miles flown, and one fatality for every 542,307 miles flown.

Statistics of the Interstate Commerce Commission show that 6,500 persons were killed and 85,560 injured as a result of railroad operation in 1928. During the year passenger trains travelled 521,349,000 miles and freight trains 601,648,000 miles, making a total of 1,122,997,000 miles. Dividing this figure by the number of persons killed, we have one fatality for every 172,768 miles travelled by rail.

The Department of Commerce estimates that planes flew approximately 70,472,000 miles in the United States during 1928. The total loss of life in civil aviation was 368 and 672 persons were injured. This means that in flying one life was lost for every 191,500 miles travelled, which is a better record than was made by the railroads.

Thus the safety factor of English commercial aviation is shown to be 3.1 times that of American railroads, while American air travel is safer than train travel.

The above shows how the daily papers, even in the United States, pander to the morbid tastes of their readers. *Aero Digest* deserves thanks for its outspoken criticism.

In all fairness to both British and American civil aviation it should be pointed out that the British figures quoted refer only to the operations of our one civil air line from its inception, whereas the American figures cover the entire civil air operations of the United States for 1928, which included 37 regular air lines operated by private companies over 63 different air-ways aggregating a distance of 20,800 miles, not to mention the large number of smaller companies operating taxi services, sightseeing trips, schools, etc.

But, if and when one starts multiplying miles by passengers and calculating in passenger-miles, then the railways score, because the train-miles are multiplied by anything between 200 and 500, whereas the aeroplane miles are multiplied by only five or six.

FLYING AT CLACTON.

The Brooklands School of Flying are holding a display of Flying at Alton Park Road Flying Ground, Clacton-on-Sea, on Wednesday, Aug. 28. The Meeting will be opened by Mr. J. E. Ball, J.P., Chairman of the Clacton Council, at 11.00 hrs., and besides the usual joy rides from 5s. with Mr. E. A. Jones, which are now available daily at Clacton, a varied programme is being arranged consisting of displays of aerobatics by well-known pilots, bombing cars from the air, and, it is hoped, a parachute descent.

FOR A WILLING BEGINNER.

A business firm of considerable importance has open a position which offers great opportunity to an enterprising man, though the salary is small at the start. Applicants should be between 25 and 30 years of age. They should have first-class flying experience, preferably with experience as test pilots, a B.Sc. degree for engineering would be an advantage, or even an associate fellowship of the Royal Aeronautical Society. Applicants must also have a certain amount of business experience and first-class references. Letters marked L will be forwarded.

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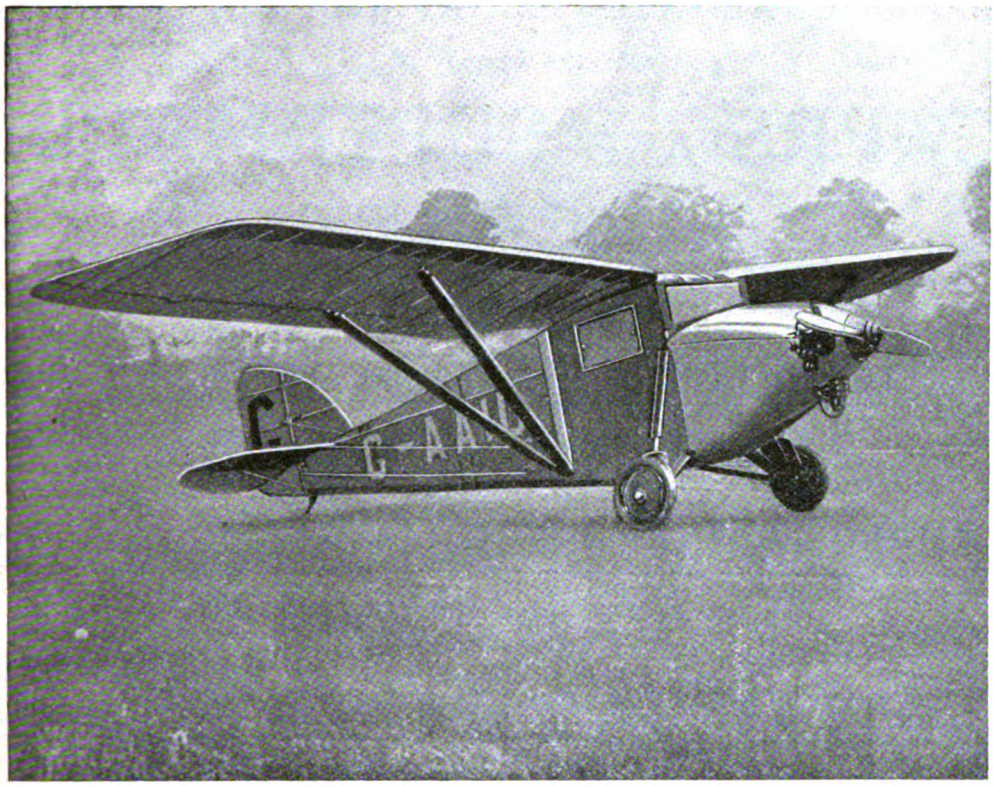

A.B.C. "Robin."

CELLON

The dope of proved efficiency

Single-seater cabin monoplane designed by A.B.C. Motors, Ltd. These machines will be constructed by S. E. Saunders, Ltd., Cowes, Isle of Wight, a large order having been placed for them by National Flying Services, Ltd. The "Robin" was exhibited at Olympia, doped with Cellon in N.F.S colours, the fuselage being lacquered with "Cerric."

Cerric Cellulose Lacquers comply with D.T.D. Specifications for metal parts, cockpits, propellers. Particulars on application.

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AN OUTSTANDING FEATURE

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was the Display of

VICKERS AND SUPERMARINE AIRCRAFT

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The VICKERS "VICTORIA" TROOP CARRIER.

With which type the Kabul Evacuations were successfully accomplished,

The SUPERMARINE "SOUTHAMPTON" FLYING BOAT.

With four of which the R.A.F. Far East Flight of 27,000 miles was effected,

The SUPERMARINE-NAPIER S.5 SEAPLANE

First and Second in the Schneider Trophy Contest, Venice, 1927, and holder of the British Speed Record of 319.57 m.p.h.

and

The VICKERS "INTERCEPTER" FIGHTER

High Speed Single-Seater All-Metal Landplane.

These with the renowned

VICKERS AIRCRAFT ACCESSORIES

and the unique selection of

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Machine Guns, Mountings, Bombs and Racks, etc., etc., formed the most comprehensive exhibit in the Show.

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

THE CHALLENGE INTERNATIONALE DE TOURISME.

On Aug. 7 forty-three of the fifty-five survivors of the original eighty-two entrants for the *Challenge Internationale de Tourisme* left Orly on the 3,900 mile tour of Europe.

The competitors left the aerodrome in batches of four at five-minute intervals.

The first four competitors left at 09.25 hrs. These included the two Raab-Katzenstein R.K.-25 monoplanes one with a Cirrus and one with a Hermes engine, piloted by Herr Altmeier and Lord Carbery respectively, the Darmstadt D-18 (Genet) piloted by Nehring and Guerchais-Henriot (Salmson) piloted by Lemerre.

The two British competitors, Miss Spooner and Mr. Hubert Broad, both on Gipsy-Moths, left in company with two Caudron monoplanes piloted by MM. Delmotte and Barbot.

By 17.00 hrs. thirty-five competitors had arrived at Geneva and had continued to St. Raphael.

At the end of the first day several competitors had withdrawn. A Klemm (Salmson) flown by Hagenmeyer was damaged on landing at Berre near Marseilles, the C.A.N.T.26 (Isotta-Fraschini) piloted by Stoppani was damaged at Basle, an Avia Antilopa (Walter) flown by M. Vlcek was forced to land at Marignane and was damaged.

The Hon. Lady Bailey, who arrived at Orly too late to qualify for the contest, decided to go round the course *hors concours*.

On Aug. 8 the remaining competitors left for Turin and beyond. The Guerchais-Henriot and the Belgian St. Hubert monoplanes were non-starters. The first four to arrive at Turin were Lord Carbery (Raab-Katzenstein RK-25-Hermes), Mr. Broad (Gipsy-Moth), Herr Altemeier (Raab-Katzenstein RK-25-Cirrus), and Miss Spooner (Gipsy-Moth).

At 17.03 hrs. Mr. Broad arrived at Belgrade, and he was immediately followed by Lord Carbery. Herr Altemeier (Klemm-Cirrus) crashed within six miles of Venice owing to a fuel stoppage when holding second position. The machine was wrecked but the crew were unhurt.

On Aug. 9 the leading competitors started for Bucharest, the farthest east point in the circuit, and Budapest. Only seventeen covered the 1,730 miles between Orly and Bucharest. Delmotte (Caudron-Salmson) was the leader at this point. Signor Liberrati (Breda-Cirrus) damaged his machine on landing and retired.

On Aug. 10 the competitors continued to Vienna and Prague. Lord Carbery (Raab-Katzenstein-Hermes) was the first to arrive at Vienna at 10.00 hrs., and he was followed by Miss Spooner (Gipsy-Moth), Mr. Broad (Gipsy-Moth), Herr Kirsch (Klemm-Cirrus), Herr Nehring (Darmstadt-Genet), M. Kleps (Avia-Walter), Herr Offermann (B.F.W.-Siemens), and M. Delmotte. All with the exception of Nehring filled up and continued to Prague.

Herr Nehring and three Fiats, and four Romeos and one Junkers (Genet), which arrived during the afternoon, decided to wait at Vienna until the following day, owing to head winds and bad weather reports.

On Aug. 11 several more competitors arrived at Vienna against a strong head wind and several left for Prague. Lady Bailey also left for Prague. Some were left at Vienna until the following day owing to rain and very bumpy conditions.

Those who had reached Prague the previous day left on the Breslau—Warsaw—Posen—Berlin—Hamburg leg.

At Breslau Mr. Broad (Gipsy-Moth) arrived first, followed by Herr Kirsch (Klemm-Cirrus), Miss Spooner (Gipsy-Moth) and Lord Carbery (Raab-Katzenstein-Hermes).

At Warsaw and Berlin Mr. Broad was still leading and at the latter city Herr Kirsch had dropped to fourth place. Lord Carbery was held up at Berlin with a broken oil-pipe but Mr. Broad and Miss Spooner continued to Hamburg where they arrived at 17.15 hrs. and 17.21 hrs. respectively.

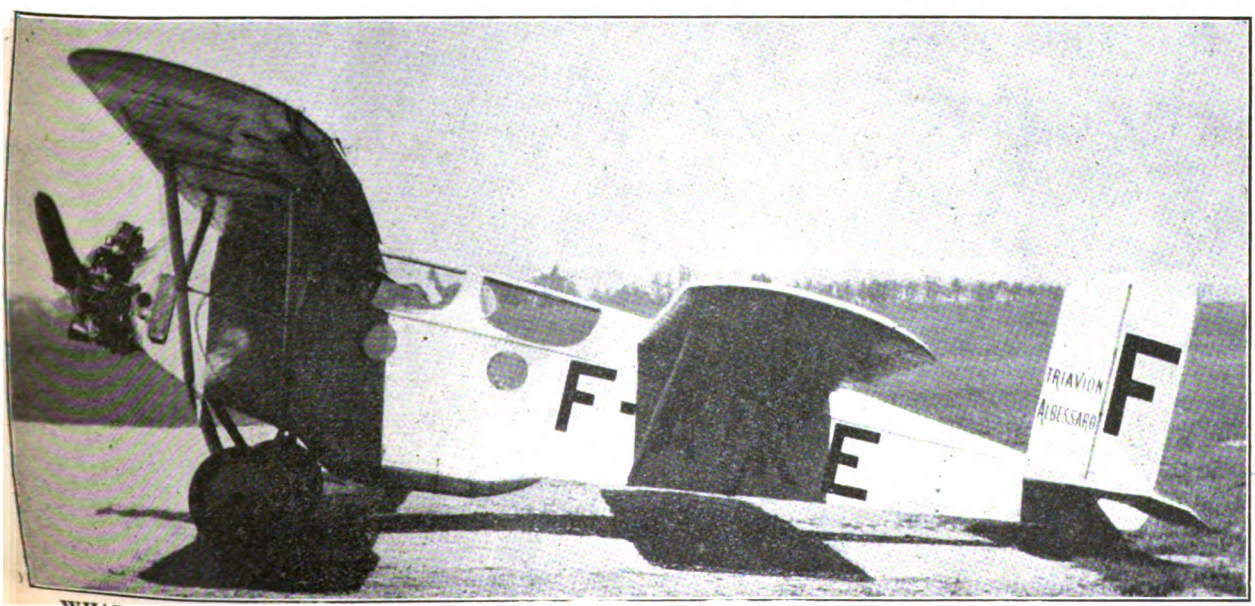
On Aug. 12 the competitors continued to Amsterdam. Mr. Broad and Miss Spooner were the first to leave Hamburg. They were passed, however, by Herr Kirsch (Klemm-Cirrus), who was the first to arrive at Amsterdam. He was followed by Mr. Broad and Miss Spooner (Gipsy-Moths), M. Kleps (Avia-Walter), Lord Carbery (Raab-Katzenstein-Hermes), M. Delmotte (Caudron-Salmson) and Herr Offermann (B.F.W.-Siemens).

In the meantime many competitors were completing earlier stages,—several owing to minor mechanical troubles and several owning to bad weather. Lady Bailey arrived at Warsaw from Breslau.

As competitors are not allowed to arrive at Orly before 15.00 hrs. on Aug. 14 the early arrivals at Amsterdam had to remain there until the following day when they could proceed to Brussels. Here another night stay is necessary before completing the circuit at Orly.

Up to Amsterdam Miss Spooner and Mr. Broad have completed a daily average mileage of 685 miles since leaving Orly on Aug. 7. Their enforced stays at Amsterdam and Brussels will reduce this average to 488 miles.

Their performance as the only two official British competitors although entered through the French Aero Club is magnificent. That they should have lost the lead to Herr Kirsch at Amsterdam is sad, but we can console ourselves by the fact that Herr Kirsch is using a British engine as are many of the foreign leaders throughout the circuit.



WHAT IS IT?—The Albessard tandem monoplane (Salmson engine) which bears a strong family resemblance to the Peyret tandem glider of Itford Hill. The Albessard monoplane was built by M. Louis Peyret.

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In any case the exact position of competitors in this contest is not necessarily indicated by their arrival times at the various stops. Points were awarded at Orly in preliminary tests in connection with fuel consumption, construction, etc. These will be combined with average speed over the European circuit to decide the actual winner.

All competitors have been unanimous in expressing their appreciation at their reception in all places. Fueling and timing arrangements have been excellent, and for a competition covering so large an area and coming under the jurisdiction of so many different official bodies everything has gone off successfully and according to plan.

A CORRECTION.

Never in the history of The Aeroplane has one had so much pleasure in correcting a mistake as one has now in stating that Herr Offermann, the German pilot who was reported as having been killed at Orly before the start of the European tour, is, at the time of writing, alive and well and flying strongly.

The mistake arose because in the report of the fatal accident the pilot's name was given as Hoffmann, and in the official programme no pilot of the name of Hoffmann appears. Herr Offermann's name was the nearest to Hoffmann and a mistake of that kind is precisely such as does occur in transmitting names verbally, especially by telephone.

The day after The Aeroplane went to Press, a visitor who had just returned from Orly said that Herr Offermann had in fact started in the Tour. Thereafter a careful search discovered, in a mimeographed sheet issued on the Sunday before the start by the Aero Club de France, that Doctor Eggers, whose name appeared in the programme as the pilot of the Arado monoplane, had in fact a passenger named Hofmann.

Further inquiries then disclosed the fact that this unfortunate Herr Hofmann had been flying the Arado at Orly and that while he was looping and spinning the machine, the wing, which was held by a very light structure of steel tubes, came off. A picture of this machine appears on page 400 of The Aeroplane, and engineers will not be surprised that a big high-lift wing, with an aeroplane slung below it in that particular way, should come off.

While sympathising with our friends in Germany on the death of their friend Hofmann, whom one had not the honour of knowing, one rejoices that our good friend Herr Offermann is still alive. And one hopes that he may live many years to continue his good service to German Aviation.—C. G. G.

A NEW HEIGHT RECORD.

The Royal Aero Club has informed Glenny and Henderson, the constructors of the Gadfly light monoplane (A.B.C. Scorpion engine), that the height of 3,021 metres (9,911 ft.) obtained by the machine on May 16 has been homologated by the *Fédération Aéronautique Internationale* as a World's Record.

This record is for Single-Seat Light Aeroplanes (4th category) weighing not more than 200 kgs. (440 lbs.).

THE LIVERPOOL—MANCHESTER INTER-CITY RACE.

Northern Air Lines held the first inter-city race with Liverpool at the temporary municipal aerodrome at Wythenshawe near Manchester on Saturday, Aug. 10.

The start was at Wythenshawe and the course lay round a mark at Hooton Park aerodrome at Liverpool and back to Wythenshawe. One hour's wait at Hooton was compulsory.

Quite a large amount of enthusiasm had been raised for the race and it bids fair to become an important annual event among those who fly in these cities. When the idea was first started Sir W. Cundiff was approached and asked to associate himself with a cup or trophy to be competed for annually and he very generously gave his wholehearted support and presented a large trophy as well as a replica for the pilot.

The conditions are that entrants and pilots must be resident within 30 miles of either city and the aircraft must be standard and not specially faked up for the race. The Royal Aero Club arranged the handicapping and looked after the starting and finishing times.

Three pilots from each city took part and were all amateurs.

The Liverpool team were,—J. B. Allen, Avian (Cirrus II) G-EBXX; A. Moulsdale, Avian (Cirrus II) G-EBWK; T. H. Naylor, Moth (Gipsy) G-AABO.

The Manchester Team were,—Miss W. Brown, Avian (Cirrus II) G-EBVZ; J. C. Cantrill, Avian (Gipsy) G-AAHK; E. Cohen, Avian (Cirrus III) G-AAGR.

The general arrangements for the race were admirable and one novel and excellent feature was that two machines flown by Flt. Lt. Comper and Mr. Boyes were stationed in the air on the course to ensure that no one flew below 500 feet. Any who did so were to be disqualified.

The result was a very close race and a really exciting finish. The handicappers are to be congratulated.

In a race of this nature one sees very little except the actual start and finish and the interest of the onlookers is apt to flag unless there is the hope of a close finish. But in this case none could have cavilled at the handicapping, for the machines at the finish appeared to be approaching in a bunch. Actually there were just enough seconds between each to make it safe without losing the excitement. The results are tabulated below:—

Pilot.	Start.	Arrival at Hooton.	Arrival at Wythenshawe.	M.p.h	Place.
Moulsdale ..	3.30.00	3.50.46	5.08.11	88.01	4
Allen	3.30.00	3.50.25	5.07.20	90.00	3
Miss Brown ..	3.30.00	3.50.47	5.08.19	87.70	5
Cohen	3.31.57	3.53.08	5.11.12	85.11	6
Cantrill	3.32.37	3.51.20	5.07.05	97.80	2
Naylor	3.32.56	3.51.17	5.06.59	98.52	1

Mr. Naylor, the winner, is a private owner who has only been flying for about eighteen months and he was opposed by several much more experienced pilots, so his performance is all the more creditable. He had as his passenger (all machines had to carry passengers) Mrs. Reynolds, the daughter-in-law of Sir J. Reynolds,—who presented a cup as a team prize.

AN AMERICAN EAGLE.—The American Eagle A-429 light aeroplane (60 h.p. Le Blond engine). It is fitted with side-by-side seating and folding wings.

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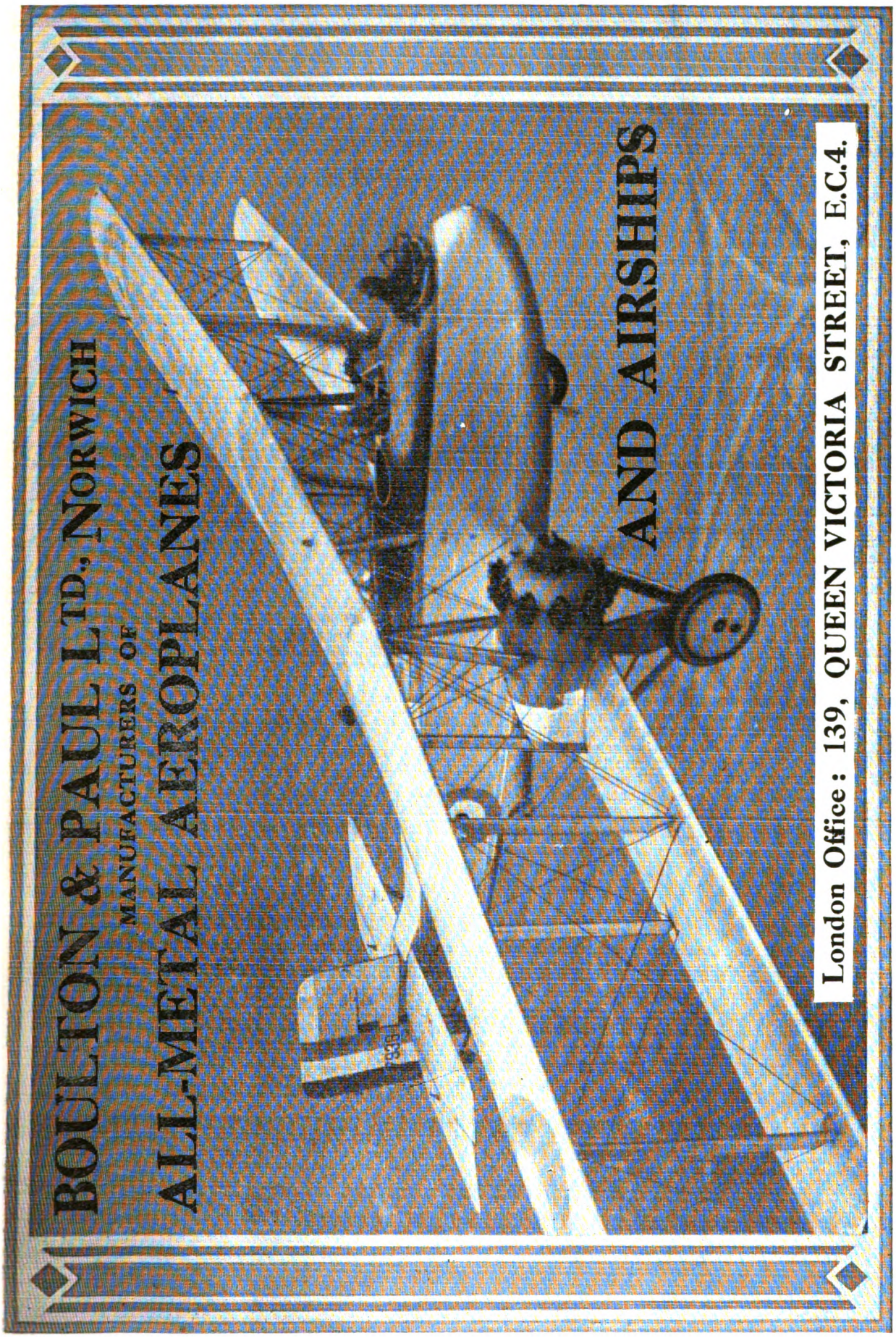

Photograph by courtesy of "Flight."

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This team prize was awarded on a marking system based on the finishing positions of the machines and this was also gained by the Liverpool Team.

Before, coincident with, and after, the race a series of turns kept the crowd amused. The crowd is rather an exaggeration as there cannot have been more than 2,000 or 3,000 present, but those there were keen and in these days a crowd of even this size is not to be sneezed at. One heard several officials bemoaning the fact that there were not nearly as many as they had for their previous pageant. At that show somewhere about 10,000 arrived, which must be a record even for a city the size of Manchester, and it would be unreasonable to expect anything like the same number again.

After all even the public are becoming a trifle blasé about air shows and unless they have very good publicity indeed and there is some special attraction one cannot expect much more than an attendance of those who come because they are really keen on this sort of thing, and not merely to pass the time away. On one's way to the aerodrome one failed to see any posters or publicity at all, which seemed a pity, seeing that it was, after all, a City affair with the Trophy for the race given by a prominent local man.

Sir Sefton Brancker, who had been staying at Bolton, came over in one of the Northern Air Lines Moths—his own machine apparently feeling off colour at being called upon so early in the morning. He waited for the start of the race and then left for London in the same machine.

Mr. Lawson opened the programme with a display of stunting on an Avro. His various manœuvres were quite pretty but somehow stunting in Avros always seems dull when compared with the snappiness of a Moth or similar light aircraft. He got right in the line of the sun and very bright clouds and one consequently lost a good deal of his show. It was a pity he did not repeat his Scarborough performance and land with a dead engine; this was a particularly effective effort and besides drawing much applause from the crowd served very well indeed to show that it is possible to land without one's engine, a fact that few of the public seem to understand.

After the start of the race he again went up and did some inverted flying. It is to be feared that the difficulty of this form of amusement is not appreciated by the usual run of spectators.

Our D.C.A. having borrowed the firm's Moth the "wedding party" had to be bombed from an Avro. Since the Scarborough show they had acquired severel large-sized infants and these, dressed, neatly and tastefully, in white crepe-de-chine (or was it calico) party frocks were given balloons and other playthings and left to amuse themselves on the aerodrome while Pa and Ma had a short nap in the car. The shameful way in which Capt. Kingwill came along and disturbed them caused much amusement. One wonders whether, if the present multiplicity is kept up, at the next Wythenshawe meeting we shall see not one car—by this time heavily overloaded!—but a whole fleet of Baby Austins led out in formation and playing touch round the Aerodrome.

After this we were treated to that really funny turn of Mr. Kingwill's. As a spectator rashly trying his hand at flying he is really good and there was no doubt about the appreciation of the crowd at the end. He was handicapped by having an Avian with an early and low-powered engine, —but even so was killingly funny.

At this point the competitors were due in at the finish of the Race and duly arrived in the order already mentioned.

After their arrival proceedings rather dragged. One would like to suggest to the management that to sustain the interest in these meetings they must be run snappily. Waiting to see what is going to happen bores the crowd more than anything. Ten minutes is the average time for events, and it would be far better to repeat everything twice and so have something doing all the time than to have people waiting around for half an hour or more before the next event. Watching others joy-riding does not interest the majority, and with an aerodrome of this size the joy-riding machines might well be apart from the main show.

The set piece was again the burning oil-well. When burning merrily a D.H.9 raced down and the occupants raced across and put out the flames with the help of Fire Snow outfits. These certainly worked effectively and should be the right thing for a real fire.

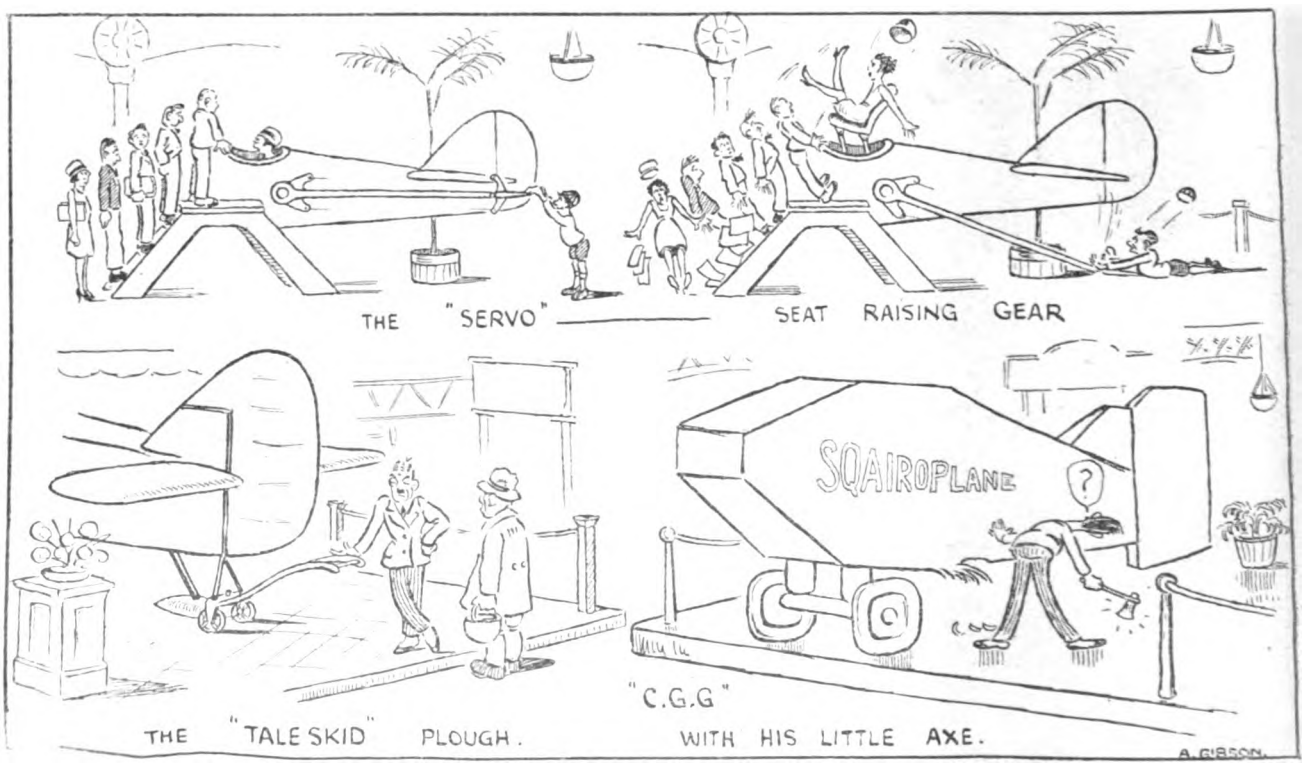
The Lancashire Club sent over some pilots who did a little formation flying and showed that pupils are well trained at that club.

Later Mr. Kingwill took off in his illuminated Avian. The lower planes, fuselage and tail units have been outlined with small electric lamps and when he switched these on as it was getting dusk and started stunting at 3,000 feet it was extraordinarily effective. He continued to fly round until it was very nearly dark and finally landed with the help of,—or in spite of,—the head-lights of various cars which had been switched on. This sort of show should prove a great attraction at seaside resorts which are out to do things to amuse their visitors and one recommends all live Town Clerks to get in touch with the Northern Air Lines people and see about it.—C. N. C.

THE BITER BIT AT BOURNEMOUTH.

A D.H. Moth, piloted by Mr. John Hoare, an apprentice of the De Havilland Co. Ltd., dived into the sea at Bournemouth on August 11 while taking part in a regatta.

The machine was "bombing" a speed boat with bags of flour and overshot its mark. Mr. Hoare and his passenger, Mr. Read, were rescued and neither is badly injured. The machine was salved in a badly damaged condition.



Things Which Were NOT Seen At the Aero-Show.

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"TITANINE" DOPE AND THE KING'S CUP AIR RACE 1929

1st GLOSTER "GREBE" Pilot: Flying Officer R. L. R. ATCHERLEY
2nd D.H. MOTH Pilot: Lieut. L. G. RICHARDSON, R.N.
3rd D.H. GIPSY MOTH Pilot: Capt. W. L. HOPE

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MOTH SERVICE.

The following story comes from a most reliable source:—

A Moth owner landed in a field near Sevenoaks with plug trouble. He walked half a mile to a telephone box and rang up the nearest Moth Service Station, which was the Brooklands School of Flying. When he got back to his machine a new plug had been fitted.

The explanation is that when the telephone call came through to Brooklands a machine was standing on the tarmac and its pilot was a man who knew the field near Sevenoaks in which the stranded pilot had landed. He flew straight off with the new plug and had fitted it before the owner got back from the telephone box.

AUSTRALIAN-BUILT MOTHS.

The Aeroplane of March 20, 1929, reported the fact that the Australian Defence Department had placed orders for 32 D.H. Moths to be built locally.

News from Australia shows that the tender was secured by the Larkin Aircraft Supply Co. Ltd., Melbourne, whose chief engineer is Mr. W. S. Shackleton, formerly designer to William Beardmore and Co. Ltd., of Dalmuir.

The Larkin company is now awaiting a complete set of drawings before putting the machines into production. This order is the first order given by the Commonwealth Government for mass production in Australia.

SUSPENSION OF CLUB MEMBERS.

The Committee of the Cinque Ports Flying Club have had to deal with two breaches of discipline by "A" licence pilots recently. One concerned low flying over the beach at Littlestone. In this case the pilot concerned was severely cautioned. The other concerned two unauthorised landings on Club aircraft away from the Aerodrome. The pilot concerned was suspended from flying club aircraft for two months from the date of the offence. The committee are determined to deal in future with such cases in a firm manner, as incidents of this description are calculated to cause inconvenience and annoyance to the public. This cannot be tolerated.

July beat all previous records for the Club by a very large margin. The two Club aircraft made 284 flights, totalling 124½ hours in the air, which is equivalent to a distance of about 9,000 miles.

During this month, also, the number of flying members first reached the 100 mark. There were 101 flying members and 15 ground members on the register on July 31. As, however, only about half of these members are actually under instruction, there is ample opportunity for new members without inconvenient waiting.

The Annual General Meeting of the Club was held on Aug. 8, and the Hon. Secretary's report, which was adopted, showed that whereas at the last Annual General Meeting the Club had one Moth and a small stock of spares with a credit balance of some £500, the Club now had a comprehensive stock of spares and tools and a credit balance of £250, and, in addition, a Club Room with bar and steward, office, garden and lawn had been established at Lympne out of working profits.

On the proposition of Major Krabbe, it was resolved that as a reward for their services in the past, the Hon. Treasurer and Hon. Secretary be granted flying facilities at reduced rates when the aircraft and pilot instructor were not required by any other member, and they were to be Honorary Members of the Club while they held office.

Major Krabbe was elected Chairman of the Club for the ensuing year, Mr. R. Dallas Brett and Mr. H. E. Twaites were re-elected Hon. Secretary and Hon. Treasurer respectively, and the new Committee is as follows:—Mr. A. Dallas Brett of Folkestone, Mr. T. A. M. S. Lewis of Postling, Mr. K. Edgson Wright of Ashford, Mr. W. H. Evernden of Faversham, Capt. G. E. Took of Dover and Mr. A. J. Drake of Hythe.

A BRISTOL AERIAL GARDEN PARTY.

The Bristol and Wessex Aeroplane Club will hold an Aerial Garden Party at the Filton Aerodrome, Patchway, Bristol, on Sunday, September 22, as a farewell Display before they move to the new Bristol aerodrome. They hope to arrange for visits by a number of interesting new machines and a competition will also be in the programme.

Full details will be notified later, but in the meantime all those interested should make a note of the date.

ANOTHER INTRENAIONAL AIR RALLY.

An International Air Rally is being organised by the Suffolk and Eastern Counties Aeroplane Club at Hadleigh Aerodrome, Suffolk, in conjunction with a two-day Display to be held on Aug. 31 and Sept. 1.

The Rally is open to all types of aircraft of any nationality. Zero hour will be Noon on Aug. 31.

The winner will be the pilot who, having crossed the finishing line (a white line on the aerodrome from South to North) obtains the highest number of marks on the following formula:—$D \times (D \div 50) \div M$,—where D = Distance in miles from stated point of departure and M = Minutes + or — Zero.

Any competitor who is observed to be deliberately wasting time in the air will be disqualified.

The first prize will be £25, Second £10, Third £5.

During the two days of the Display there will be a bomb-dropping and a landing competition open to all pilots who have competed in the Rally. In each event the prizes will be First £3, Second £2.

During the Display pilots and passengers will be the guests of the Club.

Intending competitors are requested to write for entry forms to The Display Secretary, The Aerodrome Hadleigh.

THE LONDON AEROPLANE CLUB.

Report for the month of July.

Instructors: Major H. G. Travers and Capt. F. R. Matthews. *Ground Engineers*: C. Humphreys and A. E. Mitchell. *Aircraft*: The following machines were in commission—G-AABL, G-AABN, G-EBXS, G-EBZC, G-AAEX and G-EBWY.

Total Flying Time for the month of July:

The flying time for the month of July was a record: Dual instruction 341 flights, 150 hr. 25 5min.; Cross-country instruction 22 flights, 35 hr. 5 min.; Solo 302 flights, 125 hr. 30 min.; Passenger Flights 140 flights, 50 hr. 10 min.; Test Flights 105 flights, 17 hr. 30 min. Total 910 flights, 378 hr. 40 min.

During the month 225 individual members made flights on Club aircraft.

Twelve Months' Flying.

On July 31 the London Aeroplane Club completed its subsidy year and the results show a large increase on the previous year. The Club was able to earn the full Government subsidy.

Year ending July 31, 1929:

Dual instruction 2,584 flights, 1,116 hr. 35 min.; Solo 2,405 flights, 1,029 hr. 5 min.; Passenger Flights 586 flights, 221 hr. 20 min.; Test Flights, 960 flights, 161 hr. 5 min. Total 6,535 flights, 2,528 hr. 5 min.

This compares favourably with the previous year, when the total flying time was 1,413 hours.

"A" and "B" Licences.

During the year 64 "A" Licences and 4 "B" Licences were obtained.

A REMINISCENCE AND AN ANTICIPATION.—How the Winnepeg Club looks on a fine Winter day. Mr. de Blicquy, the Instructor, is the third from the right,—with cap.

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ENGLAND TO INDIA AND RETURN

The Duchess of Bedford's Fokker monoplane (Jupiter Engines) piloted by Captain C. D. Barnard was equipped with

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COMMERCIAL AERONAUTICS.

THE CANADIAN CIVIL AIR PROGRAMME.

The 1929 Civil Air Programme of the Canadian Department of National Defence for the various Government Departments is as follows:—

Department of the Interior.

Forest Service. — The former area of 3,500,000 acres patrolled in Alberta is increased to 25,500,000 acres. The added area is in the Peace River district, where two light planes will operate out from Grande Prairie on detection work only.

In Saskatchewan the work has been reorganised and the planes will cover 21,250,000 acres in the interests of forest protection, both detection and suppression.

In Manitoba over 44,500,000 acres will be patrolled, for both detection and suppression purposes. Here also there is an increase in the area patrolled of about 7,000,000 acres to take care of territory subject to additional hazard through recent mining development.

The photographic work in connection with the survey of the Nelson River watershed is to be completed.

Topographical Survey.—Oblique aerial photography in connection with the study and mapping of the English River, Ignace, and Miminiska Lake areas in Ontario; Manitou, Cross Lake and Granville Lake areas in Manitoba; Reindeer Lake, Foster Lake, Mudjatik River, Fond du Lac and Black Lake areas in Saskatchewan.

Vertical aerial photography in connection with the study and mapping of the Lunenburg and Lake Rossignol areas in Nova Scotia; the Moncton and Newcastle areas in New Brunswick; the Tashereau, Senneterre, Parent, Doucet, Bell River and Maniwaki areas in Quebec; the Lake Nipissing, Algonquin Park, and Rideau Lakes areas in Ontario; Kississing Lake area in Manitoba; Prince Albert area in Saskatchewan; Shuswap Lake area and Parsnip River valley north of Prince George, in British Columbia.

National Parks of Canada.—Oblique aerial illustrative views of sites of historic interest when other operations permit. If planes are available the photography of areas between the Big Bend of the Columbia river in British Columbia and the Canadian National Railway. Continuation of the practice of co-operating with the Forestry Branch in the patrol of the Waterton Lakes park from High River base.

Natural Resources Intelligence Service.—The taking of oblique scenic photographs illustrating features of all kinds —settlements, power plants and sites, lumber and mineral developments, industrial plants, etc.—relating to the development of the natural resources of Canada.

Dominion Water Power and Reclamation Service.—Vertical and oblique photography in connection with power projects in New Brunswick, Quebec, Ontario, Manitoba, and British Columbia, including vertical photography of areas adjacent to the Winnipeg, Nelson, and Churchill rivers, and Rottenstone Lake .

Geodetic Survey.—Reconnaissance flights along the Canadian National railway from Senneterre to Barriere on Lake Kakabonga, from Clave to near La Tuque, and from the vicinity of Folyet to Nakina; on the Canadian Pacific railway from Sudbury to Sault Ste. Marie.

North West Territories and Yukon Branch.—Provided planes are available, aerial photography over a number of different areas in the Northwest Territories.

Department of Mines.

In co-operation with the Topographical Survey, Department of the Interior, vertical aerial photography to complete work started last year in areas in Cape Breton Island, Novia Scotia; in New Brunswick; and in Manitoba, together with a small operation in the Rottenstone Lake area.

Department of Public Works.

To assist in dredging and other operations in Kootenay district of British Columbia. Vertical photographs have already been taken in the vicinity of Arrow Lakes and Kootenay Lake

An area also in the vicinity of Prescott is being photographed in connection with port development. It may be mentioned that vertical aerial photographs reveal underwater features which assist in laying out such projects.

Department of Agriculture.

Experimental dusting for the prevention of wheat rust in the Prairie Provinces, and for the control of the spruce budworm in the Sudbury district. In co-operation with the Ontario Government Air Service, the control of hemlock looper in the Muskoka district.

Provincial Services.

In addition to the work of the R.C.A.F. extensive programmes are being carried out by Provincial Governments and private interests. The Province of Ontario operates its own Forestry flying service and during the period of fire hazard, detection and suppression patrols are carried on throughout northern Ontario. Forest type sketching is also carried out on a large scale, as well as exploration in the district of Patricia. This work each year, on account of mining and other developments, is being extended farther and farther north.

In Quebec and British Columbia the work is undertaken by commercial companies, under contract, for the respective

INTERFERENCE.—Churchill River, N. Manitoba, on a non-photographic day.

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TYRES must bear and absorb the initial shock. Wheels must be of tremendous strength, and the fitting arrangements such that the Tyre cannot be thrown from the rim.

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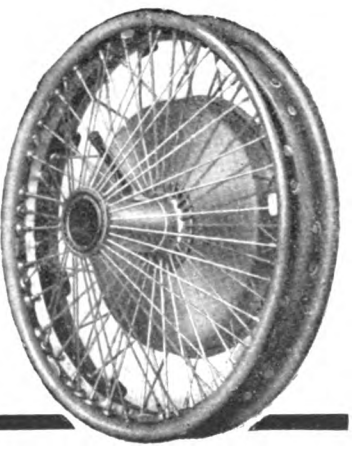

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Provincial Governments. Much transportation of survey parties on the north shore of the gulf of St. Lawrence is done by aircraft. A large part of Gaspé has now been photographed. Air patrols for forest fire protection will be continued in British Columbia.

COMMERCIAL SERVICES.

At the present time there are 44 commercial operating companies in Canada. Their activities extend into all parts of the Dominion and include forest fire patrols, timber cruising, air photography, passenger, express and mail transportation, instruction, and other related services.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 23; Monday, 39; Tuesday, 45; Wednesday, 51; Thursday, 44; Friday, 40, Saturday, 46.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 98, passengers 891, freight 28¾ tons. India Route: Inward, passengers 5, mail 430 lbs.; outwards, passengers 5, mail 607 lbs.

AIR UNION:

Paris—London and return: Machines 84, passengers 351, freight 24¾ tons.

K.L.M.:

Amsterdam—Rotterdam—London and return: Machines 43, passengers 341, freight 17 tons.

SABENA:

Brussels—London and return: Machines 12, passengers 68, freight 3 tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London and return: Machines 26, passengers 51, freight 5 tons.

MISCELLANEOUS:

British machines 22, passengers 22.

Foreign machines 3, passengers 10.

Total number of trips by British machines, 120, carrying 913 passengers. Foreign machines, 168, carrying 821 passengers.

COMPARATIVE FIGURES.

Week ending Aug. 10:

Machines, 288; Passengers, 1,734; Crews, 639; Total personnel, 2,373.

Corresponding week, 1928:

Machines, 269; Passengers, 1,790; Crews, 494; Total personnel, 2,284.

Corresponding week, 1927:

Machines, 183; Passengers, 1,068; Crews, 348; Total personnel, 1,416.

Corresponding week, 1926:

Machines, 183; Passengers, 1,313; Crews, 226; Total personnel, 1,539.

Corresponding week, 1925:

Machines, 176; Passengers, 1,011; Crews, 248; Total personnel, 1,259.

Corresponding week, 1924:

Machines, 176; Passengers, 904; Crews, 223; Total personnel, 1,127.

Corresponding week, 1923:

Machines, 144; Passengers, 724; Crews, 231; Total personnel, 955.

Corresponding week, 1922:

Machines, 176; Passengers, 642; Crews, 303; Total personnel, 945.

Corresponding week, 1921:

Machines, 114; Passengers, 437; Crews, 140; Total personnel, 577.

Corresponding week, 1920:

Machines, 123; Passengers, 262; Crews, 154; Total personnel, 416.

EUROPEAN AIR MAILS.

The Postmaster-General announces that the first morning air service to Holland, Germany, Austria and other Central European countries has been discontinued. Air mails for these countries now close at 07.00 hours instead of 03.30 hours.

A SOUTH AFRICAN AIR MAIL.

The Postmaster-General announces that the South African Post Office has notified that a new Air Mail Service has been established between Cape Town, Port Elizabeth, Johannesburg and Durban in connection with the arrival and departure of the Mail Packets to and from this Country. The service will begin with the Mail due to leave this country on Aug. 9.

The new service will accelerate the transmission of correspondence for Port Elizabeth, East London, Durban, Bloemfontein, Johannesburg, Pretoria and surrounding districts, and extend the time in which replies can be sent by the return mail ship. The gain in time is about 1 day for Port Elizabeth, Bloemfontein, Johannesburg and Pretoria and 1-2 days for East London and Durban.

The air fee payable on packets sent by the new service is 4d. per ounce, in addition to the ordinary postage.

Packets intended for conveyance by the new air service may be posted in any of the ordinary ways of posting, up to the usual time of closing for the South African Mail. They should bear the usual blue air mail label, of which supplies are obtainable free of charge through any Post Office.

CATAPULTING MAILS.

The French steamship *Ile de France* will carry an aeroplane during all her future trips across the Atlantic, so as to maintain a ship-to-shore mail service. The aeroplane will be catapulted from the ship when it approaches the coast, and in time to allow the mail to be delivered 24 hours ahead of the normal service. The machine, which is a seaplane, will alight in the harbour in New York and on the Seine at Suresnes, near Paris.

SAUNDERS-ROE LTD.

The firm of S. E. Saunders Ltd. have announced the alteration of the company's name to Saunders-Roe Ltd., thus linking together two names which have been associated with aviation since the earliest days.

Sir Alliott Roe made the first flight on a British-built machine and was one of the founders of the firm of A. V. Roe and Co. Ltd., now acquired by the Armstrong Siddeley Development Co. When the firm changed hands Sir Alliott Roe and Mr. John Lord joined S. E. Saunders Ltd.

S. E. Saunders Ltd. built the hull for the Sopwith Batboat, which was the first successful amphibian flying-boat in the country, and have been connected with the aviation industry ever since, chiefly in the production of flying-boats.

The linking together of the marine experience of Mr. S. E. Saunders and Sir Alliott Roe's experience of aviation should be of considerable advantage to the aviation industry of the country.

A new departure for the firm is the production of a small flying-boat for the private owner, and the firm's first essay in this type was the Cutty Sark, shown at the Aero Show.

GOOD THINGS FOR CANADA.

Readers of THE AEROPLANE in Canada will be interested to know that Mr. J. W. A. Legge-Willis, of 17, Williams Buildings, 413, Granville St., Vancouver, B.C., has been appointed agent for Canada for A.B.C. Motors Ltd., and for the Essex Fire Extinguisher. He is taking samples with him, and after reaching home he will start on a business tour Eastward.

Mr. Legge-Willis served in the Infantry during the War 1914-18 and later joined the R.F.C. The authorities refused to pass him for flying, so he became a kite-balloon officer and as such served for a long period in France.

A.B.C. Motors Ltd., who during the War were turning out high-power radial engines, which had not been fully developed at the end of the War, have of late made a considerable name for themselves as builders of engines for very light aeroplanes. The little 2-cylinder A.B.C. Scorpion, although it is not of a type which can be used for any commercial purpose, has done very good work in competitions, and is eminently suitable for single-seat light aeroplanes, or even very light 2-seaters, for purely sporting purposes. But the firm has recently developed the Hornet, a 4-cylinder double-opposed horizontal engine, which will give all of 80 h.p., and should, when it has been properly tried-out in suitable aeroplanes, give a very good account of itself. It strikes one as being particularly suitable for a twin-engined pusher light aeroplane, when anybody has the enterprise to build such a machine.

The Essex Fire Extinguisher has only recently become prominent in the Aircraft Trade. The moving spirit in the firm which is marketing it is Mr. Leigh Mossley, who was well known until recently as a Director of the Supermarine Aviation Works Ltd. Besides the Fire Extinguisher the firm makes various tools which are of considerable importance to aerodromes and aircraft works.

Between the two firms Mr. Legge-Willis has some very marketable goods to offer to aviation interests in Canada. The Essex Fire Extinguisher and the other tools sold should soon find places in every aeroplane shed in the country, whether it be that of a club or of an operating company or service station or of a manufacturing concern. And the A.B.C. engines should find a ready market among those people in Canada who have the pluck to start building aeroplanes.—C. G. G.

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CAPTAIN ACLAND'S ACCIDENT.

His many friends will regret to hear that Capt. P. D. Acland, lately Chairman of the S.B.A.C., had a serious accident last week while staying with friends at Beaconsfield. He fell out of a window some ten feet to the ground, and broke a wrist, besides injuring himself internally. He is in the Empire Nursing Home, Vincent Square, S.W.1, where he is doing as well as can be expected, but is not yet able to see visitors.

PERSONAL NOTICES.

BIRTHS.

BUTLER.—On July 9, at a nursing home, Barnsley, to Doris, widow of Flg. Off. Leonard Butler, A.F.C., R.A.F.—a son.

COMPER.—On Aug. 7, at 71, Beulah Hill, Norwood, to the wife of Adrian Comper—a daughter.

ELLIOT.—On Aug. 12, at 6, Hampstead Way, N.W.11, to Nancy, wife of Sq. Ldr. K. Riversdale Elliot, R.A.F.—a daughter.

MARRIAGES.

BIRD—BECKINGHAM.—On Aug. 10, in London, James Bird, Sq. Cdr., R.N. (Retired), to Yolanda Claire, twin daughter of Mr. and Mrs. E. L. Beckingham, of Tynemouth, Northumberland.

The Sunday Times of Aug. 11 states:—

Commander James Bird, R.N. (Retired), Vice-Chairman of the Royal Aero Club Schneider Committee, was married in London yesterday to Miss Claire Beckingham, well known in lawn tennis circles as one of the "Beckingham Twins."

Commander Bird is a director of Messrs. Vickers' Aviation, Limited, and the Supermarine Aviation Works, Limited. He was responsible for the production of the Supermarine-Napier S5 machines, which were first and second in the Schneider Trophy race at Venice in 1927, and so recaptured the trophy for England.

The bride, who has often played in the tennis championships at Wimbledon, has been the holder of many singles championship cups, has represented England internationally, and has for several years helped to keep Durham in the first inter-county group. Many women's doubles events in English tournaments were won by the "Beckingham Twins."

NICHOLL—THATCHER.—On Aug. 7, at Wishford, Salisbury, Patrick Edward Nicholl, R.A.F.O., to Josephine Thatcher.

PIDCOCK—WATKIN.—On July 25, Geoffrey Arthur Henzell Pidcock, Flt. Lt., R.A.F., to Evelyn Catherine Watkin, 35, Moore Street, S.W.3.

VIGERS—VIGERS.—On Aug. 10, at St. Mary's Church, Kippington, Capt. Arthur W. Vigers, M.C., D.F.C., youngest son of Mr. and Mrs. Vigers, of Montville, Guernsey, to Marjorie Frances, eldest daughter of Mr. and Mrs. Chas. H. Vigers, of Kippington House, Sevenoaks.

FORTHCOMING MARRIAGES.

DESMOND—FRASER.—A marriage has been arranged, and will take place quietly in October, between Flt. Lt. T. J. Desmond, R.A.F., and Elsie, only daughter of the late Colonel and Mrs. Fraser, of White Cottage, E. Cowes, I.W.

GRACE—HEWITT.—The engagement is announced between Charles Frederick Hallyburton Grace, R.A.F., son of the late Major C. H. Campbell Grace, Indian Army, and Irene Mary, elder daughter of Mr. and Mrs. J. Roland Hewitt, of Foxhall, Ipswich.

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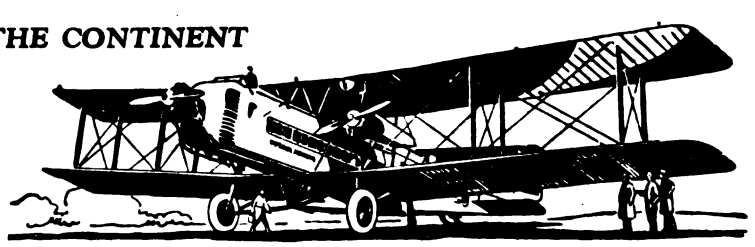

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Edited by C. G. Grey

Vol. XXXVII. No. 8. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

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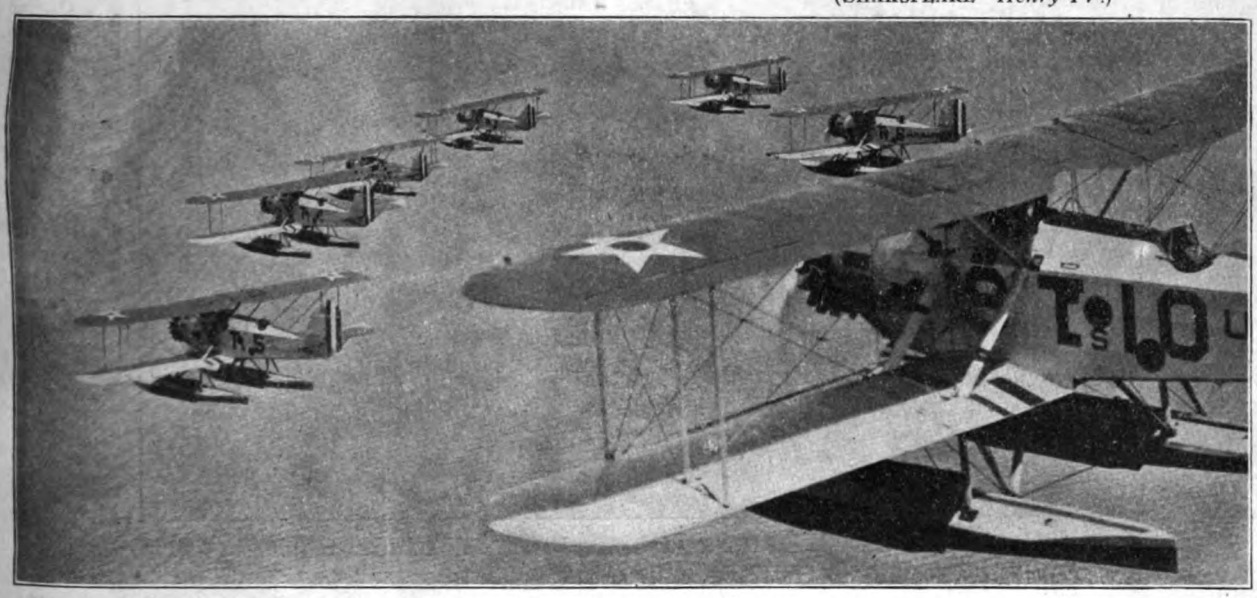

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ON OUR INTERNATIONAL CHALLENGE.

For once in a way we in this country can be really proud, without any qualification, of an all-British performance in a great international competition. Let us hope that two or three weeks hence we may be equally proud about the result of the Schneider Trophy Contest. But even if we are, we ought to be still more proud of the extraordinarily fine performance of Miss Winifred Spooner and Mr. Hubert Broad in their Gipsy Moths in the great *Challenge Internationale de Tourisme*. They have un-aided thrown out an international challenge where light aeroplanes are concerned.

They were the only two British competitors with all-British equipment out of forty-five starters from Orly. They led the field the whole way through. And if they had not been compelled by the rules to stop until a certain stated time at two or three of the intermediate stopping places, they could have finished at Orly on Sunday of last week, Aug. 11, and nobody else would have been within days of them.

On actual speed over the course they have both been beaten, but only by machines which had any amount of work done on them stage after stage. In fact the machine credited with the fastest time over the course might almost be said to have been rebuilt at the various stopping places.

Actually the fastest time over the course, taking it stage by stage, was 155 kilometres per hour. This was done by Lord Carbery in his Raab-Katzenstein with a Hermes engine. He had endless trouble on the way. Oil pipes broke, petrol pipes broke, cowling cracked, and at one point a fuselage strut broke and a part of the fuselage had to be stripped so that it could be welded. During one stage he had to land three times. The fact that his British Cirrus-Hermes engine stood up to such a gruelling is splendid testimony to the design, workmanship and material of our latest aero-engine, for it came through undamaged in spite of over-heating caused by strange cowling.

Mr. Broad's speed over the course, stage by stage, was 154 km.p.h. He was running his Gipsy engine at 2,000 r.p.m., and he never so much as changed a sparking plug throughout the journey.

Third and fourth fastest time was done by two of the Italian Romeos. Their speeds were 148 km.p.h. and 146 km.p.h.

Miss Spooner's Performance.

The fifth fastest time was Miss Spooner's,—145 km.p.h. She replaced one plug, not because it was needed but because her mechanic felt a little doubtful about it.

She was the only woman in the race. Her machine is by no means new, for she has flown it in a number of competitions over here and has used it for ordinary joy-riding. She was always a little behind Mr. Broad on each stage, but she always fetched up at the same place every day, and they finished within a few seconds of one another. Also Mr. Broad's machine had a very low coupé top, and Miss Spooner's is of the ordinary open type.

The reason that they were not in the first two or three landing at Orly was that they under-estimated their speed from Brussels to Orly, arrived a little ahead of time and had to cruise round for two or three minutes before crossing the line.

Miss Spooner is the first woman pilot to figure prominently in an international competition of the first importance, and her performance definitely places her among the World's best pilots of light aeroplanes irrespective of sex. Which only shows how foolish the *Fédération Aéronautique Internationale* was in allowing itself to be jockeyed into creating a special category of records for women pilots.

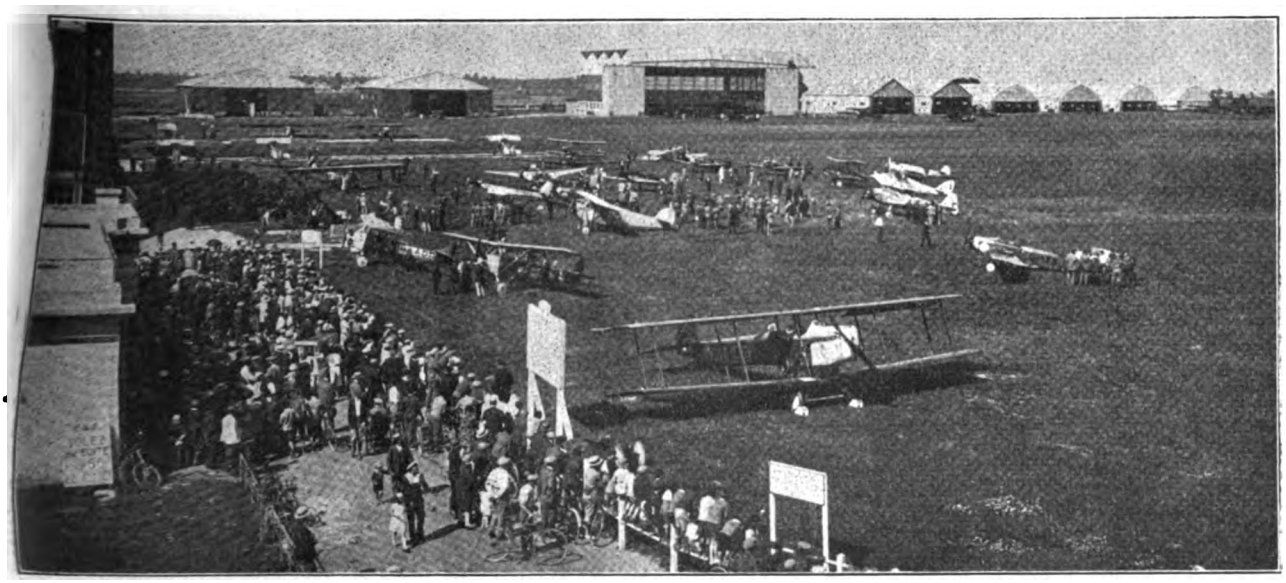
Unofficial Results.

The final official results of the competition will not be known until after The Aeroplane has gone to press this week. But a telegram from Mr. Broad from Paris on Monday gives the results unofficially as follows:—

The first place goes to Herr Morzik, of the Deutsche Verkehrsfliegerschule, in A4, a B.F.W. M-23 (70 h.p. Siemens S.H.-13).—This machine is in the light category and probably wins the competition on its points for petrol consumption, as it never showed up prominently during the actual flying. Nevertheless the B.F.W. is, in the very light class, a good little aeroplane.

The second place goes to Mr. Broad, in H35, a Coupé Moth (Gipsy). He is thus the winner in the heavier class. And, as the heavier class of light aeroplane is definitely the class which is best suited for general use all over the World for touring and taxi work and school work, this highly satisfactory result definitely proclaims the Gipsy-Moth the champion light aeroplane of its time.

The third place, apparently, goes to Lord Carbery, in B3., Raab-Katzenstein (Hermes) — presumably on speed. In the marking of various points of utility and efficiency awarded before the start of the tour his machine was at the very bottom of the list and was only awarded twelve marks, as against 26.25 marks awarded to Mr. Broad's Coupé-Moth, and 22.5 marks awarded to Miss Spooner's Gipsy-Moth. How he managed to pick up so many places in the



THE CHALLENGE DE TOURISME.—The scene at the finish at Orly.

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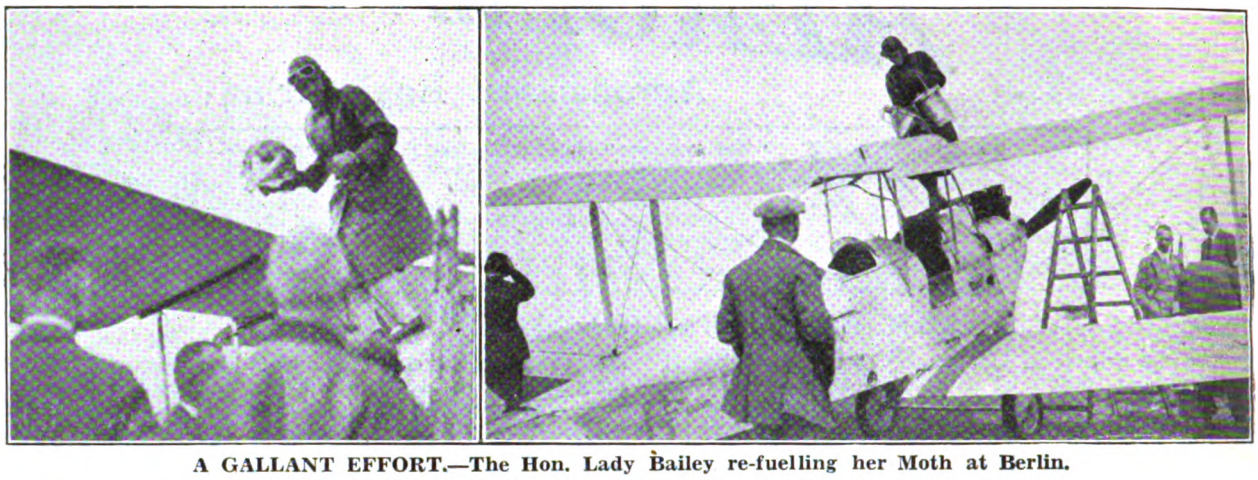

A GALLANT EFFORT.—The Hon. Lady Bailey re-fuelling her Moth at Berlin.

final classification when his speed was only one kilometre per hour faster than Mr. Broad's, is something of a mystery.

Nevertheless, Lord Carbery does deserve full credit for his pluck and perseverance in carrying on to the finish in spite of all the trouble he had, and all the repair work he had to do at the stopping places. And, in common justice one must admit that his machine was built purely for speed. It had a racing undercarriage which must have shaken it badly every time it landed, and the structure was obviously light for its powerful Hermes engine. Also it was built in a hurry, the only one of its kind, so that it was in every way an experiment, and one can hardly blame the makers because it tried to shake itself to pieces in the course of the journey.

All the same, if marks had been awarded for reliability throughout the journey, as undoubtedly they should be in any competition which is not a race pure and simple, the machine would have been disqualified for needing so many repairs. And if the competition had been a straight race round the course, allowing the competitors so many hours per day, the two Moths would, as already stated, have finished days ahead of anything else, including Lord Carbery, for he would have been left behind doing repairs.

Lady Bailey's Flight.

Following hereafter will be found notes on the progress of the race, including one from a correspondent in Vienna and one describing the finish at Orly. In all these the excellence of the performance of the Moths is duly indicated. And, just by way of showing that their performance was no fluke, we have confirmation in the very fine sporting flight made by the Honourable Lady Bailey round the course in a brand new Moth.

As was stated in the first article on this competition Lady Bailey arrived unfortunately too late to have her machine accepted as a competitor. So, true to her record for sportsmanship, she flew round with the rest. And she finished with the rest. So far as can be gathered, her Moth needed no more attention than did either of the other two.

Our Engines.

We British have yet another reason to be pleased with the result of this competition. Forty-five machines left Orly on Aug. 7. Among them they had five Genet engines, five Cirrus engines, three Gipsies and one Hermes.

In the first twenty-five machines which finished were three out of the five Cirruses, two out of the three Gipsies, and two out of the five Genets and the one Hermes. Allowing for the machines which were put out of action by sheer accident or bad piloting or by any one of a dozen other causes, and considering that there were only fourteen British engines in forty-five starters, this is an extraordinarily good show for British engines.

None of the foreign machines with British engines was stopped by failure of its engine. Not only the manufacturers, but Mr. Olney of the Cirrus, and Mr. Sleigh of the Armstrong Siddeley Co., who saw to the installation of the engines at Orly, deserve full credit for their good work.

Our Manufacturers.

The great pity is that more British manufacturers did not see the wisdom of competing in this great international event. Several of our private owners would have liked to have been in it, but the majority of them have to work for their livings, even though they make enough out of doing so to be able to afford aeroplanes of their own. Therefore the only hope of the British Aircraft Trade being adequately represented was that the Trade would see the advertising value of such an international competition. Unfortunately, as usual, our salesmanship was not up to our workmanship, and so the only British aeroplane in the competition was the Moth.

The De Havilland Co. thoroughly deserve the enormous international advertisement which they will get out of the performance of their two lonely representatives. Whatever the marks may show, they have undoubtedly put up the best show in the whole competition. And they have worthily upheld the reputation of British design, British workmanship, British material and British sportsmanship.—C. G. G.

ON THE WAY.—Miss Spooner and Mr. Cambpell, her mechanic (right), at Basle.

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THE BRITISH CHAMPION.—Mr. Broad getting ready to start from Orly.

A General Resume.

A brief resumé of the progress of the tour of Europe from the time that the competitors left Orly was given in The Aeroplane last week. At that time the results of the eliminating tests were not available so that it is now necessary to return to the preliminaries, now that the results are known, in order to be able to appreciate the final results of the Competition, which should be announced some time during the coming week.

As is already known, fifty-five machines arrived at Orly, of which eight were eliminated for various reasons, leaving forty-seven "toeing the line" for the Competition. These machines had first to be submitted to a number of preliminary tests for which a maximum of 46 points could be gained before starting on the Tour of Europe.

These tests resolved themselves into examinations of the machines to determine (1) the robustness of construction and comfort of the crew, (2) the arrangements for dual control, (3) the arrangements for the installation of parachutes, (4) the arrangements for protection against fire, (5) engine-starting, (6) the arrangements for dismantling and re-erection, and finally (7) the fuel consumption over a circuit of 320 kms.

For robustness of construction and comfort of the crew the three Potez 36 cabin monoplanes obtained the maximum 5.75 points followed by the Junkers Juniors (Genet engines) and the Breda 15 cabin monoplanes (Cirrus engines) with 5.5 points and the Guerchais-Henriot cabin monoplane and the Coupé-Moth (Gipsy engine) with 5.25 points.

For dual-control arrangements the Fiat A.S.1 monoplanes obtained the maximum 1.75 points, these being followed by the Romeo Ro.5 monoplanes with 1.5 points. Six machines —the two Raab-Katzenstein R.K.25 monoplanes, the Caudron 190 and 191 and the two Belgian St.-Hubert monoplanes— had no dual-control fitted.

All machines without exception carried parachutes. The Darmstadt D.18 (Genet engine), the Cirrus-Klemm, the three Junkers Juniors (Genet engines), the three Breda 15 cabin monoplanes (Cirrus engines) and the two Avia Antilopas were awarded the maximum 1.5 points for providing the best means for using their parachutes.

For protection against fire the Junkers Junior, Romeo Ro.5 and Breda 15 monoplanes were awarded the maximum 3.75 points.

For engine-starting all the Salmson-engined Klemm monoplanes, the Guerchais-Henriot and the two Potez 36, all fitted with the 95 h.p. Salmson engine, the Cant (Isotta-Fraschini) and the two Avia Antilopas (Walter engines) were awarded the maximum three points.

In the dismantling and re-erection tests the two Gipsy-Moths gained the maximum five points by shutting and opening themselves in 22 and 30 seconds respectively. Thirteen machines were not fitted with dismountable wings.

The fuel consumption test was the most important in that unlike the other tests, it was eliminatory. Forty-seven machines lined up for this test. Eight machines were eliminated and two exceeded the maximum consumption figure and repeated their tests under a penalty of a fifty per cent. reduction of their final classification.

The eight eliminated machines were the B.F.W.23, piloted by Herr Sido, for excessive consumption, the two Potez 36 piloted by MM. Laulhé and Roques respectively for landing during the tests, the B.F.W.23 piloted by Herr von Bismarck for engine trouble during the tests, the Focke-Wulf Kiebitz piloted by Herr Kissin, the Arado cantilever biplane in which Herr Hoffmann was killed and the Yougoslav Icarus biplane for having an unsuitable airscrew. The two machines to repeat their consumption tests were the Caudron piloted by M. Delmotte and the Romeo Ro.5 piloted by Signor Benassati.

The fastest speed over the circuit was made by Lord Cadbery in the Raab-Katzenstein R.K.25 monoplane (Cirrus Hermes engine) at 174.171 km.p.h. with a consumption of 47.196 kgs. of fuel. The lowest consumption figure was o

THE BRITISH CHAMPION.—Mr. Broad at Hamburg.

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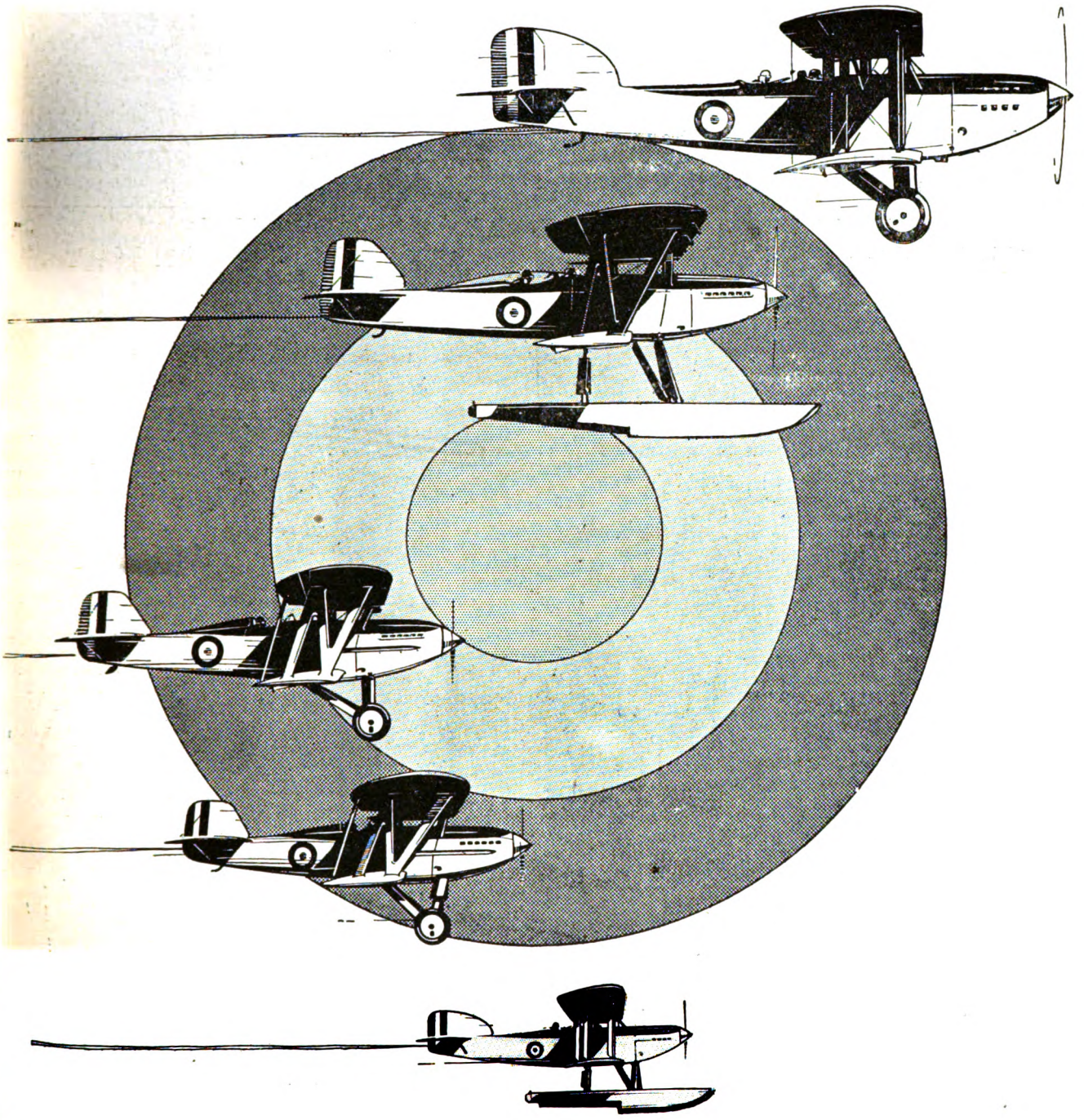

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WITH A BRITISH ENGINE.—Herr Kneer's Junkers, with a Genet, at Berlin.

tained by the Swiss M. Wirth in a Klemm-Salmson with 20.176 kgs. at an average speed of 109.533 km.p.h. All the Klemm-Salmson monoplanes showed extremely low consumption figures, the highest being that of the other Swiss competitor, M. Burkhard with 28.132 kgs. and an average speed of 116.326 km.p.h. The biggest variation between two machines of the same type was that of the two Romeo Ro.5's piloted by Signors Guazzetti and Benassati. The former's consumption figure was 37.749 kgs. and that of the latter 62.921 kgs. Both averaged 155 odd km.p.h.

The following gives the order of the competitors in the classification on points gained in the eliminating tests:—

		Points.
1.	Wirth (Klemm-Salmson 40 h.p.) *S-2	32.5
	Kleps (Avia-Walter 85 h.p.) T-1	
	Nehring (Darmstadt-Genet 65 h.p.) *B-5	
4.	Lusser (Klemm-Salmson 40 h.p.) *C-2	30.5
5.	Poss (Junkers-Genet 80 h.p.) *C-6	30.25
	Roeder (Junkers-Genet 80 h.p.) D-5	
7.	Siebel (Klemm-Salmson 40 h.p.) *C-5	30
8.	Risticz (Junkers-Walter 85 h.p.) D-7	29.75
9.	Kneer (Junkers-Genet 80 h.p.) D-4	29.5
	Hirth (Klemm-Salmson 40 h.p.) *C-1	
11.	Vleck (Avia-Walter 85 h.p.) T-2	29
12.	Guazzetti (Romeo-Fiat 80 h.p.) M-3	28.25
13.	Kirsch (Klemm-Cirrus 80 h.p.) C-4	27.75
14.	Stoppani (Cant-Isotta-Fraschini 80 h.p.) K-7	27.25
15.	Broad (Coupé-Moth-Gipsy 85 h.p.) H-5	26.25
	Novak (Aero-Walter 85 h.p.) T-4	
	Ferrarin (Breda-Cirrus 80 h.p.) M-4	
18.	Castaldo (Romeo-Fiat 80 h.p.) M-2	25.25
	Junck (Albatros-Siemens 70 h.p.) B-9	
20.	Thomas (B.F.W.-Genet 80 h.p.) *A-1	25
21.	Burkhard (Klemm-Salmson 40 h.p.) *S-1	24.75
22.	Mazzotti (Breda-Cirrus 80 h.p.) M-5	24.25
23.	Liberrati (Breda-Cirrus 80 h.p.) M-6	24
24.	Weiss (Potez-Salmson 95 h.p.) F-5	23.75
25.	Miss Spooner (Moth-Gipsy 85 h.p.) H-6	22.5
26.	Ziegler (Albatros-Gipsy 85 h.p.) B-7	21.5
27.	Bayol (Potez-Salmson 95 h.p.) F-4	20.5
28.	Von Dungern (B.F.W.-Siemens 70 h.p.) *A-3	20.25
29.	Fauvel (Caudron-Anzani 70 h.p.) E-8	19.75
30.	Morzik (B.F.W.-Siemens 70 h.6) *A-4	19.55
31.	Benassati (Romeo-Fiat 80 h.p.) K-8	19.25
32.	Finat (Potez-Salmson 95 h.p.) F-6	18.5
	Lombardi (Fiat-Fiat 80 h.p.) K-3	
34	Hagenmayer (Klemm-Siemens 70 h.p.) C-3	18.25
35.	Mauss (St.-Hubert-Walter 85 h.p.) H-2	18.125
36.	Barbot (Caudron-Renault 80 h.p.) E-6	18
	Gelmetti (Romeo-Fiat 80 h.p.) M-1	
	Suster (Fiat-Fiat 80 h.p.) K-5	
	Donati (Fiat-Fiat 80 h.p.) K-4	
40.	Botalla (Fiat-Fiat 80 h.p.) K-6	17.5
41	Vuylsteke (St.-Hubert-Walter 85 h.p.) H-3	15.75
42.	Croneiss (B.F.W.-Genet 80 h.p.) *A-5	15.25
43	Lemerre (Guerchais-Salmson 95 h.p.)	15
44.	Offermann (B.F.W-Siemens 70 h.p.) *A-2	14
45.	Delmotte (Caudron-Salmson 95 h.p.) E-7	12.75
46	Lord Carbery (Raab-Katzenstein-Hermes) B-3	12
	Altemeier (Raab-Katzenstein-Cirrus 80 h.p.) B-2	

Of the forty-seven competitors who survived the eliminating tests, forty-five left Orly on Aug. 7 to take part in the European tour.

The two non-starters were Herr Risticz (Junkers-Walter) whose undercarriage failed while he was taxy-ing from the hangar to the starting line and M. Vuylsteke (St.-Hubert-Walter) who suffered persistent magneto-trouble.

Of the starters M. Barbot (Caudron-Renault), M. Novak (Aero-Walter) and Signor Donati (Fiat-Fiat) gave up soon after starting with engine trouble. Barbot and Donati returned to Orly.

Up to Aug. 11, of the departures from Orly, forty-two had been checked in at Basle, forty-one at Geneva, forty at Lyon, thirty-nine at Marseilles, thirty-eight at St. Raphael, thirty-seven at Turin and Milan, thirty-five at Venice, thirty-two at Zagreb, thirty at Belgrade, twenty-five at Bucharest, twenty-one at Budapest, sixteen at Vienna and fourteen at Brunn, Prague and Breslau.

On Aug. 12 there were still thirty-four competitors left in the contest, strung all over Europe from Bucharest to Amsterdam. Herr Nehring, who was one of the three to score highest points in the eliminating tests, was forced to land in Poland and his machine was wrecked. Herr Nehring was flying a very interesting cantilever biplane which had been designed and built by the students of the Darmstadt University, and this machine had attracted considerable attention by reason of its originality in design and excellence of workmanship.

On Aug. 13 those competitors who had arrived at Amsterdam continued to Brussels. Mr. Hubert Broad (Coupé Gipsy-Moth) was the first to arrive at Brussels at 08.20 hrs followed by Lord Carbery (Raab-Katzenstein-Hermes) and Miss Spooner (Gipsy-Moth) at 08.22 and 08.23 hrs. respectively.

They were followed by Herr Roeder (Junkers-Genet), Herr

WITH A BRITISH ENGINE.—Herr Roeder's Junkers, with a Genet, at Orly.

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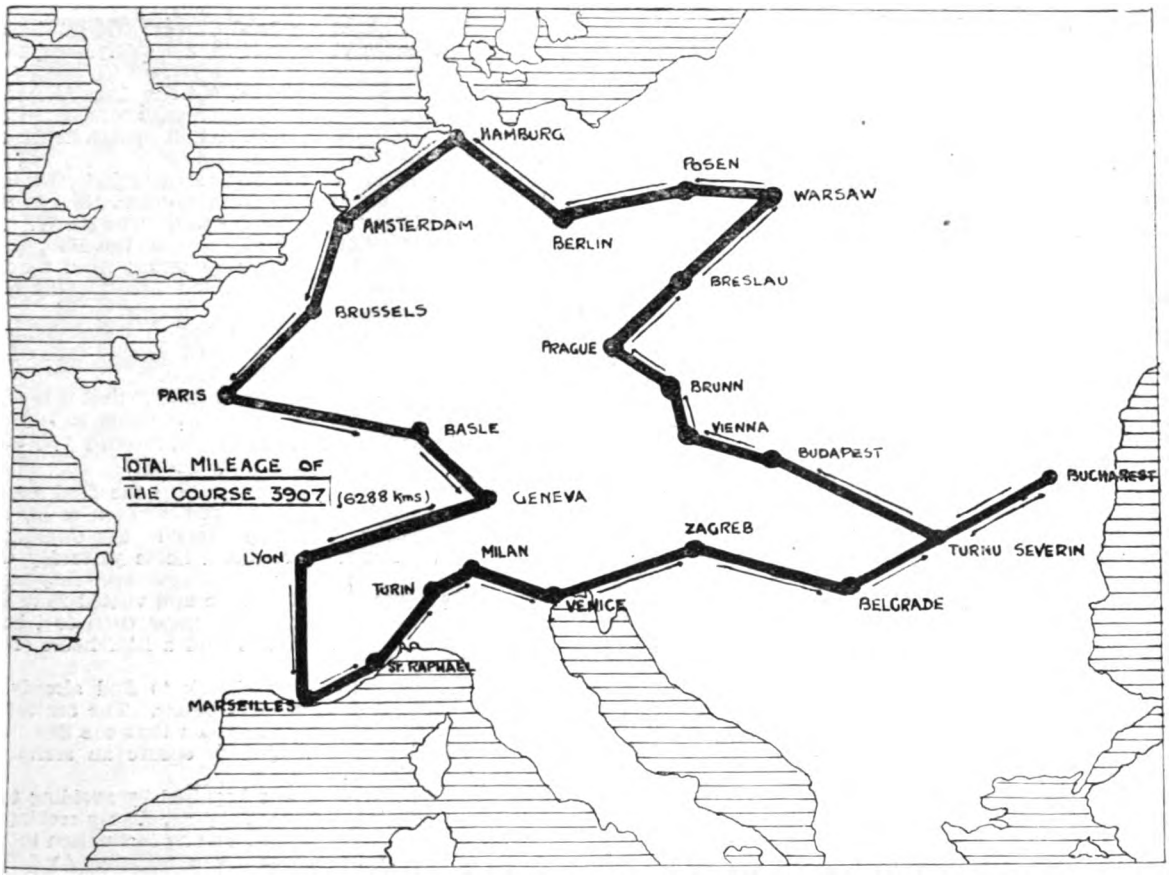

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Offermann (B.F.W.-Siemens), M. Delmotte (Caudron-Salmson), Herr Hagenmeyer (Klemm-Siemens), M. Kleps (Avia-Walter), Signor Lombardi (Fiat-Fiat), Signor Botalla (Fiat-Fiat), Signor Mazzotti (Breda-Cirrus), Herr Van Dungern (B.F.W.-Siemens), Herr Morzik (B.F.W.-Siemens), Herr Junck (Albatros-Siemens) and Herr Kneer (Junkers-Genet).

The Hon. Lady Bailey, who had gone round the course *hors concours*, was the last to arrive at Brussels that day. after having overshot Evère aerodrome and landed in a field to inquire the way.

15.00 hrs. on Aug. 14 was the zero hour for arrivals at Orly. Any competitor who arrived before that time and flew round, over, or in the vicinity of, the aerodrome, was liable to have his waiting time added to his flying time from Brussels to Paris and would thus penalise himself. Soon after 14.30 hrs. two Junkers monoplanes appeared over the aerodrome and they were closely followed by other German machines. At 14.58 hrs. the two Gipsy-Moths arrived and at 15.00 hrs., precisely, a rocket was fired to signify that landings would be permitted. Following this signal fifteen competitors crossed the line within two minutes and by 18.00 hrs. twenty-five competitors had landed.—L. B.

At Vienna.

A correspondent writes from Vienna:—

Machines arrived in the following order, on Aug. 10, Raab-Katzenstein (Hermes) Lord Carbery, 10.00 hrs.; Moth (Gipsy) Miss Spooner, 10.43; Moth (Gipsy) Mr. Broad, 10.51; Klemm (Cirrus) Kirsch, 10.59 hrs.; Darmstadt Akad. (Mk. I Genet) Nehring, 11.56; Avia (Walter) Klepps, 11.25; B.F.W. (Siemens) Offermann, 11.26; and Caudron (Delmotte) 12.00 hrs.

All save Nehring filled up and went on to Prague. The latter decided to wait until Sunday, the 11th. Three Fiats and four Romeos which arrived during the afternoon, also waited until Sunday morning as did Roeder (Junkers-Genet) who arrived just before the Italian machines. They decided to do this owing to the increasing force of head wind and bad weather reports.

The exact position of competitors in this competition is not necessarily indicated by the arrival times. Points were awarded in Paris for fuel consumption and design, etc. Points gained for average speed while actually flying will be added together.

AN INTERNATIONAL JOKE.—Herr Offermann at Schiphol, Amsterdam, reading his obituary in "The Aeroplane," while Mr. Broad, and Mr. Smits of the Fokker Co. (extreme right) enjoy the mistake.

FORCE OF HABIT.—Lord Carbery (right) looking for the cause of trouble in his R.K. monoplane.

The Raab Kat machine (Cirrus II), Altemeier pilot crashed within 10 kms. of Venice on Thursday, through fuel stoppage when holding 2nd Position,—machine destroyed, no injuries to pilot or mechanic.

Lady Bailey left Vienna this morning just after the Darmstadt (Genet) and the Junkers (Genet). She is flying the course round but not as a competitor. The B.F.W. (Siemens) von Dongern pilot, arrived late on the 10th.

This morning, 11th, against a strong head wind, arrived two Klemm (Salmson 40 h.p.) an Albatros (Siemens) and Junkers (Genet) Kneer, pilot.

All competitors are unanimous in expressing their appreciation at their reception in all places. Oil and fuel and timing arrangements are first class.

The Competition, for a "first timer," that is to say for an International one of such a size, covering so large an area and so many countries, is so far apparently very successful.

The Grand Finale.

A correspondent in Paris describes the final scene:—

Amid blazing sunshine and in heat such as has not been known for weeks, the competitors in the *Challenge Internationale de Tourisme* returned home yesterday (Aug. 14). Since leaving on Aug. 7, just a week ago, they have flown over the greater part of Europe and visited 23 of the chief cities: and of the 46 that left more than 50% have completed the course within two and a half hours of the first machine home.

One arrived before two o'clock to find already a small crowd of officials and general public. The control was not open till 3 p.m. and it was known that the departure from Brussels had been arranged to ensure an arrival at Orly exactly at 3 o'clock.

The time of waiting was beguiled by avoiding the attentions of too-flirtatious wasps, by sedulously seeking the few cool spots, and by resisting a strong inclination to lie on the grass and close one's eyes for a minute. At 2.30 a faint spasmodic interest in the heavens was observable. The sky was quite empty; not a speck, not a sign of anything; not even a tiny cloud. Only a hot lazy sun. Suddenly at 2.40 the first 'plane arrived, coming from behind the aerodrome and taking one quite by surprise. It flew low and triumphantly over the arrival line and went off to amuse itself for 20 minutes. It was followed immediately by another, and for five minutes these two held the sky alone. Then they all came. At 3 o'clock there were 16 planes circling round and round over the aerodrome.

To one more or less an amateur, it was a beautiful sight to see these 16 machines dancing in and out, flashing silver in the sunlight, forming a crazy pattern in the sky and avoiding each other, as it seemed, only by miracles. They seemed like giant dragon-flies, darting past and roaring over the line of arrival. At one minute past three the first an Italian machine, piloted by Lombardi, touched ground. At two minutes past the hour 16 planes had landed and the occupants were being rapturously greeted.

These planes had left Orly seven days ago; they had flo

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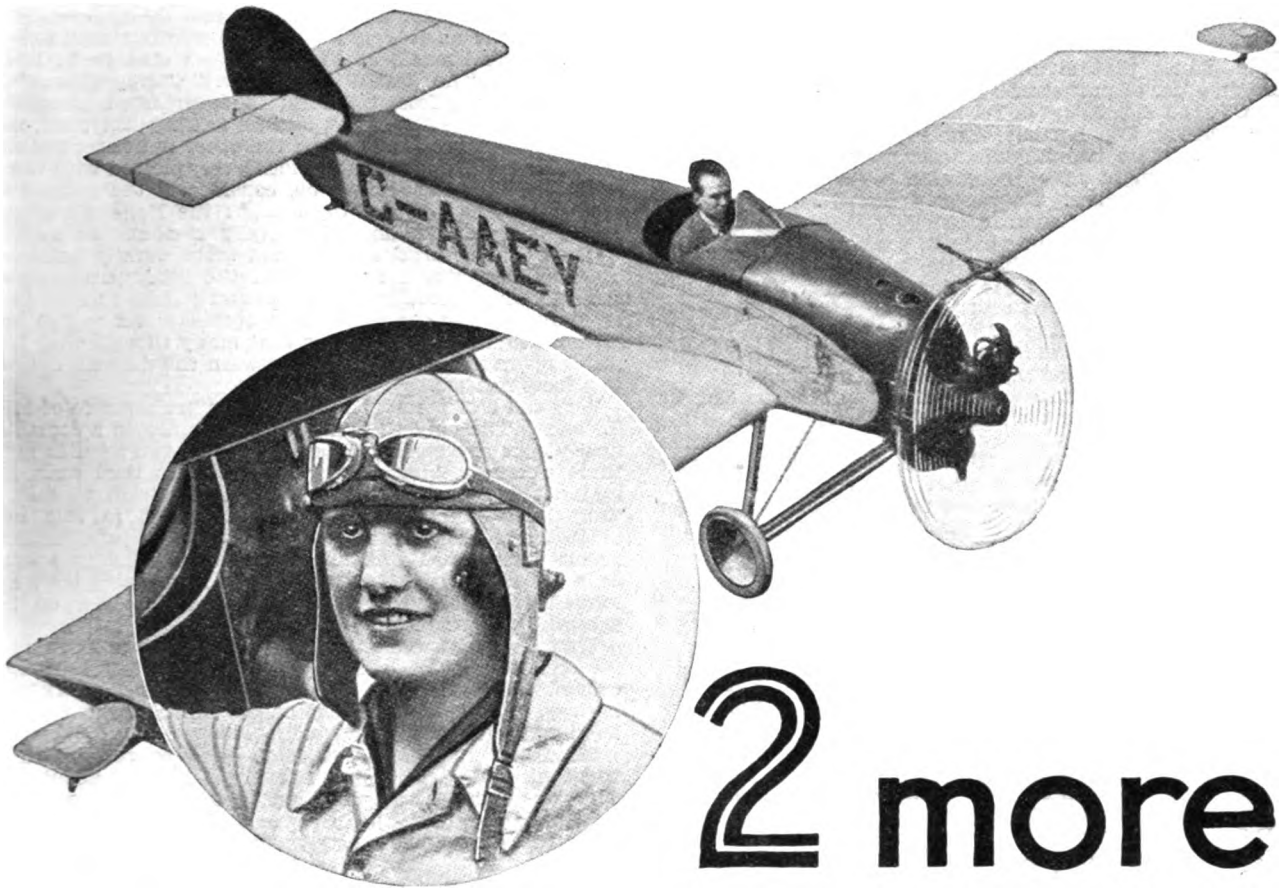

2 more RECORD FLIGHTS on Mobiloil

RECD TRADE MARK

THE *Quality* OIL

LIGHT AEROPLANE ENDURANCE RECORD

The French aviator, Maryse Bastie, on a Caudron Monoplane, fitted with 40 h.p. Salmson engine, lubricated with Mobiloil, established a new endurance record for women and broke *all* light aeroplane endurance records.

NEW WORLD'S ALTITUDE RECORD

A Glenny-Henderson, The Gadfly, fitted with an A.B.C. Scorpion Mark II. engine lubricated with Mobiloil, has broken the altitude record for single-seater light aeroplanes of weight when empty not more than 200 kilos.

Use MOBILOIL—the record-breaking oil.

VACUUM OIL COMPANY, LTD., CAXTON HOUSE, LONDON, S.W.1.

C.F.H

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right round the Continent of Europe and they had landed back in Orly within one minute of each other. And in the crowd that greeted them was Monsieur Blériot.

Order of Arrival.

The planes that arrived during the first two minutes were, in order of precedence, the K-3, A-2, D-4, F-5, B-3, H-6, D-5, C-5, C-2, E-7, A-3, C-6, T-1, C-4, and H-5; that is to say, nine German, two Italians, four French, and one Czechoslovakian. The two English machines were (as already stated a fortnight ago) flying under the auspices of the Aéro Club de France. They were followed immediately by A-4 and B-9, both German machines, two minutes later.

One had ample time in which to greet these arrivals, examine their planes and hear the hazards of the voyage before the appearance of the other machines. The Italian Breda, the M-5, came in at 3.40 p.m., to be followed just before 4 o'clock by that splendid equipage of Italian Romeos which had flown the whole course without one of the four constituent planes being separated from the others.

There was some small excitement when they landed, for two, at least, of the four, had not understood, or had forgotten, that it was necessary for them to pass the arrival line while in actual flight. However, as the arrival, registration of dismay, taking-off again, and rectification of the mistake only occupied about one minute it did not matter.

The second Potez 36 to arrive appeared at 4.15 p.m. and at 5.50 p.m. the long-expected M-6, an Italian Breda, showed up, —greatly to the satisfaction of the Italian contingent.

Hereafter is appended the official list, as issued by the Aéro Club de France, giving the competition mark, the type of machine, pilot, and time of arrival:—

K-3	A.S.1 (Fiat)	Lombardi	3.01 m.
*A-2	B.F.W. (Siemens)	Offermann	3.01 m.
K-6	A.S.1 (Fiat)	Botalla	3.01 m.
D-4	Junkers (Genet)	Kneer	3.01 m.
F-5	Potez 36 (Salmson)	Weiss	3.01 m.
B-3	Raab-Katzenstein (Hermes)	Carbery	3.01 m.
H-6	Moth (Gipsy)	Miss Spooner	3.01 m. 4 s.
D-5	Junkers (Genet)	Roeder	3.01 m. 8 s.
*C-5	Klemm (Salmson)	Siebel	3.01 m. 14 s.
*C-2	Klemm (Salmson)	Lusser	3.01 m. 20 s.
E-7	Caudron (Salmson)	Delmotte	3.01 m. 25 s.
*A-3	B.F.W. (Siemens)	Von Dungern	3.01 m. 30 s.
*C-6	Klemm (Salmson)	Poss	3.01 m. 35 s.
T-1	Antilopa (Walter)	Kleps	3.01 m. 40 s.
C-4	Klemm (Cirrus)	Kirsch	3.01 m. 58 s.
H-5	Moth (Gipsy)	Broad	3.02 m. 38 s.
*A-4	B.F.W. (Siemens)	Morzik	3.04 m. 2 s.
B-9	Albatros (Siemens)	Junck	3.04 m. 36 s.
M-5	Breda (Cirrus)	Mazzotti	3.41 m. 42 s.
M-1	Romeo (Fiat)	Gelmetti	4.00 m. 11 s.
K-8	Romeo (Fiat)	Benassati	4.00 m. 18 s.
M-2	Romeo (Fiat)	Castaldo	4.00 m. 21 s.
M-3 F-6	Romeo (Fiat)	Guazzetti	4.02 m. 18 s.
F-6	Potez (Salmson)	Finat	4.15 m. 21 s.
M-6	Breda (Cirrus)	Liberrati	5.50 m. 00 s.

(Asterisks denote the light category.)

Nationality Will Out.

I think if one had been deaf and also entirely ignorant of aircraft construction one could have told the nationality of each machine as it arrived by the behaviour of its occupants. The French, so gay, jolly, and glad to be home again, with "*Le Voila!*" "*Eh, bien!*" "*Magnifique!*" in quick succession from all sides; the Germans, smiling and contented, not saying much, and all looking dusty, hot, and tired, in marked contrast with the other nations, especially the French and English, but obviously very pleased with themselves—as well they might be, considering the number of their planes that stayed the course: the Italians laughing and talking all at once, frightfully excited, and full of "*Viva-s*" and "*Bravissimo-s*" and more warmly welcomed by their compatriots than any of the other participants: the English distributing a few casual "Hello-s" and then stretching out on the grass for cigarettes and a rest, so well hidden behind their machines that many thought they had not yet arrived. This contrast between the different nations was most marked.

Very full credit must be given to the performance of Miss Spooner. The only woman entrant, she stayed a course of nearly four thousand miles and came in two minutes after three o'clock looking fresher and far less tired than the majority of the men. The tremendous strain of such a test, flying over seven hours a day—and in this connection one remembers vividly a young German tenderly rubbing his seat on dismounting—under all conditions would be too much for many men, and it is amazing that any woman could stand it. Congratulations to her on her splendid performance.

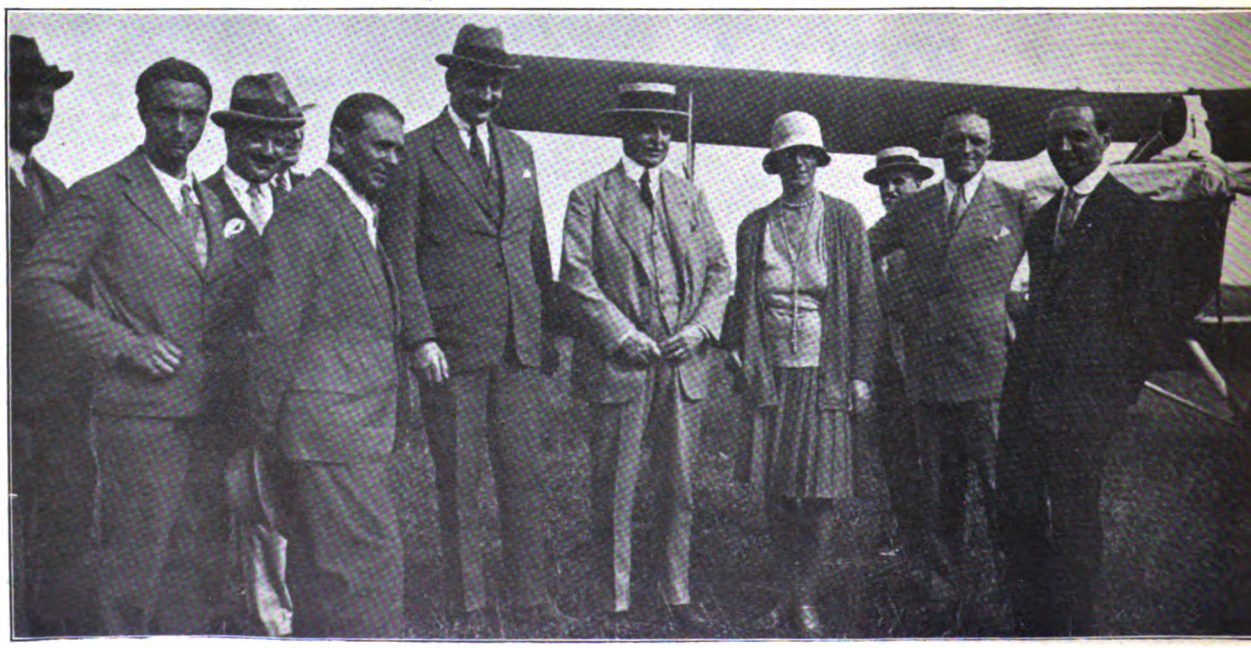
That fine sportswoman, Lady Bailey, although disqualified for arriving late on the day of the start, flew the whole course with the competitors and arrived back at Orly at midday. After being present at the finish of the race she left immediately for Croydon.

Mr. Broad and Miss Spooner on being pressed for an account of their experiences, murmured vaguely about difficulties of obtaining adequate food, perilous crossings of the Danube, and referred to bed bugs and such like. They did not seem to have much else to say of Europe.

Among Those Present.

A reception was held afterwards when the majority of the competitors had arrived. There were present, Monsieur P. E. Flandin, Vice-President of the Chambre de Députés and President of the Aéro Club de France; Monsieur Vivant, representing Monsieur Laurent Eynac, the Air Minister; Monsieur Soreau, Vice-President of the Aéro Club de France; these gentlemen representing French interests: and the General Piccio, Air Attaché at the Italian Embassy representing Italian interests. British support was conspicuous only by its absence. Mr. St. Barbe, of the De Havilland Company came over and was very pleased with the performance of the two De Havilland planes. One noticed several aeroplane designers, among them Herr Klemm.

Undoubtedly it was the constructors' day and to them was the triumph. The *Challenge International de Tourisme* can never be considered purely as a sporting event because so much depends on the actual constructors.—V. G. W.



AT THE FINISH.—M. Pierre Etienne Flandin (President of the Aéro Club de France) and M. Blériot (in straw hat) greet Miss Spooner.

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ON THE INDIAN AIR RECORD.

On August 13 Mr. C. D. Barnard, who was chief pilot in the Duchess of Bedford's historic journey to India and back, while giving a talk through the British Broadcasting Company, was understood to say "I am sorry to say it, but there is not a machine built in this country which could possibly have done this flight."

Naturally this statement struck some thousands of hearers with amazement and called forth loud protests from various people connected with aviation. The enterprising *Evening News* apparently asked the opinions of several people in the British Aircraft Trade, and they, also naturally, spoke scornfully of Mr. Barnard and his opinions.

The Evening News, which so far as one can remember has not hitherto gone out of its way to proclaim the excellence of British aircraft, actually asked an official of the British Broadcasting Company whether his firm had not power to censor a remark likely to do harm,—such as this remark was apparently supposed to do. And one cannot help thinking that if *The Evening News* had paid some attention to the splendid performances of Mr. Broad and Miss Spooner in the International Air Tour Competition it might have done more good to British Aviation than it could ever do by expressing surprise that uncomplimentary remarks about the British Aircraft Trade were not censored by some authority at the B.B.C.

Personally one reads *The Evening News* fairly regularly, but the only paragraph one can remember seeing in it about the International Air Tour was one drawing attention to the fact that Lady Bailey was flying round the course. And no information whatever was given concerning the competition or the course to which the paragraph about Lady Bailey referred.

Lady Bailey, through no fault of her own, happens to be what the daily papers consider News. And the great International Air Tour, in which the two Gipsy Moths were giving British aircraft the best free advertisement they have had for years, does not happen to be news,—even with a small n.

English Salesmanship.

That is a wonderful example of English ideas of salesmanship. There are so many people in the British Aircraft Industry who, like *The Evening News*, think that the way to sell British aircraft is to hide their defects, instead of advertising their excellence.

What knowledge of British industrialism His Royal Highness the Prince of Wales displayed in proclaiming to the world our greatest commercial fault when in a speech he asked his hearers whether our salesmanship was worthy of our workmen.

Begging the Question.

Anyhow, to return to Mr. Barnard.—According to *The Evening News*, Mr. F. Handley Page, who is now the Chairman of the Society of British Aircraft Constructors, said that Mr. Barnard's statement was absolute nonsense, and that it was so obviously incorrect that he hardly had the patience to take it seriously.

May one be permitted to ask Mr. Handley Page in what respect Mr. Barnard's statement is absolute nonsense? Although Mr. Handley Page is Chairman of the S.B.A.C., and although one is only the humble editor of a humble aircraft paper, one believes that one's knowledge of what is being produced by the various aircraft firms in this country is at least equal to that of Mr. Handley Page. And one challenges Mr. Handley Page to name a machine built in this country which could possibly have done *that particular* flight.

Remember that for that particular flight the machine had to have comfortable cabin accommodation. And it had to have reasonably high speed. And it had to be arranged so that the passengers could change places with the pilot while in the air. A search through the current issue of *All the World's Aircraft*, and a fairly good knowledge of what has been produced since the last issue of that work appeared, fails to reveal any British machine fulfilling those conditions.

According to *The Evening News* "Major" Maurice Wright, of the Fairey Company, was inveigled into saying of Mr. Barnard's statement "obviously it is nonsense to say that no British 'plane could have flown to India and back. Why, the R.A.F. 'plane flew to Karachi in 50 hours without stopping. It could have come straight back to England, too, without stopping, and so done the trip in far less time than the Duchess of Bedford."

If Squadron Leader Wright said what he is reported as having said he was obviously not concentrating on what Mr. Barnard said. Nobody denies that the Fairey Long Range Monoplane could do the trip to Karachi in less time than did the Duchess of Bedford's old Fokker. But it would not fulfil the conditions of that flight.

In the first place the only existing machine of the type could not be bought for the job at any price, as it is R.A.F. property. In the second place it could not be built to sell at anything like the price of the old Fokker. And anyhow it is not being built for sale. And these points are included inherently in Mr. Barnard's phrase "this flight."

The old Fokker is a perfectly plain commercial proposition and the Fairey Long Range Monoplane, which personally one regards as the most beautiful flying-machine ever produced, is not a commercial proposition, and is hardly likely to become so.

The Daily Telegraph, also taking up the cudgels on behalf of the British Aircraft Trade, reports Mr. Handley Page as saying that the "only machine that has flown non-stop to India was British-built, that most of the machines that have flown to India were British and that the first machine to make the flight, back in 1918, was British."

Here again Mr. Handley Page begs the question. The fact that the first machine to fly to India, a twin-engined Handley Page in 1918, was British, has nothing to do with a single-engined cabin job which enabled three people fly to India and back in comfort in 7½ days. And the fact that a number of war machines and light aeroplanes and other things have flown to India more or less successfully has nothing to do with the Duchess of Bedford's successful flight.

"An official of D. Napier and Sons Ltd." has also been lured by *The Daily Telegraph* into referring to the non-stop flight to India, by the Fairey Long Range Monoplane, which had a Napier engine.

"An official of the De Havilland Aircraft Co. Ltd." is credited by *The Daily Telegraph* with having spoken thus: "Captain Barnard's statement is probably true with the addition of the words 'at the price.' The Giant Moth, with which Sir Alan Cobham is now touring Great Britain, could be equipped to give a range of over 2,000 miles and a cruising speed of 110 miles an hour. In this form it would have done the job adequately.

"It is, however, a far larger machine than the Fokker used by Captain Barnard, and the price is necessarily considerably higher. The smaller Hawk Moth saloon could also be equipped to do the job, but this being a very recent type was unfortunately not in the production stage at the time the machine was wanted."

That answer again begs the question. There are only two Giant Moths in England. Sir Alan Cobham has one and *The Daily Mail* has the other. So one can hardly say that they are "built in this country" as a habit.

They can certainly not be bought off the hook, so to speak, as the Duchess of Bedford bought the Fokker. And anyhow they do not fulfil the condition that the pilot and his passengers can change seats when flying.

The reference to the Hawk Moth also begs the question. Very possibly it could do the journey. Possibly it could do it faster than the Fokker, but one doubts it, seeing that the Fokker had a new geared Jupiter. And there is only one of it,—so the Duchess of Bedford could not have got it if she had wanted it.

WITH BRITISH ENGINES.—Herr Altmeier's R.K.25 (B2), with a Cirrus, and Lord Carbery's R.K.25 (B3), with a Hermes, at Orly.

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CHALLENGE INTERN

4,000 MILE

100 PER CEN

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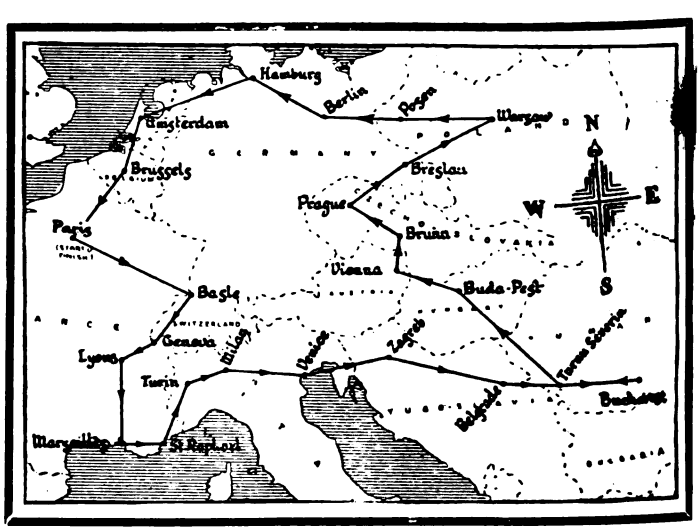

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PSY MOTH Capt. Hubert Broad,
154 k.p.h., 96 m.p.h.

PSY MOTH Miss W. E. Spooner,
145 k.p.h., 90 m.p.h.

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Mr. Barnard is perfectly right. No such British aeroplane exists. But several dozen of them have been built in Holland. Quite a good few of a similar type have been built in France, though none of them have done anything worth talking about. And there are hundreds of them in America. There are Lockheeds and Ryans and Fairchilds and Stinsons and half-a-dozen more types all built by the dozen, any one of which with any one of half-a-dozen different makes of engines could have done the journey just as well as the Fokker. And the Lockheed would probably have knocked 25% off the time.

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There is a craze at the moment for three-engined cabin machines. But people are apt to forget that a machine with three little engines all pulling their little hearts out to try and get performance, is very much less reliable than a single-engined aeroplane with one big engine only using about two-thirds of its power.

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Hoity-toity, you gents whose names begin with H and others (coupled for alliterative reasons with the name of Harry Harper). What's it all about? What *is* it all about? Truth may be more annoying than comfortable fiction, but, Bless us and Guard us, why worry? Has anyone a guilty conscience or anything? Surely not in this Britain of ours or in the S.B.A.C.

What after all are the facts? Why, these (more or less).

McIntosh drifts along to K.L.M. casual like and remarks, "Patriotic as I am and so on, and in spite of the immense numbers of commercial aircraft in daily operation on British air lines, perfectly capable of the job I want, have you by chance some old commercial aeroplane on your air lines which will serve my purpose?"

"Why sure, Cap," says K.L.M., "we have dozens of F.VIIa planes, take your choice."

Mac takes his choice and beetles off and incidentally keeps on buying Fokkers afterwards at odd times out of sheer habit. Barnard sort of meets Mac in a temperance hotel one day, and says, says he, "Mac, ole top, wattabout your Fokker, is she for sale?"

"My dear old boy," says Mac, "she's yours, take her."

Barnard kind of flies the Duchess of Bedford to India and back, casual like, meaning no offence to Mr. Handley Page or anyone else.

Could he have got one of the numerous Gigantic Moths at the time? Probably not, if Cobham's was being used as a pulpit, and Wilson had a date with *The Daily Mail* for his.

One British designer, leaving out all reference to the actual figure in thousands of pounds, and making no mention of delivery time, remarked something to the effect that a British machine could have been found to do the job "*at a price*," and to this it is merely necessary to add—what's money to a Duchess anyhow?

The Long Range Monoplane has been compared to the poor old Fokker commercial 'plane quite a lot, but unless this person is in error (which often happens, Mr. H. P., so don't try any bullying here because we shall surrender at once), the Long Range Monoplane was a very special job and not a casual hack.

Naturally, too, Barnard only had to give Fairey a ring on the 'phone, and the Long Range Monoplane would have cancelled all other engagements to be at his disposal. Deuced unpatriotic not to have requisitioned it, what?

Poor Barnard! He never happened to notice all the many many British aircraft capable of the job and it is doubtful whether he would have heard of them at all, but for the present heaven-sent fuss. Well! Well! it has at least moved this person to a fit of rollicking mirth of unequalled value for medicinal purposes.

BRISTOL FASHION.

The Duchess of Bedford, Mr. C. D. Barnard, and Mr. R. F. Little flew from London to Bristol on August 13 in the Fokker monoplane (Bristol Jupiter engine) in which they flew to India and back in seven and a half days. The machine landed on the Filton aerodrome and the Duchess and her pilots were welcomed by officials of the Bristol Aeroplane Company and several hundreds of workpeople from the engine shops.

A Civic Lunch was given in honour of the Duchess and her companions at the Grand Hotel, Bristol. The Lord Mayor of Bristol was in the Chair. Welcoming the Duchess and her pilots the Lord Mayor said that the flight from London to India and back within a week was a striking record of courage and endurance. It opened a new era in the history of communication between this country and India. The task had called for physical endurance which any young man might have shirked. Throughout the flight the Duchess had been an active, useful and efficient member of the crew.

The chief interest in connection with the present celebrations was the fact that the engine with which the aeroplane was fitted came from Bristol. That the engine used was designed and manufactured in Bristol was a matter for congratulation. On behalf of the City of Bristol he had much pleasure in congratulating the Duchess on a record flight with which her name would be associated for all time.

The Duchess of Bedford, responding, expressed thanks for the honour that had been done to her. The flight for her two companions had been strenuous, but for herself it

WITH A BRITISH ENGINE.—Her Grace the Duchess of Bedford, with Mr. Barnard (left) and Mr. Little (right) and her Fokker monoplane and Jupiter engine at Bristol.

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PERFORMANCE IN THE AIR IS ONLY ONE REASON WHY THE

"Bristol"

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IS SOUGHT FOR BY ALL INTERESTED IN MILITARY AVIATION.

AMONG OTHER REASONS ARE THE SUPERB WORKMANSHIP OF THE HIGH TENSILE STEEL STRIP CONSTRUCTION TOGETHER WITH THE HIGH FACTOR OF SAFETY OF THE DESIGN, THE EASE OF ERECTION AND REPAIR AND THE LOW COST OF MAINTENANCE.

• • • • • • • •

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"Bristol"

THE BRISTOL AEROPLANE COMPANY LTD.

FILTON BRISTOL.

Telegrams—"Aviation, Bristol."
Telephone—3906 Bristol.

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Well done Barnard! In the silly season you have raised a hornet's nest. More, you have stirred up a perfect formicarium of formic-acid-squirting Air Correspondents.

As a leg-pull, premeditated or not, your remarks about not being able to get an aeroplane in this country for your India flight, were perfectly delightful, and hearing them broadcast to the Nations t'other night, this person was convulsed with unhallowed mirth at the thought of what the morrow would bring. H. P., usually abed by 10 p.m., would burn the midnight oil composing a counter-blast, and Stag Lane would hum with wrath during the hours usually devoted to reflection.

Hoity-toity, you gents whose names begin with H and others (coupled for alliterative reasons with the name of Harry Harper). What's it all about? What *is* it all about? Truth may be more annoying than comfortable fiction, but, Bless us and Guard us, why worry? Has anyone a guilty conscience or anything? Surely not in this Britain of ours or in the S.B.A.C.

What after all are the facts? Why, these (more or less).

McIntosh drifts along to K.L.M. casual like and remarks, "Patriotic as I am and so on, and in spite of the immense numbers of commercial aircraft in daily operation on British air lines, perfectly capable of the job I want, have you by chance some old commercial aeroplane on your air lines which will serve my purpose?"

"Why sure, Cap," says K.L.M., "we have dozens of F.VIIa planes, take your choice."

Mac takes his choice and beetles off and incidentally keeps on buying Fokkers afterwards at odd times out of sheer habit. Barnard sort of meets Mac in a temperance hotel one day, and says, says he, "Mac, ole top, wattabout your Fokker, is she for sale?"

"My dear old boy," says Mac, "she's yours, take her."

Barnard kind of flies the Duchess of Bedford to India and back, casual like, meaning no offence to Mr. Handley Page or anyone else.

Could he have got one of the numerous Gigantic Moths at the time? Probably not, if Cobham's was being used as a pulpit, and Wilson had a date with *The Daily Mail* for his.

One British designer, leaving out all reference to the actual figure in thousands of pounds, and making no mention of delivery time, remarked something to the effect that a British machine could have been found to do the job "*at a price*," and to this it is merely necessary to add—what's money to a Duchess anyhow?

The Long Range Monoplane has been compared to the poor old Fokker commercial 'plane quite a lot, but unless this person is in error (which often happens, Mr. H. P., so don't try any bullying here because we shall surrender at once), the Long Range Monoplane was a very special job and not a casual hack.

Naturally, too, Barnard only had to give Fairey a ring on the 'phone, and the Long Range Monoplane would have cancelled all other engagements to be at his disposal. Deuced unpatriotic not to have requisitioned it, what?

Poor Barnard! He never happened to notice all the many many British aircraft capable of the job and it is doubtful whether he would have heard of them at all, but for the present heaven-sent fuss. Well! Well! it has at least moved this person to a fit of rollicking mirth of unequalled value for medicinal purposes.

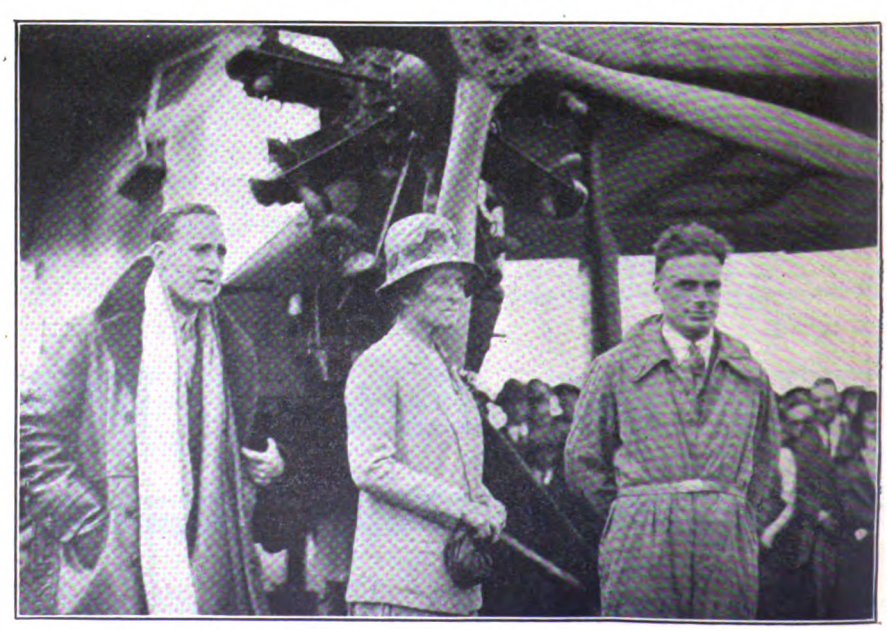
BRISTOL FASHION.

The Duchess of Bedford, Mr. C. D. Barnard, and Mr. R. F. Little flew from London to Bristol on August 13 in the Fokker monoplane (Bristol Jupiter engine) in which they flew to India and back in seven and a half days. The machine landed on the Filton aerodrome and the Duchess and her pilots were welcomed by officials of the Bristol Aeroplane Company and several hundreds of workpeople from the engine shops.

A Civic Lunch was given in honour of the Duchess and her companions at the Grand Hotel, Bristol. The Lord Mayor of Bristol was in the Chair. Welcoming the Duchess and her pilots the Lord Mayor said that the flight from London to India and back within a week was a striking record of courage and endurance. It opened a new era in the history of communication between this country and India. The task had called for physical endurance which any young man might have shirked. Throughout the flight the Duchess had been an active, useful and efficient member of the crew.

The chief interest in connection with the present celebrations was the fact that the engine with which the aeroplane was fitted came from Bristol. That the engine used was designed and manufactured in Bristol was a matter for congratulation. On behalf of the City of Bristol he had much pleasure in congratulating the Duchess on a record flight with which her name would be associated for all time.

The Duchess of Bedford, responding, expressed thanks for the honour that had been done to her. The flight for her two companions had been strenuous, but for herself it



WITH A BRITISH ENGINE.—Her Grace the Duchess of Bedford, with Mr. Barnard (left) and Mr. Little (right) and her Fokker monoplane and Jupiter engine at Bristol.

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PERFORMANCE IN THE AIR IS ONLY ONE REASON WHY THE

"Bristol"

BULLDOG

IS SOUGHT FOR BY ALL INTERESTED IN MILITARY AVIATION.

AMONG OTHER REASONS ARE THE SUPERB WORKMANSHIP OF THE HIGH TENSILE STEEL STRIP CONSTRUCTION TOGETHER WITH THE HIGH FACTOR OF SAFETY OF THE DESIGN, THE EASE OF ERECTION AND REPAIR AND THE LOW COST OF MAINTENANCE.

• • • • • • • •

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DESIGNED AND MANUFACTURED
BY

"Bristol"

THE BRISTOL AEROPLANE COMPANY LTD.

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had been a pleasure cruise. She had had the best of pilots, the best of mechanics and the best of engines. Like Robert Bruce they had taken their lesson from the spider and though, at first, they had not succeeded, they had tried again and spun their web across the Continents.

Mr. Barnard compared their flight with the operation of the India air route, and said that by the India air mail letters reached India in nine days. They had done the return trip in two days less. They had flown by compass most of the way and Mr. Little had never been more than one degree out. The Duchess had taken control for hours at a time.

His crowning regret was that they could not possibly have a British aeroplane. They had to buy a Fokker, as there was not a machine built in this country that could possibly do the job. They could have carried 1,000 pounds more weight on board. The Bristol engine had been ideal.

Mr. Little also replied.

AN INTERNATIONAL SEAPLANE RALLYE.

An International Seaplane Rallye has been arranged to take place at La Baule, on Sept. 14. This meeting has been organised by the French Aero Club, the Municipality of La Baule and the newspaper *Le Journal*.

La Baule is a fashionable seaside resort recently fabricated on the Bay of Biscay, 8½ miles, in a straight line, west of St. Nazaire, which is the port near the mouth of the River Loire, on the north side, at which most of the British Expeditionary Force debarked when we saved France in 1914.

There are six prizes totalling 100,000 frs. (£805) and a cup worth 10,000 frs. (£80) to be won in the Rallye, besides 100,000 frs. (£805) worth of prizes to be won in races on the following day.

The Rallye is open to entries from any country belonging to the F.A.I.

Prizes for the Rallye will be awarded on points. These will be given for distance covered and horse-power per member of the crew. In awarding points for distance notice will be taken of whether the journey was made over land, along the coast, or over water. To rank in the last category the flight must be made more than 30 km. (19 miles) from inhabited land. Note will also be taken of landings which must be separated by at least 100 km. (62 miles). Special points will be awarded to amphibians.

All machines entering for the Rallye must take-off on Sept. 14, any time after 04.00 hrs. The competitors have to cover at least 200 km. (124 miles) before reaching La Baule where they must arrive at 16.30 hrs.

The competition for the 100,000 frs. worth of prize money and the cup offered by the French Aero Club will take place on Sept. 15.

This competition will be divided into two parts. There will be a speed contest for machines faster than 400 k.p.h. (roughly 245 m.p.h.), and a handicap race. Both races will be flown over a course of 100 km. (62 miles). The fastest machine in the first category will receive 50,000 frs. (£402).

The first prize for the handicap will be 30,000 frs. (£242) and the cup offered by the French Aero Club; the second prize will be 15,000 frs. (£121); and the third prize of 5,000 frs. (£40). In the event of no entries being received for the speed contest the prizes for the handicap will be doubled.

Handicapping will be done by the Stewards after a qualifying heat has been flown on the morning of Sept. 15.

There are also some other prizes for beating the altitude record and using heavy oil fuel.

All entries must be made through the Commission D'Aviation de l'Aéro Club de France, 35, rue François Ier, Paris, before Aug. 23.

This meeting is of great importance to British Manufacturers. One gathers that the French seaplanes intended for the Schneider Contest are to be sent over the speed course.

FORTHCOMING EVENTS.

There is still much to do this year. For instance:—

Aug. 28.—The Brooklands School of Flying Show at Clacton.

Aug. 31-Sept. 1.—International Air Rallye of the Suffolk Club at Hadleigh.

Sept. 6.—Preliminaries of Contest for Schneider Trophy.

Sept. 7.—Contest for Schneider Trophy.

Sept. 14-Sept. 15.—International Seaplane Rallye at La Baule.

Sept. 21.—Rallye at Haldon (near Teignmouth, Devon).

Sept. 22.—The Bristol Club's farewell party to Filton.

Sept. 28.—Proposed date for opening the Leicester Club's new aerodrome.

Oct. 5.—Newcastle Air Pageant at Cramlington,—with R.A.F. support.

A TRIBUTE TO COCHRAN.

In order to see Mr. Cochran's revue "*Wake up and Dream*" at the London Pavilion eleven passengers left Paris at tea-time one day last week and flew to London, where they had dinner before seeing the show. They then "*returned to Paris in the first light of dawn.*"

The affair was arranged by the Piccadilly Bureau in conjunction with the Air Union.—Anyhow it was good publicity, for the newspapers seem to have used the story copiously.

THE "GRAF ZEPPELIN'S" TRIP ROUND THE WORLD.

The *Graf Zeppelin* left Friedrichshafen for Tokyo on Aug. 15 at 4.35 hours. The costs of the flight are reported to be about £25,000, which have been covered by receipts from passage money, postal charges, and sale of newspaper rights.

The *Graf Zeppelin*, which had a gross weight of 78½ tons at the start, carried 70,000 cubic feet of a gas fuel which has the same weight as air. As this fuel is consumed, it is replaced by air, thus leaving the trim of the ship unaffected. Besides this quantity of gas fuel, nearly 15 tons of petrol are carried. The petrol if necessary can be used as emergency ballast.

The airship reached Berlin at 10.00 hours, and was reported over Danzig at 15.00 hours. The Latvian-Soviet frontier was crossed to the south of Dvinsk at 21.30 hours.

The *Graf Zeppelin* passed north of Moscow, and thence followed approximately the 62 parallel of latitude, passing north of Tobolsk, and north of Lake Baikal. After reaching the coast, she turned south along the chain of Japanese islands to Tokyo. The airship reached the air-port of Kasumigaura at 16.20 hrs. and continued to Tokyo. The airship had returned and landed by 19.07 hours.

The distance flown appears to be about 6,700 miles with a flying time of about 100 hours. Favouring winds across Siberia assisted the ship to maintain a high average speed in spite of the fact that fuel was carefully economised throughout the trip.

The *Graf Zeppelin* is reported to have had 60 hours' reserve of gas fuel and 20 hours' reserve of petrol when she landed.

DISTINGUISHED VISITORS.—The Archduke Anthony Mary Francis Leopold Blanche Charles Joseph Ignatius Raphael Michael Margaret Nicetas and the Archduke Francis Joseph Charles Leopold Blanche Aldegond Ignatius Raphael Michael Vero of the House of Hapsburg-Tuscany, with Mr. Herbert Thomas, Director of the Bristol Aeroplane Co. Ltd., and Mr. C. F. Uwins, inspecting a Bristol Bulldog at Filton.

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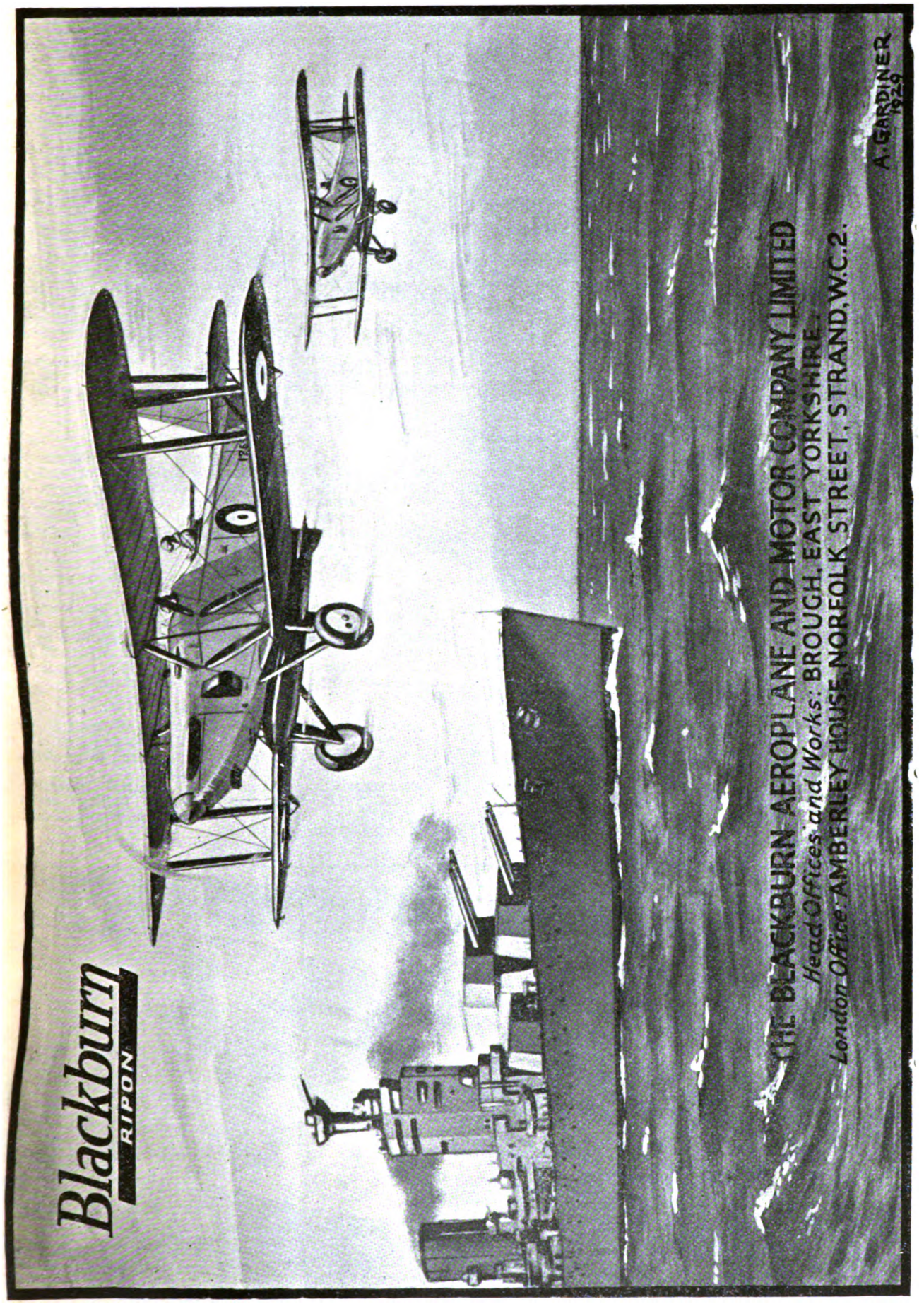

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THE ROYAL AIR FORCE.

The London Gazette.

Aug. 13.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—The following Plt. Offs. on probation are confirmed in rank:—J. B. Mackenzie (May 9); H. C. Friday (May 25); B. W. Figgins, W. R. C. Wilkins (July 15); R. J. C. Hunt, J. C. L. Claxton, S. A. Davis, R. C. W. Ellison, D. L. Iremonger, C. N. McLoughlin, J. D. Robertson, H. E. Sales, N. W. A. Cullum (July 29).

The following Plt. Offs. are promoted to the rank of Flg. Off.:—H. B. Maugham (Jan. 8); C. E. St. J. Beamish, S. L. Blunt (June 17); W. F. Murray (July 9); E. N. V. Everett (July 13).

Flg. Off. J. A. E. Inkster relinquishes his S.S. comn. on account of ill-health (Aug. 13). The S.S. comn. of the following Plt. Offs. on probation are terminated on cessation of duty (Aug. 13):—P. S. Hession, O. W. Hoffman.

Flt. Lt. C. G. Hancock is dismissed the Service by sentence of General Court-martial (Aug. 1).

Flg. Off. D. S. Thomas is cashiered by sentence of General Court-martial (Aug. 1).

STORES BRANCH.—Flg. Off. H. J. Bamber is placed on the retired list at his own request (Aug. 1).

MEDICAL BRANCH.—Maj. R. H. Bebb, O.B.E. (Army Dental Corps), is granted a temp. comn. as a Sq. Ldr. (Dental) on attachment to the R.A.F. (Aug. 1); Flt. Lt. A. B. H. Cole (Capt., Army Dental Corps) relinquishes his temp. comn. on return to Army duty (Aug. 1).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—The following are granted comns. in Class A.A. (ii) as Plt. Offs. on probation:—C. M. Dransfield, P. A. Jessel (July 26); E. M. Wright, G. B. Rahr (July 29); Plt. Off. on probation G. Nelson is confirmed in rank (July 21); Plt. Off. E. M. S. Spence is promoted to the rank of Flg. Off. (Aug. 6). The following are transferred from Class A.A. (ii) to Class C:—Flg. Off. J. M. Greenwood (June 24, 1928); Plt. Off. on probation C. F. Morris (Aug. 9). Flg. Off. A. G. Moon is transferred from Class A to Class C (June 1); Flg. Off. A. H. Barnard is transferred from Class B to Class C (Aug. 7).

The following relinquish their comns. on completion of service:—Flt. Lt. M. D. Nares, A.F.C. (July 26); Flg. Off. S. Turner, D.F.C. (July 13).

Appointments.

Week ending Aug. 19.

GENERAL DUTIES BRANCH.—Group Captains F. K. Haskins, D.S.C., to Air Ministry (A.M.P.), on appointment as Deputy Director of Postings, 12/8. C. H. K. Edmonds, D.S.O., O.B.E., to Station H.Q., Worthy Down, to command, 6/8. S. Smith, D.S.O., A.F.C., to No. 2 F.T.S., Digby, to command, on transfer to Home Establishment, 2/8.

Wing Commanders G. H. Bowman, D.S.O., M.C., D.F.C., to H.Q., Inland Area, for Air Staff Duties, 9/8. R. Collishaw, D.S.O., O.B.E., D.S.C., D.F.C., to H.M.S. *Courageous*, for duty as Senior R.A.F. Officer, 2/8.

Squadron Leaders G. H. Hall, A.F.C., to R.A.F. Training Base, Leuchars, 5/8. R. S. Lucy, A.F.C., to No. 101 Sqdn., Bircham Newton, 9/7.

Flight Lieutenants E. J. L. Hope, A.F.C., to R.A.F. Depot, Uxbridge, 24/7. H. L. Beatty, to R.A.F. Base, Calshot, 29/7. S. D. Scott, to School of Naval Co-operation, Lee-on-Solent, 6/8. J. A. Teasdale, to H.A.D., Henlow, 10/8. J. R. D. Goadsby, to R.A.F. Base, Gosport, 29/7. F. E. Vernon, to H.A.D., Henlow, 6/8. A. F. Scroggs, to School of Photography, S. Farnborough, 6/8. G. R. M. Clifford, to No. 406 Flight, Donibristle, 23/7.

Flying Officers G. W. Hayes, to H.A.D., Henlow, 12/7. F. S. O'Hanlon and A. C. Danbury, to H.A.D., Henlow, 11/7. C. H. Hockly, to Armoured Car Wing, 'Iraq, instead of to No. 6 Sqdn., 'Iraq, as previously notified, 19/4. H. J. J. Jagger and P. MacG. Watt, to No. 1 F.T.S., Netheravon, 7/8. F. W. Moxham and H. E. Power, to No. 2 F.T.S., Digby, 7/8. A. P. Bett, to No. 3 F.T.S., Grantham, 7/8. J. Norwood, to No. 5 F.T.S., Sealand, 7/8. E. S. Finch and J. W. Gillan, to R.A.F. College, Cranwell, 7/8. B. E. Moody, to No. 501 Sqdn., Filton, 7/8. P. J. Hayes, M.B.E., A.F.C., to M.A.E.E., Felixstowe, 24/7. C. A. Pearson, to Night Flying Flight, Biggin Hill, 23/7. J. H. Powle, to H.A.D., Henlow, 13/7.

Pilot Officers J. G. W. Weston, to No. 207 Sqdn., Eastchurch, 30/7. E. J. Laine, H. M. Pearson and K. R. Coates, to No. 201 Sqdn., Calshot, 31/7. J. D. Rutherford, to No. 204 Sqdn., Cattewater, 31/7. B. T. Shelley and F. C. Sturgis, to M.A.E.E., Felixstowe, 31/7.

MEDICAL BRANCH.—Flight Lieutenant P. D. Barling M.B., to R.A.F. Hospital, Cranwell, 4/8.

ACCOUNTANT BRANCH.—Flight Lieutenant W. E. Fisher, M.C., to R.A.F. Record Office, Ruislip, 3/8.

Flying Officers T. C. Reep, to No. 3 Stores Depot, Milton, 26/8. M. L. Jones, to School of Balloon Training, Larkhill, 29/7.

A Fatal Accident.

The Air Ministry regrets to announce that as the result of an accident at Sutton Bridge, Lincolnshire, to a Gamecock machine of No. 23 (Fighter) Squadron, Kenley, on August 14, Flg. Off. Charles Henry Jones, the pilot and sole occupant of the aircraft, was killed.

At the Inquest at Sutton Bridge on Aug. 14, Sjt. James Hickling, of No. 111 (F.) Sqdn., said that the machine took off normally, but seemed to turn too steeply and hit the ground with the engine full on. The machine, which had 200 rounds of ammunition on board, caught fire on impact.

Air Communications.

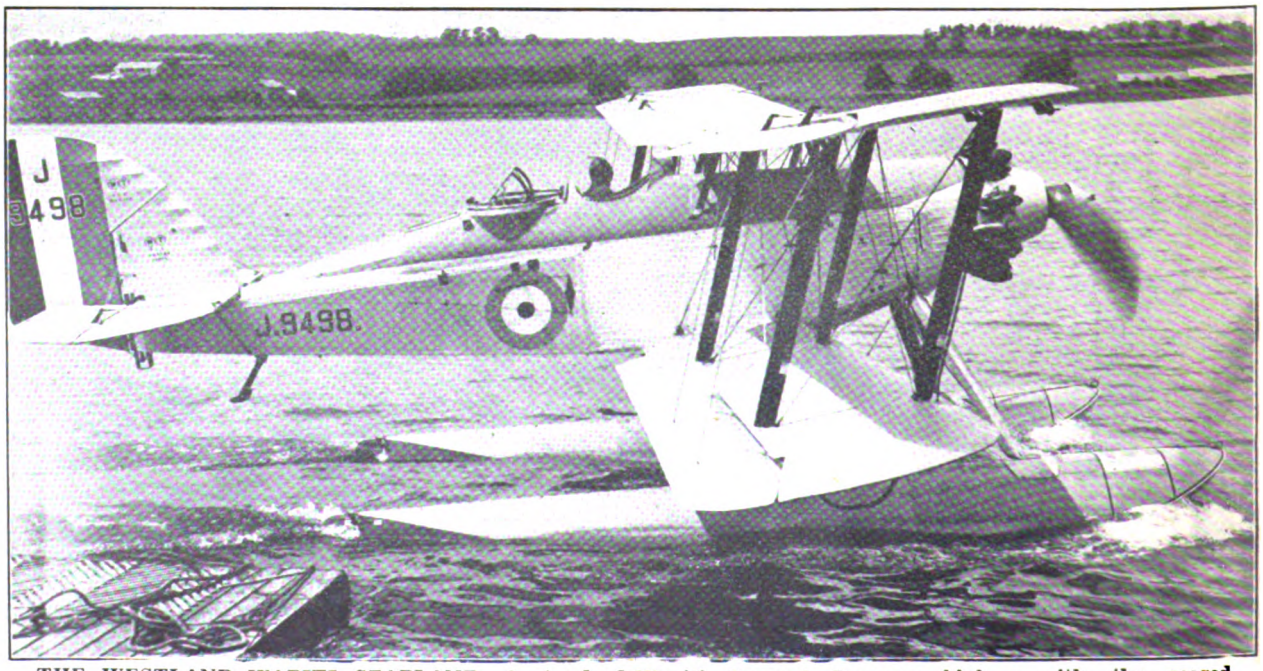
With reference to the Editorial comment on the announcement that His Royal Highness the Prince of Wales had crossed the Channel as a passenger in a low-powered single-engined aeroplane without floats or flotation gear, THE AEROPLANE understands that on the outward journey the Prince's machine was escorted by a flying-boat, and that the crossing on the return journey was made at 9,000 ft.

Nevertheless one holds that a low-powered aeroplane is not a proper vehicle for the Heir to the Throne when crossing the Channel. There is much to be said in favour of small machines when landing in unknown aerodromes, but the danger of putting a small aeroplane down in a sea-way outweighs the danger of damaging a big machine by overrunning the limits of a small aerodrome. Whatever escort may be provided, a small aeroplane is always liable to break up and sink before its escort can reach it.—C. G. G.

Courts-martial.

A Court-martial took place on Aug. 15 at Chatham in connection with the explosion in H.M.S. *Vindictive* on July 23. Lieut. Simon Barrett, R.N., was sentenced to be dismissed his ship and severely reprimanded.

At a second Court-martial Flt. Lt. G. R. O'Sullivan, R.A.F. (No. 444 (F.S.R.) Flight, R.A.F., H.M.S. *Vindictive*) was tried on two charges connected with the previous Court-martial and was acquitted.



THE WESTLAND WAPITI SEAPLANE.—A standard Wapiti General Purposes biplane with the geared Bristol Jupiter engine and Short metal floats.—(*"Aeroplane" photograph.*)

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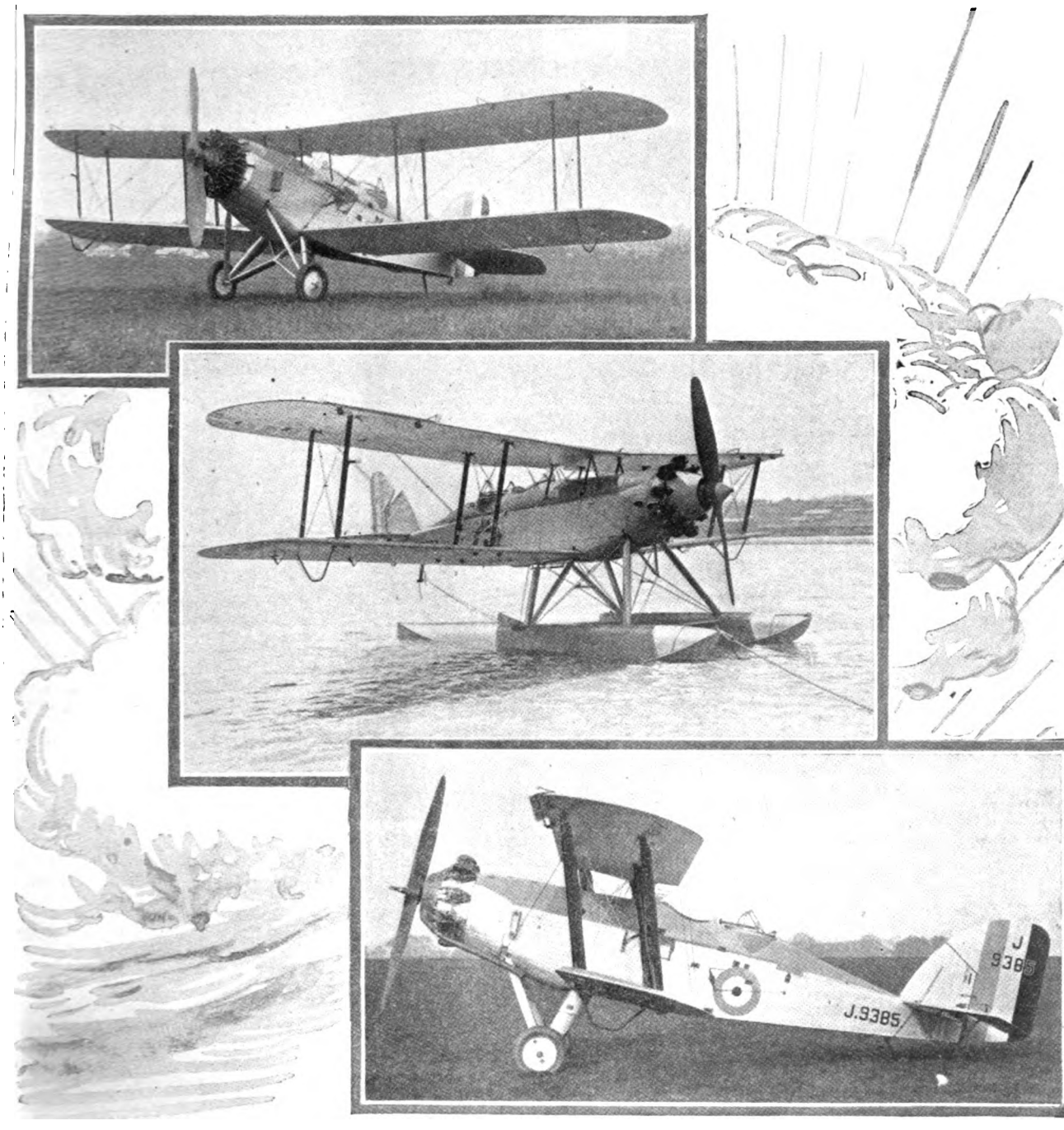

THE WESTLAND WAPITI

TOP.—The Westland Wapiti with Jaguar Engine and Split Axle Undercarriage.

CENTRE.—The Westland Wapiti Seaplane with Jupiter VIII Engine.

BOTTOM.—The Westland Wapiti with Jupiter VIII Engine with Exhaust Ring (as supplied to the R.A.F.).

Other Westland Machines include The Westland IV, Three-Engined Limousine, The Westland Widgeon Light 'plane, The Westland high-speed single-seater fighter, etc.

WESTLAND AIRCRAFT WORKS,

Branch of Petters Limited),

YEOVIL, ENGLAND.

Telephone: Yeovil, 141

Telegrams: Aircraft, 141, Yeovil

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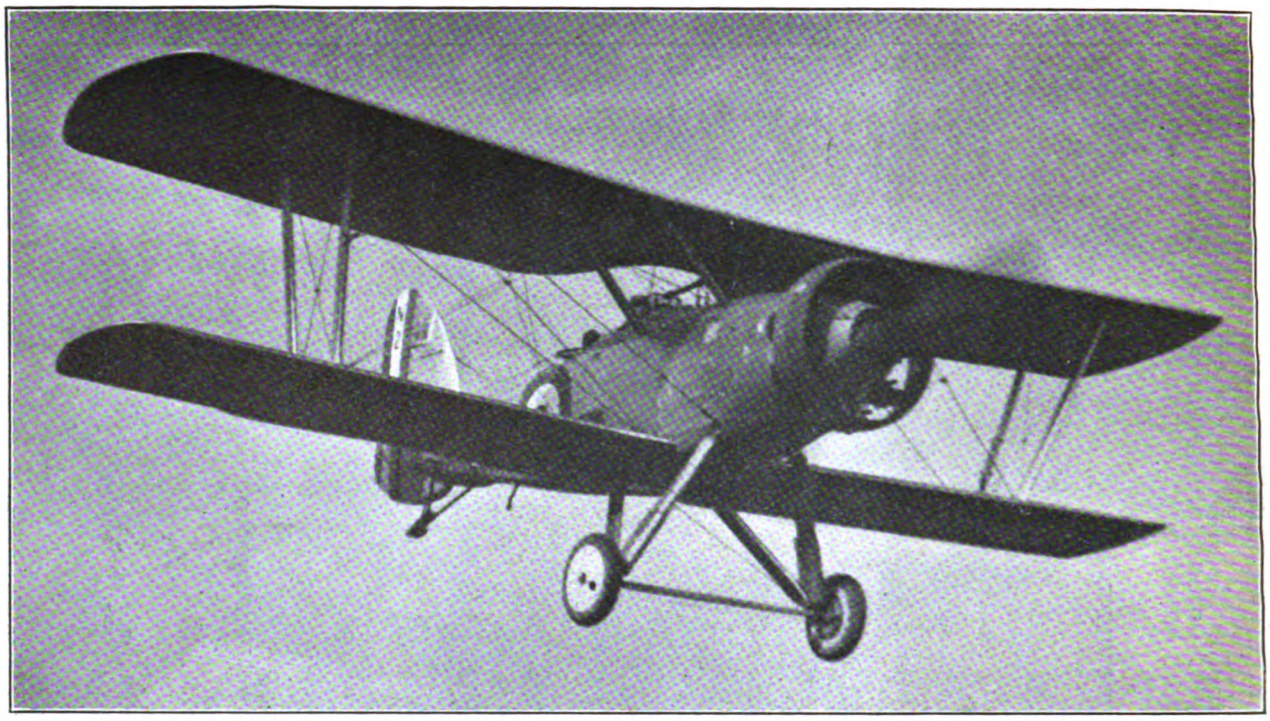


THE SHORT GURNARD.—A two-seat Fleet Fighter Reconnaissance biplane with the Bristol Jupiter engine and Townend ring-cowling.

The following announcement appeared in *The London Gazette* of August 13:—

Flt. Lt. C. G. Hancock is dismissed the Service by sentence of General Court-martial (Aug. 1).

Flt. Lt. Hancock was concerned in the unauthorised flight from Eastchurch to Hendon by Flg. Off. D. S. Thomas, of Henlow.

Permanent Commissions in the Stores Branch.

The Air Council have provisionally selected the following officers of the Stores Branch, who hold short service commissions, for permanent commissions. No further selection will be made:—

Flying Officers.—E. G. M. Charleston, H. M. S. Dawes, G. H. Doveton, F. W. Felgate, P. G. Mote, P. P. S. Rickard, L. Taylor.

The Schneider Trophy Contest, 1929.

From 00.01 hours on Sept. 6, 1929, until the completion of the Schneider Trophy Contest on Sept. 7 (or later, in the event of postponement), no aircraft other than competing aircraft are to enter the area designated hereunder:—

The area enclosed by straight lines drawn from Yarmouth Pier to Lymington Pier and thence to Netley Castle; by the line of high water between Netley Castle and Hamble Spit; by straight lines drawn from Hamble Spit to Cosham Railway Station, thence to Selsey Bill Coast Guard Station, thence to Bembridge Railway Station, and thence to Gurnard Village; and by the line of high water from Gurnard Village to Yarmouth Pier.

Modern Foreign Languages.

A course in Russian will begin at King's College, London, in October 1929.

One officer of the R.A.F. will be selected to attend. The officer selected will be regarded as being on duty and will receive full pay and allowances during the course. Officers desiring to attend should submit applications through the usual channels.

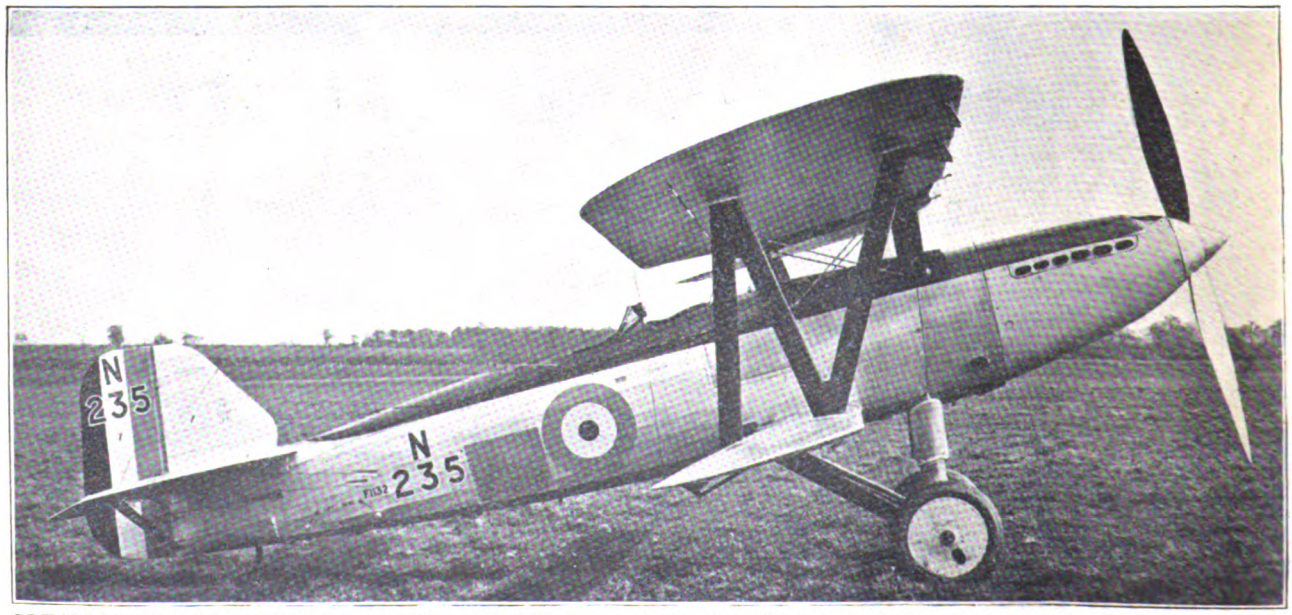
Air and other officers commanding, in forwarding applications should state whether they are recommended and give particulars of any special qualifications possessed by the applicants, such as aptitude for languages, staff duties, etc.

Applications from home commands should reach the Air Ministry by Sept. 1, 1929. Officers abroad may send in their names for consideration for future courses.

Officers applying should hold permanent commissions in the general duties branch and be not over 30 years of age on Oct. 1, 1929.

A Service Contemporary.

The Planesman, a monthly journal for the Royal Air Force, gives all the latest news from R.A.F. Stations at home and abroad. It also gives comprehensive accounts of sports and athletics and has illustrated articles of topical and general interest. It only costs 6d. a month, and those officers and airmen of the R.A.F. who cannot buy it in their Unit should apply to the Editor, *The Planesman*, R.A.F., Eastchurch, Kent.



CLEAN LINES.—The Fairey two-seat Fleet Fighter Reconnaissance shipplane with the Rolls-Royce "F" type engine.

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Hawker Horsley
Torpedo Carrier

ROLLS-ROYCE

AERO ENGINES

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THE NEW CHIEF OF THE AIR STAFF.

His Majesty the King has been pleased to approve the appointment of Air Chief Marshal Sir John M. Salmond, K.C.B., C.M.G., C.V.O., D.S.O., A.D.C., to succeed Marshal of the Royal Air Force Sir Hugh Trenchard, Bart., G.C.B., D.S.O., as Chief of the Air Staff with effect from Jan. 1, 1930.

Air Chief Marshal Sir John Salmond was born in 1881 and educated at Wellington and Sandhurst. He entered The King's Own Royal Regiment (Lancaster) in 1901 and served in the South African War in 1901-2. He was promoted Captain in 1910.

He learned to fly on a Grahame-White biplane at Hendon and his Royal Aero Club certificate, No. 272, is dated Aug. 13, 1912. He joined the Royal Flying Corps in 1912 and was appointed an Instructor at the Central Flying School in the same year. In 1914 he was appointed to command No. 7 Squadron at Farnborough. In 1914 he was given Brevet rank of Major.

On Aug. 13, 1914, he went to France in command of No. 3 Squadron, R.F.C., which command he held until April, 1915. In June, 1917, having in due course commanded a Wing and a Brigade, he was promoted to the temporary rank of Major-General while commanding the Training Division, R.F.C., in England. In October, 1917, he was appointed to the Army Council as Director-General of Military Aeronautics.

In February, 1918, he took over the command of the R.F.C. in the Field,—Sir Hugh Trenchard having come home to be the first Chief of the the Air Staff in the newly-formed Royal Air Force. He was promoted to the substantive rank of Major-General in April, 1918, and commanded the R.A.F. in France till the end of hostilities.

He was appointed a Companion of the Distinguished Service Order in February, 1915, a Companion of the Order of St. Michael and St. George in June, 1917, a Commander of the Victorian Order in August, 1918, and a Knight Commander of the Bath in January, 1919.

His foreign decorations include the Legion of Honour, the Croix de Guerre (France), the Croix de Guerre (Belgium), the Order of Leopold (Belgium), the Order of the White Eagle (Russia), the Order of the Crown of Italy, and the American Distinguished Service Medal.

He was promoted to the rank of Air Vice-Marshal in August, 1919, and appointed Air Officer Commanding the Inland Area, R.A.F. in 1920. In 1922 he was appointed to command the British Forces in 'Iraq, and was promoted to the rank of Air Marshal in June, 1923.

In January, 1925, he was appointed Air Officer Commanding-in-Chief, Air Defence of Great Britain, on the formation of that Command. He was appointed Air A.D.C. to the King in February, 1925.

During 1928 the services of Sir John Salmond were loaned to the Commonwealth of Australia to advise them on the air defence of the Commonwealth and on the organisation, training, and equipment of the Royal Australian Air Force.

On Jan. 1, 1929, Sir John Salmond was promoted to the rank of Air Chief Marshal and appointed Air Member for Personnel, the Air Council.

The appointment of Sir John Salmond will give general satisfaction in the Royal Air Force, and it will be a great relief to those who for several years have been arguing about who was likely to succeed Sir Hugh Trenchard.

The Chief of the Air Staff need not necessarily be the senior officer of the Royal Air Force. Essentially the Chief of the Air Staff is rather the Chairman of a Committee than a Commander-in-Chief, just as is the Chief of the Imperial General Staff at the War Office.

In time of war the probability is that the senior officer of the Royal Air Force would be the Air Officer Commanding in the field, and in a future war he may very conceivably be the Generalissimo of all forces of the air, land and sea. In such case the Chief of the Air Staff at home might quite conceivably be considerably junior to the Commander in Chief and to other senior officers in the field. But, in time of peace, the senior officer of the Air Force may well be Chief of the Air Staff in that his rank necessarily gives him authority over those holding the various commands which come under the Air Staff.

Leaving out any question of seniority, the appointment of Sir John Salmond will be highly appreciated by almost everybody in the Air Force. Only a man who holds the respect and trust of all ranks could hope to follow Sir Hugh Trenchard successfully, and Sir John Salmond is trusted and respected.

Before the War he was one of the finest pilots in the Air Force, and though in these days he is too busy to fly much, he is still as good a pilot as needs be. Also, before the War, when he was at the C.F.S., and when he commanded a squadron in the R.F.C., his officers and men knew him for a just and sympathetic Commanding Officer, severe when severity was needed but ready to overlook small faults in men who were doing their best and were useful to the Service.

Sir John Salmond.

From the moment when War was declared he showed himself to be a born leader of men. Those who have read the late Major McCudden's remarkable book, *Five Years in the R.F.C.*, will understand why the men as well as the officers were ready to follow Major John Salmond anywhere. With each successive step in his rapid promotion from infantry Captain to Major-General within four years Sir John Salmond won the same respect and trust from the growing number of men under his command.

Just a week before the Armistice, in November, 1918, one had the privilege of paying a visit to R.A.F. Advanced Headquarters, in the middle of the devastated area, where Sir John Salmond was established. From there one visited units of all kinds in the R.A.F., and everywhere one found the same enthusiasm for the General Officer Commanding the R.A.F. and the same implicit trust in his judgment, whether of strategy or tactics. And during that visit one had a peculiar opportunity of proving his innate kindliness and consideration.

After the War, as Air Officer Commanding Inland Area, Sir John had the difficult task of organising one of the most chaotic Services that ever existed, composed of a warring mixture of personnel from the Navy, the Army and the Street. But in three or four years everything was running smoothly and he had still further increased the respect with which he was regarded by all ranks.

When in 1922 he went out to command all British Forces in 'Iraq he took on a job which had never been attempted before. That was what Sir Samuel Hoare called "Control Without Occupation," of a mainly hostile country. Before he left Sir John had the whole country thoroughly under control, he had reduced the garrison on the ground by tens of thousands, he had actually reduced the Air Force garrison by several units, and he had reduced the cost of administering 'Iraq by tens of millions of pounds per annum. For this alone he deserves the heart-felt thanks of John Citizen.

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On his return from 'Iraq in 1925 he undertook the equally important and no less difficult task of organising the Air Defences of Great Britain, and in three years he had at any rate laid the foundations of a system of defence which can be expanded in case of war to become a thoroughly effective defence force. The fact that in the course of air exercises our own attacking squadrons have theoretically laid London waste is merely an indication that, as attack is the best form of defence, our defences are thereby the stronger.

Another side of Sir John's character was disclosed when in 1928 he was lent to the Government of Australia to advise them on the defence of the Commonwealth. His report on Australia's defencelessness has never been published in full. But from those who know something about it one gathers that it is an excellent example of ruthlessness. At any rate something like an upheaval in Australia followed its delivery to the Government. And, as the Australian is always a man of deeds as well as words, Sir John won the whole-hearted respect of everybody in Australia by flying round that Continent, much of the way over trackless deserts and uninhabited coast-line. Even the most captious of his critics was forced to admit that when he talked about defending the Australian coasts he knew what he was talking about.

Since his return and his appointment at the beginning of this year to be Air Member for Personnel in the Air Council Sir John has no doubt been preparing himself to take over the duties of Chief of the Air Staff, and when he assumes those duties the Royal Air Force will have complete confidence in so much of the future as lies under his control.

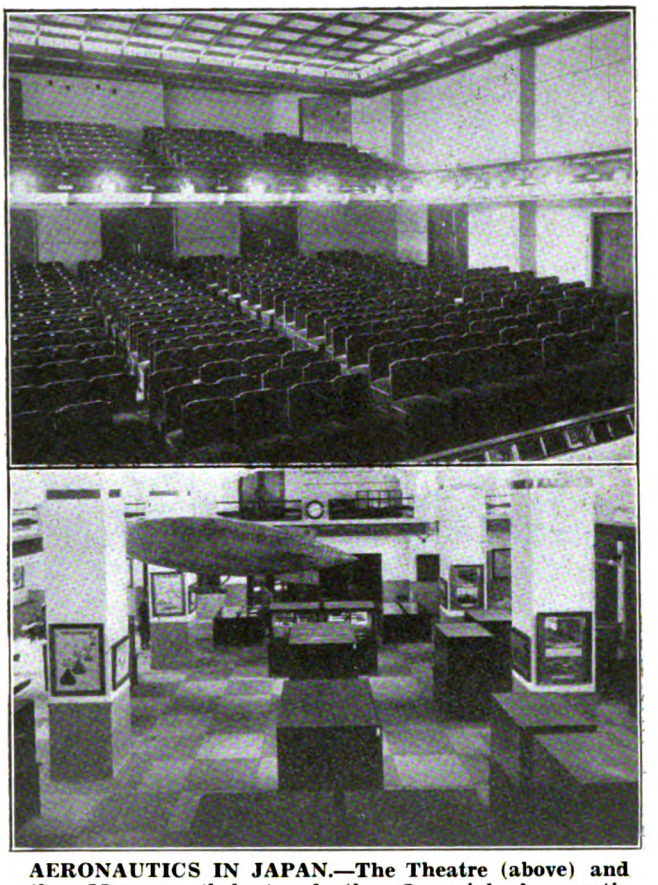
As Air Chief Marshal Sir John Salmond ranks with but after a full General in the Army. To have reached such rank, even with the advantages of a war to accelerate promotion, at the age of 48, shows exceptional ability. Judging by the careers of the World's great leaders of men Sir John Salmond has anything between twenty and twenty-five years of useful service before him. And all who have followed the history of Service Aviation in the British Empire, and have appreciated the great part that Sir John Salmond has played in making that history, will wish him well.—C. G. G.

THE JAPANESE IMPERIAL AERONAUTIC SOCIETY.

The new building of the Imperial Aeronautic Society of Japan was formally opened at Sakurada Hongo-cho, Tokyo, on June 15. The ceremony began with a greeting by Baron Sakatani, President of the Imperial Aeronautic Society, who said that the building had been built to house the organisation and to concentrate all kinds of enterprises in connection with aviation in one place.

The main floor and balcony are devoted to the exhibition of model aeroplanes given to the Society by foreign and Japanese aeroplane manufacturers. More than 30 models and several full-size engines are exhibited. This exhibition is open to the public without charge.

AERONAUTICS IN JAPAN.—The new building of the Imperial Aeronautic Society of Japan in Tokyo, which was officially opened on June 15.



AERONAUTICS IN JAPAN.—The Theatre (above) and the Museum (below) of the Imperial Aeronautic Society of Japan.

The whole of the second floor is occupied by the Japan Transportation Co.

Part of the third floor is to be devoted to a library on aviation and a newspaper men's club and part of it will be rented.

The offices of the Imperial Aeronautic Society have been established on the fourth floor with a conference room and a special guest room.

The fifth floor consists of an auditorium with a balcony. It has a seating capacity of 1,000.

A correspondent of THE AEROPLANE in Tokyo writes that he has been particularly asked by the President, Baron Sakatani and the Committee to do his best to obtain British models, pamphlets, and books dealing with air routes, etc. He was surprised to find that with the exception of one Vickers Vimy model there was not another British thing on view although nearly every other country was well represented. Manufacturers of British aeroplanes, parts and instruments would do well to send the museum model specimens and particulars of their products, also literature dealing with them.

They may be sent to Mr. A. R. Paget, 476, Sanno-cho, Oiso, Kanagawa-ken, Japana, who has offered to be the medium between British manufacturers and air line companies and the Imperial Aeronautic Society of Japan.

AIR PHOTOGRAPHY.

A recent issue from the Air Ministry is Air Publication 1354, "Air Photography—Part I. Organisation and Training." This may be had from THE AEROPLANE Book Dept., Cannon House, Pilgrim Street, E.C.4, at 1s. 3d. net.

The book contains chapters under the headings "Purpose and Value of Air Photography," "General Organisation," "Organisation of Photography in Units," "Flying for Photographic Mosaics and Air Survey," "Air Photography in Co-operation with the Army," "Air Photography in Co-operation with the Royal Navy," "Interpretation of Air Photographs," "Training Photographic Personnel," and appendices containing a specimen report syllabus of training, allocation of duties, and a comprehensive index of various Air Ministry Orders, Air Publications, and the like relating to Photography.

A number of diagrams and sketches illustrating various technical points and explaining how to diagnose various ground markings from the air are included. There is also a large illustration showing the method of preparing a mosaic with a 60 per cent. longitudinal and 30 per cent. lateral overlap This picture makes the method of construction remarkably easy to understand.

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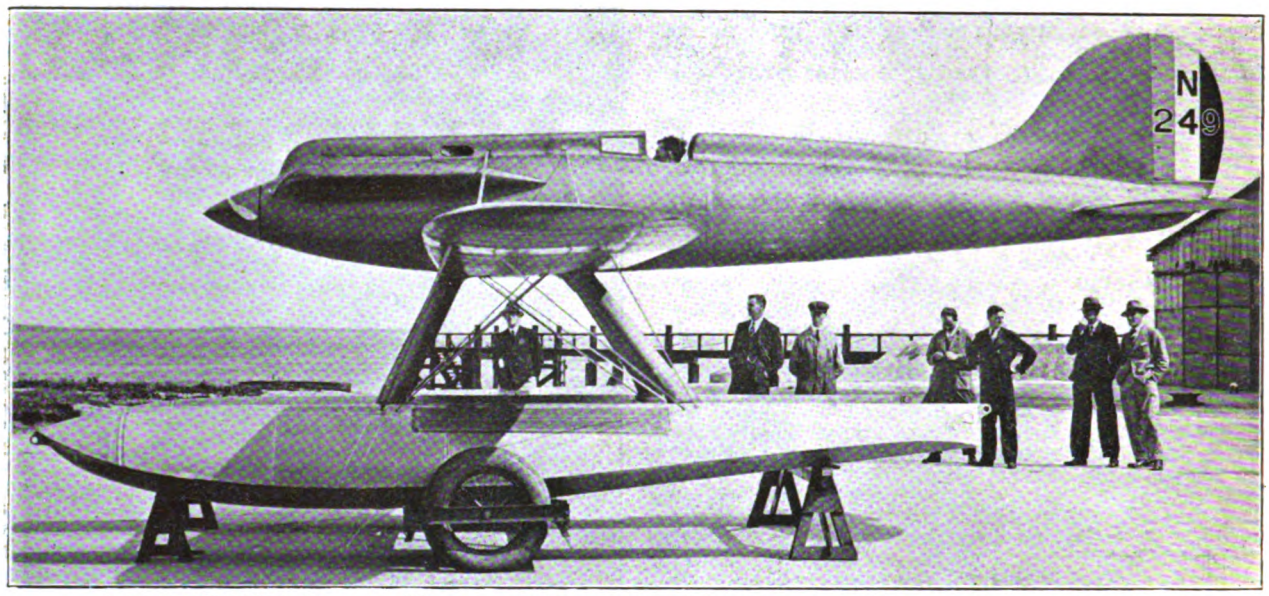
OUR SCHNEIDER TROPHY DEFENDERS—II.



A THOROUGHBRED.—A side view of the Gloster-Napier VI at Calshot.—(*"Aeroplane" photograph.*)

The second of the two types of racing seaplanes which have been produced to defend Great Britain in the Schneider Trophy Contest is the Gloster-Napier VI, and the first of the two of this type which have been built has arrived at Calshot Air Station.

The circumstances attending its first public view were not of the same order as those arranged for the Supermarine-Rolls-Royce S-6.

As mentioned last week the Gloster-Napier VI was not quite ready (in that it lacked its final coat of paint) to be present at Calshot on Aug. 12. The first machine had, however, been assembled at the works at Cheltenham and the engine had been run, but the company rightly decided that unnecessary time would have been wasted if the machine was transported to Calshot before it was completely ready to be finally assembled and flown on test.

The result was that the Gloster VI missed the initial publicity gained by its friendly rival. Its arrival later in the week, however, was not by any means unheralded or unsung.

The fact that it came by road and reached Calshot after dark provided just the right material for the "experts" who are now camping in the *environs* of the Air Station. To arrive "under cover of darkness" or "by stealth of night" added piquancy to the illusion of mystery, an illusion that all conscientious journalists delight in magnifying to the *n*th degree.

Be that as it may, the Gloster-Napier VI arrived at Calshot on Friday night, was hurriedly assembled on Saturday, and on Sunday "the huge doors of the hangar were rolled back and the waiting crowd of air experts gasped in admiration and amazement." After the gasping had ceased and after innumerable photographs had been taken the machine, variously described as "a winged meteor of gleaming gold," "the golden arrow of the air," "Venus of the air," etc., was wheeled back into the hangar, the doors were clanged shut and the work of assembly for serious flying was begun. In spite of the lyrical indigestion of the daily journalists one still prefers the name "Bullet with a bow tie," which was bestowed on a machine of similar design by its pilot when asked what it was like.

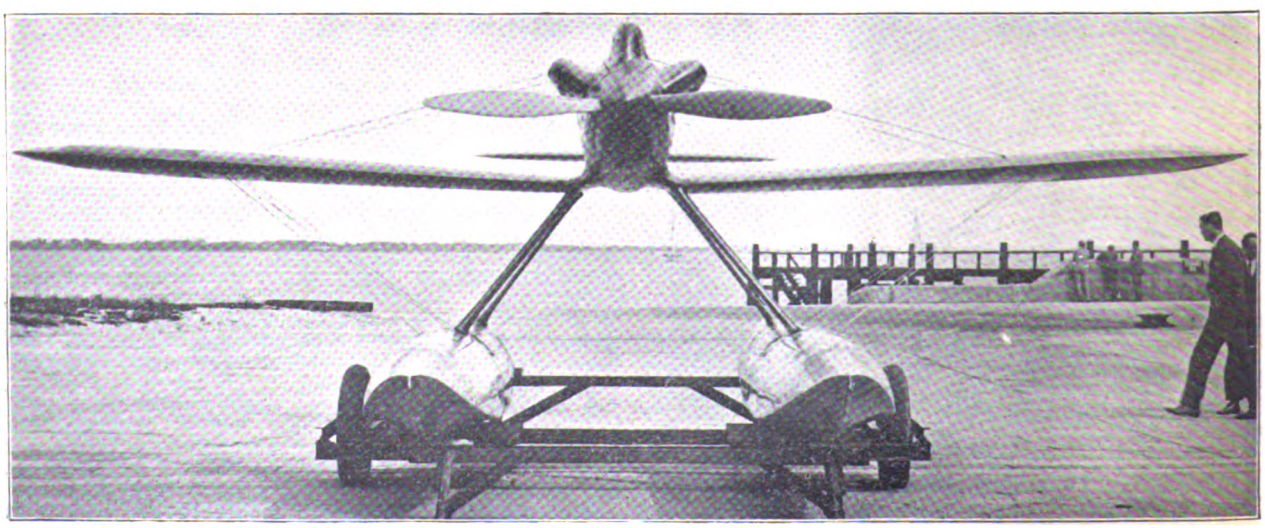
The Gloster-Napier VI is a novelty for the Gloster Aircraft Co. in that it is a monoplane. The missing number between the Gloster IV biplane, built for the 1927 contest, and the Gloster VI was the project for a biplane defender for this year's contest.

Mr. H. P. Folland, the company's chief designer, is a staunch supporter of biplane construction, but in the unbuilt Gloster V he found that the upper plane would come so far forward as to be partly over the central block of four cylinders of the Napier Lion engine and in the interests of accessibility this project was abandoned.

Previous Schneider Trophy aircraft have always given the impression that the cross-sectional area of the fuselage had reached the irreducible minimum, this minimum being largely governed by the alleged inelasticity of the existing power plant and the present pattern in pilots. In the Gloster VI the fuselage has again been reduced in cross sectional area and what seems even more extraordinary the Napier Lion engine, in spite of being induced to give an increased output, has once again successfully submitted itself to the modern craze for slimming.

Briefly, the Gloster VI may be described as the Gloster IV with the upper plane removed.

The fuselage is of the monocoque type and is built of duralumin, including the covering. It seems a perfect streamline, the only excrescences, if they can be called such, being the cowling over the three blocks of cylinders of the Napier Lion engine. The centre block, however, performs a useful function in that when the cowling is carried aft it



FRONTAL AREA.—The clean lines of the Gloster-Napier VI are here shown.—(*"Aeroplane" photograph.*)

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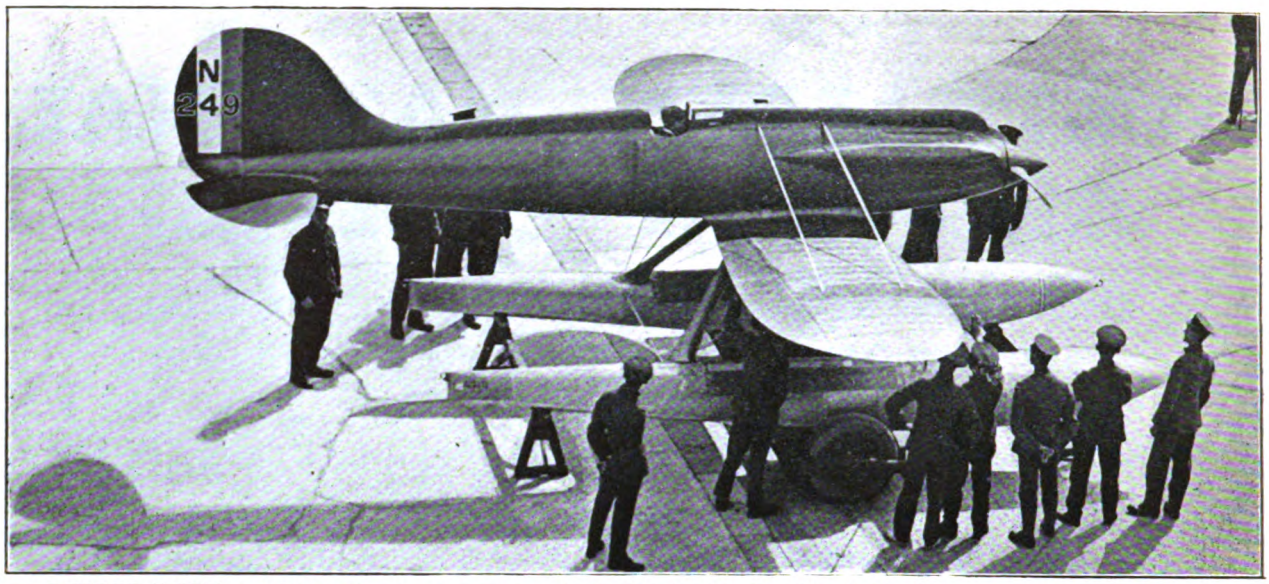


A BULLET WITH A BOW TIE.—Another view of the Gloster-Napier VI at Calshot—(*"Aeroplane" photograph.*)

forms a streamline for the pilot's head and finally merges into the fin and rudder.

All rivetting is flush with the skin, and leaves an entirely smooth surface. The fuselage is of the smallest possible dimensions and the cockpit is only just big enough for a normal-sized pilot.

The wings are of a symmetrical section and vary in thickness from root to tip. The thickest section is in the region of the attachments of the bracing wires. All wing-bracing fittings are of high-tensile steel and are housed completely within the wings, as is the complete aileron control system.

The wing-structure follows the usual Gloster racing practice. This consists of a number of spruce spars, usually six, built up to form a cellular section. These spars are covered with a plywood skin which has been previously built up on a dummy former. The whole is screwed and glued together with waterproof glue.

Practically the whole of the area of the wing surface, on top of the plywood, is covered with the wing radiators. These radiators consist of a number of thin flat brass tubes laid side-by-side and sweated together. The resultant radiators possess an absolutely smooth surface and add practically no resistance to the wings.

The oil-radiator is built up in a similar manner. The main oil-tank is mounted in the fuselage behind the pilot's cockpit and the section of the fuselage surrounding the oil-tank is made up as a flat tube radiator, which is let in flush with the skin of the fuselage and follows the true contour.

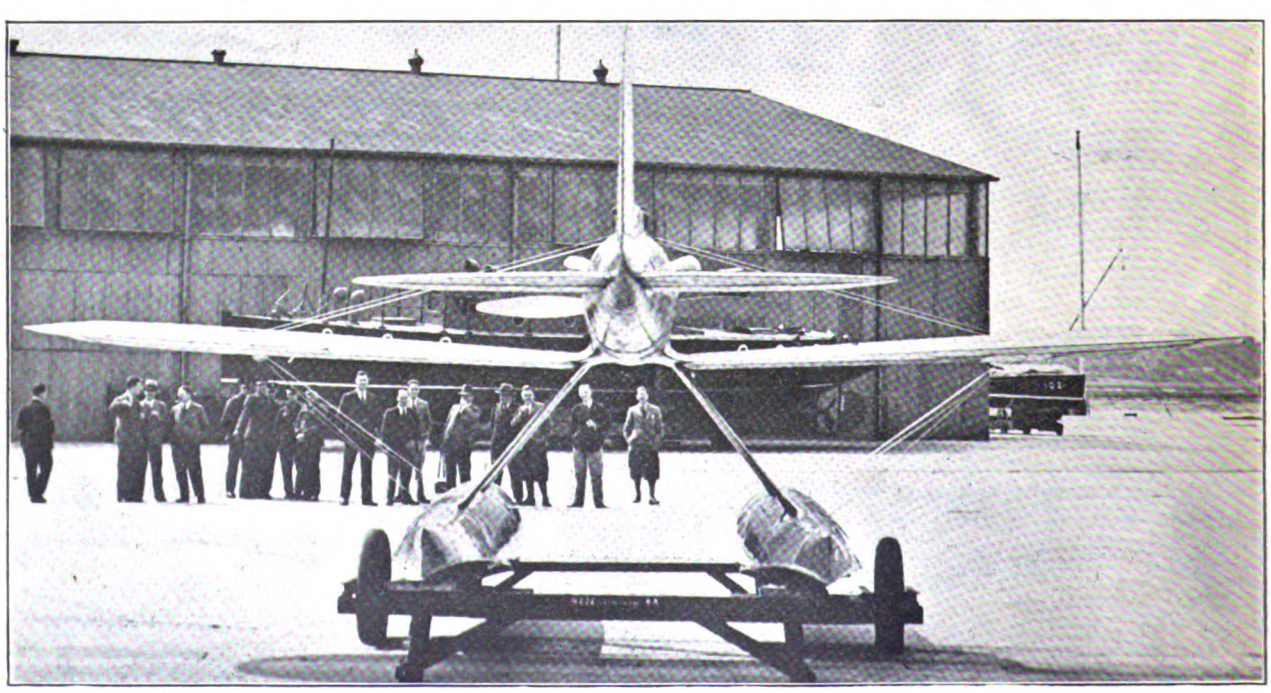
The tail unit is built up in a manner similar to the wings. All surfaces are of the cellular spar construction covered with spruce multiply, the whole being glued and screwed together. The elevator and rudder controls run direct to each controlling surface and are operated by sprocket and chains connected by solid steel tie-rods. The elevator and rudder controls are fitted with a variable control device giving a ratio of 2 : 3 for small movements grading off to a ratio of 3 : 2 for the last movement of the controls.

The floats are of the usual Gloster streamline type. They are built up of duralumin and each consists of a central longitudinal member to which are attached a number of transverse bulkheads spaced at about an average of 18 inches apart.

The bottoms of the floats are reinforced with "Z" stiffeners and the upper surfaces are reinforced with "L" stiffeners. All external rivetting is flush with the surface, thus giving an entirely smooth exterior. The floats are attached to the fuselage by two pairs of streamline struts, crossed-braced with streamline wires. These struts instead of meeting on the centre-line of the underside of the fuselage, as in the Gloster IV, meet the body on either side of the fuselage at points where the wings are attached.

Within each float is accommodated a petrol tank of equal capacity. This represents a departure from previous Gloster practice, but the reduction in size of the fuselage has made this imperative. The petrol system is completed by a 2-gallon service tank located in the fuselage and two engine-driven fuel pumps raise the petrol from the floats to the service tank. Special arrangements ensure an even feed from both tanks.

The engine is a Napier Lion VIID and is a development of the Series VIIB model, which was used in the winning



THE FOREIGNER'S VIEW.—A stern view of the Glos ter-Napier VI; which we hope may be familiar to our esteemed foreign friends and competitors.—(*"Aeroplane" photograph.*)

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machine in the 1927 contest and in the seaplane which attained the highest speed ever made over a 3 km. course. The engine has still further been reduced in frontal area.

The Series VIID is supercharged. The supercharger is at the back of the engine, where it does not interfere with the overall size.

The air compressor has been designed by the Napier company with the cordial co-operation of the British Thompson Houston Co. Ltd. and the Bristol Aeroplane Co. Ltd.

The finish of the wings, fuselage, tail-unit and float struts of the Gloster Napier VI is old gold, or, more crudely, brass. The paint exactly matches the water and oil radiators in the wings and fuselage. The floats are natural duralumin, plain varnished. Seen in the corner of a dark shed this finish does not appear so attractive as the old Gloster finish of blue and bronze. However, the presence of a brass oil radiator in the fuselage, which could not be painted, ruled out any other colour scheme.

The whole machine gives the impression of true speed, and there is little doubt that this impression will be borne out in practice.

Great Britain has now laid before the World its defenders. Whatever the challenging countries produce this country has every reason to be proud of the products of the Gloster Aircraft Co. Ltd., the Supermarine Aviation Works Ltd., D. Napier and Son Ltd. and Rolls-Royce Ltd. These four companies may rest assured that they have the good wishes of the British Empire behind them.—L. B.

ITALIAN SCHNEIDER PRACTICE.

The Times correspondent in Milan in a message dated Aug. 18, states:—

During a test flight yesterday afternoon over the Lake of Garda, just off Desenzano, the base of the Italian preparations for the Schneider Cup competition, the aeroplane which Sergeant-Major Francesco Agello, a member of the Italian team, was flying plunged into the lake. The pilot had a narrow escape from death.

Yesterday Sergeant-Major Agello entered the cockpit of a new Fiat C. 29 machine, and, after taxi-ing away from the shore, opened the throttle, and attempted to rise. The seaplane refused, however, to rise from the water, and was towed back to the slipway and examined. Half an hour later Sergeant-Major Agello again went out. A first attempt to rise was unsuccessful, but on the second occasion the seaplane left the water after a run of about 300 or 400 yards. When it had risen about 50 feet, and had flown perhaps 100 yards, the machine was seen to dip forward and plunge with terrible force into the lake.

Several motor-boats and a seaplane on patrol duty immediately dashed to the spot where, after disappearing once, the pilot was seen to be floating on the water. Sergeant-Major Agello was put on board one of the motor-boats and taken ashore. After a medical examination it was found that, with the exception of a few scratches, he had escaped injury. Sergeant-Major Agello was aided in his efforts to rise to the surface of the water by the special lifebelt which all the Italian Schneider Cup pilots wear.

So soon as it was found that the pilot was uninjured, General Balbo, the Under-Secretary for Air, ordered the trials to be continued, and further flights were made during the afternoon. Only a few fragments of the fuselage and floats of the machine have been salved; the engine has disappeared in the lake, which at the point of the accident is over 300 ft. deep.

This is the second seaplane of the C. 29 type to be lost on the Lake of Garda. The first, after having made eight flights, was destroyed while alighting on the lake.

ROYAL AERO CLUB PRACTICE.

This is from the Royal Aero Club:—

How, When and Where to See the Air Race on Sept. 7.

Nearly a million people are expected to witness the great international seaplane race for the Schneider Trophy, which takes place off the Isle of Wight on September 7.

France, Italy and America have each entered teams to challenge the British defenders, and speeds of over 330 miles an hour are expected to be reached in the thrilling contest which will be fought out over a quadrilateral course above the Solent between the Isle of Wight and the mainland.

Elaborate arrangements have been made to accommodate the vast crowds of visitors who are arriving by air, land and sea.

Two land aerodromes at Hamble and East Cowes and one seaplane station at Cowes have been reserved for visiting aircraft under the supervision of the Automobile Association; spectators afloat will be berthed, according to the size and draught of their vessels, in the special zones which have been reserved inside the boundaries of the course (details of which have already been issued).

For those visitors arriving by road or rail extensive arrangements have also been made by motor-coach companies, the various motoring organisations and the Southern Railway, who, alone, are running a series of special trains to Southampton and Portsmouth, at 15-minute intervals, throughout Friday evening and Saturday, the day of the Race.

The Royal Aero Club recommends those desirous of witnessing the Contest to make advance arrangements now and, for the guidance of intending spectators, issues preliminary details of the facilities available at the principal vantage points around the course, as follows:—

Portsmouth and Southsea.

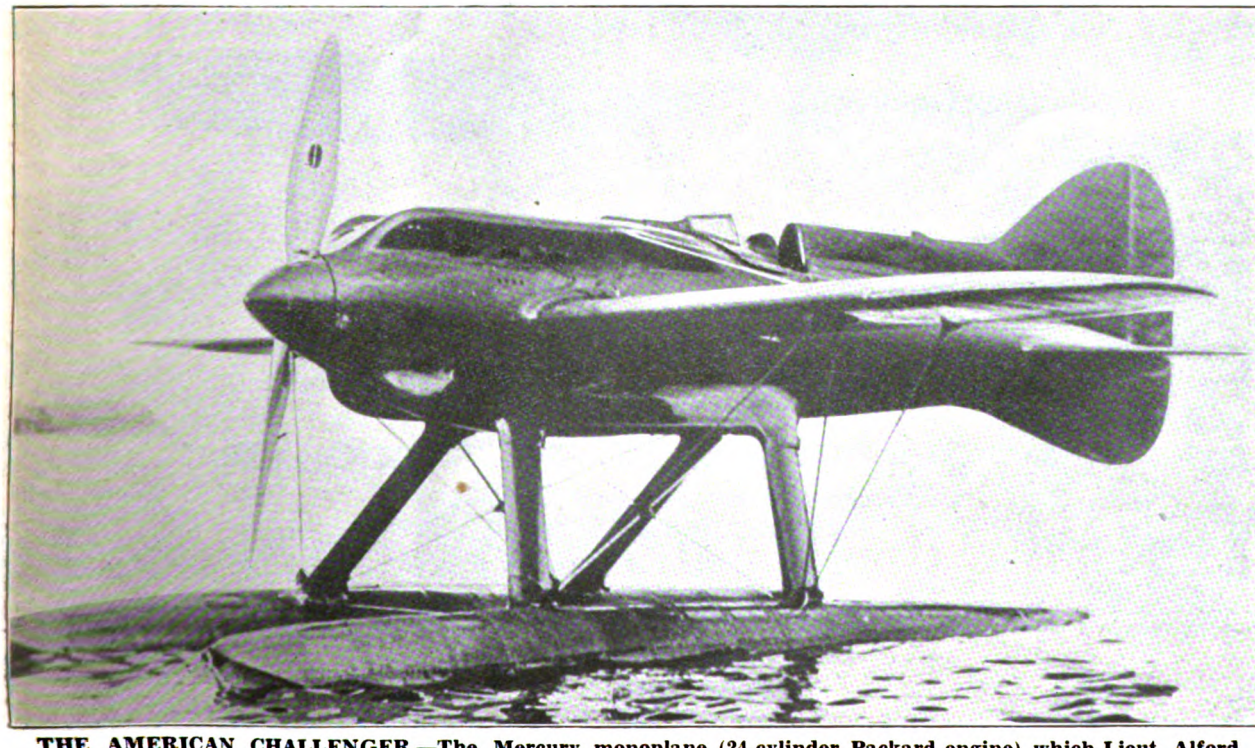
Many thousands of people are expected to assemble on the 4½ miles of front. Excellent views of a turning point can be had from the South Parade Pier, which will accommodate 5,000 people, while a further 3,000 seats will be available on the Parade in front of the Castle.

Stands holding many thousands will be erected at intervals along the front and, from the natural grandstand of the foreshore, the Race will be visible practically throughout its course. In addition, the whole of Southsea Common is to be turned into a car park.

[And all the local inhabitants are reckoning on making fortunes out of visitors.—C. G. G.]

Stokes Bay.

This area, ranging from Gosport round Gilkicker Point to Fort Haslar is the only land over which the competing



THE AMERICAN CHALLENGER.—The Mercury monoplane (24-cylinder Packard engine) which Lieut. Alford Williams, U.S.N., is reported to be bringing to England for the Schneider Trophy Contest.

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SUPERMARINE SCHNEIDER TROPHY

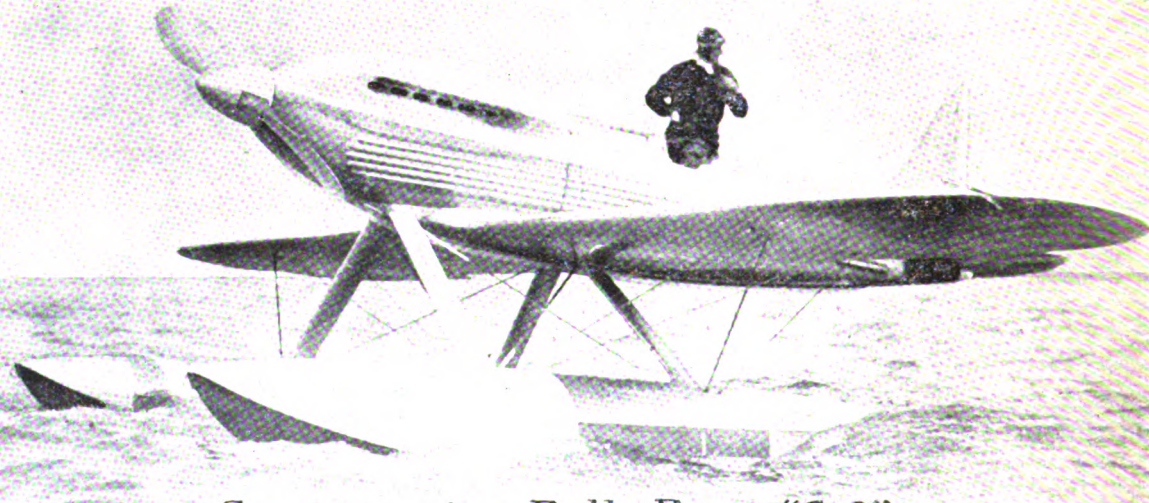
HISTORY AND SPEED RECORDS.

SCHNEIDER TROPHY.

1922. Winner — *Supermarine Napier "Sea Lion."*
1927. Winner and Second Place — *Supermarine Napier "S.5."*

SPEED RECORDS.

1922. World's Record
129·753 m.p.h. (100 kilometres) .....Supermarine Napier "Sea Lion."
1925. World's Record
226·752 m.p.h. (3 kilometres).....Supermarine Napier "S.4."
1927. World's Record
283·669 m.p.h. (100 kilometres).....Supermarine Napier "S.5."
1928. British Record
319·57 m.p.h. (3 kilometres).....Supermarine Napier "S.5."



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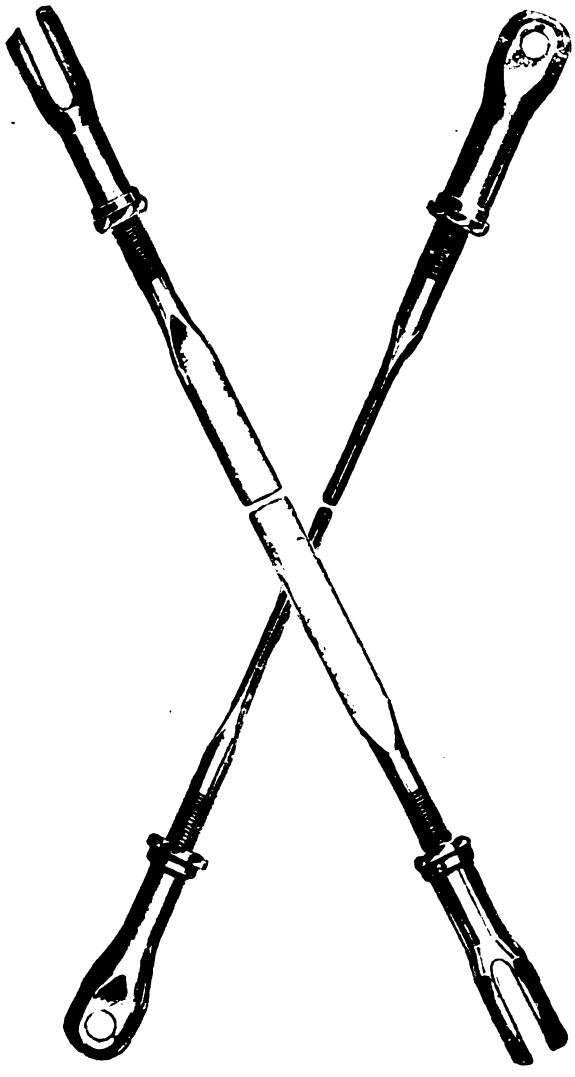
VICKERS STREAMLINE WIRES & SWAGED TIERODS



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aircraft will pass, and provision has been made for a widespread concentration on this point by spectators. A large car park will be situated on the Common, and the area should be approached via Fareham main road, which will be plainly sign-posted.

[The crowds will be most uncomfortable. And what is a "widespread concentration," anyhow?—C. G. G.]

HAYLING ISLAND.

Official car parks will be provided and the long foreshore permits of the accommodation of many visitors.

[And the turning point is so far away that practically nothing will be seen of the flying.—C. G. G.]

LEE-ON-SOLENT.

Car parks and public enclosures along the sea front.

[And practically nothing will be visible.—C. G. G.]

RYDE (I.O.W.).

The scene of the start and finish of the Race. One portion of the Pier, belonging to the Southern Railway, will be reserved for special, inclusive excursions run from London on the day of the Race, while the other portion, owned by Ryde Council, will be open to the public. In addition, special enclosures will be available along the front with numerous car parks.

[A splendid resort for millionaires, and pigeons who do not mind being plucked.—C. G. G.]

COWES AND EAST COWES (I.O.W.).

Opposite an acute turning point on the course, these towns offer ideal vantage points and will be official car parks. [More crowds and more piracy.—C. G. G.]

ST. HELENS (I.O.W.).

Provision is being made for public enclosures in Puckpool Park.—[*Query*—Misprint for pluck-fool?—C. G. G.]

The Royal Aero Club adds that it is arranging for loud speakers and large score boards to be installed all round the Course, wherever public enclosures are provided, in order to keep visitors acquainted of the progress of the competing aircraft, lap by lap.

Despite the very high speeds likely to be attained on sea, no danger to spectators need be anticipated as ample provision has been made for emergency landing lanes in case of accident to competing seaplanes, which will be able to alight well beyond the limits of the course, the public enclosures and ship berthing areas.

[How does one anticipate an expected danger? Presumably by staying away from the danger areas, thus saving much money and personal inconvenience, and surviving to read all about the tragedies in the privileged Sunday, and other, newspapers afterwards.

Meantime, the finest natural grandstand in the World,—to wit the coast line from Lee-on-Solent to Southampton Water,—is left lying idle because the people who fixed the course were so foolish as to put the turning-points in the wrong places, and too conceited to acknowledge their mistake when it was pointed out to them,—or else too fond of the Isle of Wight to recognise the absurdity of making it the Headquarters of the contest.—C. G. G.]

SEA-GOING PRACTICE.

The Evening News of Aug. 19 states:—

The Orient liner *Orford*, bound from Immingham to Copenhagen with about 550 passengers on board, went ashore at the entrance to Copenhagen Harbour to-day, but refloated at high tide three hours later. She steamed into harbour undamaged.

MOORING FACILITIES.

The Supermarine Aviation Works Ltd. have accommodation for marine aircraft visiting the Schneider Trophy Contest. Three mooring buoys will be available at the company's shops at Hythe, Southampton Water, where re-fuelling can be done. Intending visitors should make early application.

SCHNEIDER ROAD TRAFFIC.

The Times states that at a conference between the Royal Aero Club and the Chief Constable of Hampshire at Winchester on Aug. 17 it was decided that all road traffic into Hampshire on the day of the contest should conform to the following signalling system:—

Cars bound for Portsmouth and Southsea to carry red disks; Gosport and Stokes Bay, yellow; Lee-on-Solent, green; Hayling Island, Cambridge blue. Motorists must provide these disks for themselves, and the county police will automatically direct the traffic on to the appropriate routes and check it past every road junction to the destinations indicated by the disks.

SCHNEIDER PRICES.

A correspondent in the Isle of Wight writes:—

I have been endeavouring to find out what prohibitive prices are being charged.

So far the Islanders are proving very close and canny on the subject, in view of the outcry in the Press on this subject generally, but I have a shrewd idea that in many instances the prices will be almost prohibitive.

One hotel in Ryde is charging £5 5s. (Five Guineas) for a seat on the roof, upon which some sort of stand is being constructed. This is openly advertised. Being a considerable distance along the front, and some way from the start, it seems to my mind, an imposition.

Anent Cowes, I heard on excellent authority recently that during the "Week" a lady visitor was charged 27s. 6d. for a chicken, originally purchased for five shillings! So it augurs well for anyone staying at Cowes.

MR. MUDDLE GETS TO WORK.

Some weeks ago THE AEROPLANE had the pleasure of introducing to the aeronautical community Mr. Muddle and Mr. Meddle, the two real powers behind the scenes in the running of the Schneider Trophy Contest. Mr. Muddle, readers may remember, is the representative of the Royal Aero Club, Mr. Meddle has been at times the moving spirit at the Air Ministry. Since they were introduced to our readers these two gentlemen have been, in the words of Mr. Pyecroft, "lyin' powerful doggo." Or else perchance they have relied on the natural inertia of the Englishman and the habitual delays of committees and Air Ministry contractors, to get in their fine work for them. Consequently nothing whatever has been heard of them for weeks and weeks and weeks.

Now at last Mr. Muddle is showing signs of activity. Here is the latest statement issued to the Press under his influence:—

In view of the limited accommodation available on Ryde Pier it has been found necessary to decide to issue Press badges on a strictly defined basis. The broad principle adopted is that the claims of national News Agencies, the leading daily and Sunday newspapers of the competing countries should be given priority and that the needs of other newspapers and technical journals will then be provided for in so far as space permits.

Behold! Brethren of the Technical Press of Europe Asia and the Americas. We, who have made aviation what it is, we who have slaved for twenty years to educate national news agencies and leading daily and Sunday newspapers of the competing countries, not to mention our own Aero Clubs, are to be given accommodation on Ryde Pier "in so far as space permits."

That is to say, if M. Bouché of *L'Aéronautique*, or Mr Warner of *Aviation*, or the Editors of *Flugwacht*, *Flugsport* or *Flugwoche*, or *L'Ala d'Italia* or *Aviazione*, or *Vliegfeld* wish to place themselves on Ryde Pier so as to be in touch with the official announcements of the progress of the contest, or if they wish their photographers to take pictures which accurately represent the racing machines flying past the good ship *Orford* off the end of the Pier, they must, if Mr. Muddle, or his representative on duty at the moment, thinks fit, give place to some Fleet Street hack who represents *Sunday Society*, or the *Daily Dope*, or the *Weekly Wail*.

That, my brethren, is the thanks which we get for upholding the Aero Clubs of our respective nations and for trying to guide them, as well as the ignorant and stupid journalists of our respective nations, in the proper handling of aeronautical affairs.

There is another little matter in which Mr. Muddle seems to be taking a hand. Quite a large number of people have been lured into paying exorbitant prices for accommodation in the s.s. *Orford* the night before and the night after the Contest, and during the day of the Contest itself. The idea originally was that the élite or, as some people might prefer to call them, the snobocracy of British Aviation, were to be concentrated in the s.s. *Orford*.

Then Mr. Muddle, apparently not satisfied with the profit to be got out of charging people 34 guineas for two nights' accommodation in a two-berth cabin, seems to have struck the brilliant idea that some more money could be made by organising a day trip to the *Orford*.

Consequently people who have not reserved cabins on board can now leave London in the morning, promenade on the *Orford* all day and be taken off at 10 o'clock at night. And all for two or three guineas a head. Why pay 34 guineas a head for seeing no more, and having all the discomfort of sleeping in a bunk instead of in your own bed?

But that is not all. Mr. Muddle has now sent out a notice that when the snobocracy of aviation, who have already paid deposits on the exorbitant prices for accommodation in the *Orford*, are preparing to attend the Official Banquet to the competing teams on the night of Sept. 7 (whether the Contest has taken place that day or not), the said snobocracy are not to dress for dinner,—because if they did the day trippers might feel out of place.

The Secretary of the Royal Aero Club emphasises the fact that people who have booked cabins in the *Orford* are specially requested not to dress for dinner,—though evening dress is as done in all the best liners.

When one reads all the beautiful advertisements which are now being published by our old friend Mr. Cook, the Tourist's Friend, and by the Southern Railway Company and all sorts of people, offering accommodation in quite good ships, or alternatively day trips to Ryde with seats on Ryde Pier, at a fraction of the price charged by the Royal Aero Club for accommodation in the *Orford*, one begins to wonder whether Mr. Muddle's real name ought not to be Mr. Moses.

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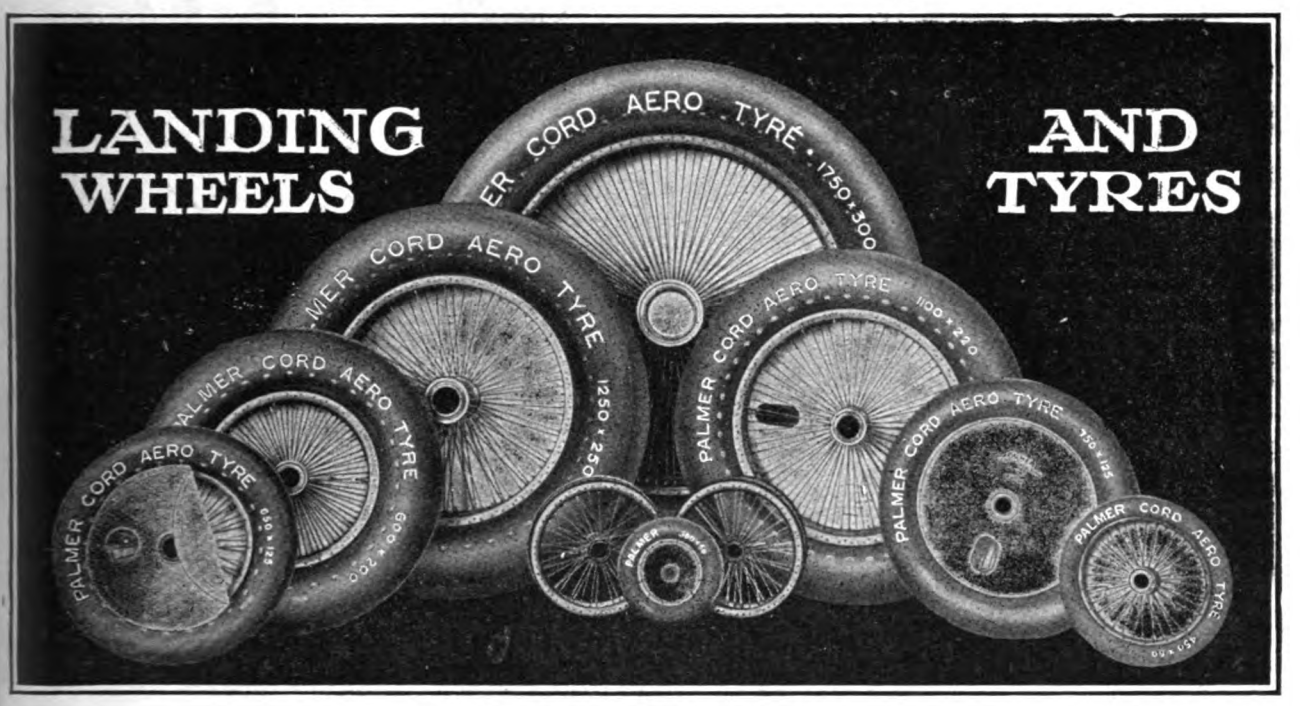
PALMER



STANDARD SIZES.

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
"	195	130.	38.09	Central
300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
"	172	130.	38.09	Central
575×60	21	160.	28.	Central
"	180	150.	38.09	104/46
"	186	120.	34.92	Central
"	190	150.	38.09	Central
600×75	21	160.	28.	Central
"	180	150.	38.09	104/46
"	186	120.	34.92	Central
"	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
"	79	178.	44.45	Central
"	100	178.	38.09	132/46
"	101	178.	31.75	132/46
"	196	178.	55.	Central
600×100	188	120.	34.92	Central
"	304	150.	38.09	104/46
"	333	120.	34.92	Central
700×100	77	178.	44.45	132/46
"	92	185.	55.	135/50
"	95	185.	55.	Central
"	99	178	38.89	132/46

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700×100	112	150.	38.09	Central
"	176	178.	44.45	Central
"	179	178.	55.	132/46
650×125	119	178.	55.	132/46
"	147	178.	55.	Central
"	188	120.	34.92	Central
"	336	178.	44.45	132/46
750×125	77	178.	44.45	132/46
"	92	185.	55.	135/50
"	95	185.	55.	Central
"	99	178.	38.89	132/46
"	112	150.	38.09	Central
"	176	178.	44.45	Central
"	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
"	162*	185.	55.	Central
"	163*	185.	66.67	135/50
"	169†	185.	55.	135/50
"	177	185.	55.	135/50
"	183	185.	55.	Central
"	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
"	174	250.	80.	Central
"	182	185.	55.	Central
"	187	220.	66.67	Central
"	201	185.	60.32	125/60

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000×150	210	185.	60.32	Central
1000×180	148	220.	80.	Central
"	149	185.	55.	Central
"	155	220.	66.67	Central
"	166	185.	55.	125/60
900×200	107	185.	55.	Central
"	108	185.	55.	125/60
"	128	220.	66.67	Central
"	137	250.	80.	Central
"	157	185.	80.	Central
"	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
"	136	250.	80.	Central
975×225	192	185.	60.32	Central
"	194	185.	55.	125/60
1100×250	364	220.	60.32	Central
1250×250	314	250.	80.	Central
"	154	304.8	101.6	Central
1500×300	305	304.8	152.4	Central
"	306	304.8	101.6	Central
1525×325	197	304.8	101.6	Central
1750×300	139	400.	152.4	Central
"	191	350.	150.3	Central
1750×350	193	400.	125.	Central
2000×450	363	500.	152.4	Central

Wheels Nos. 161, 162, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings.
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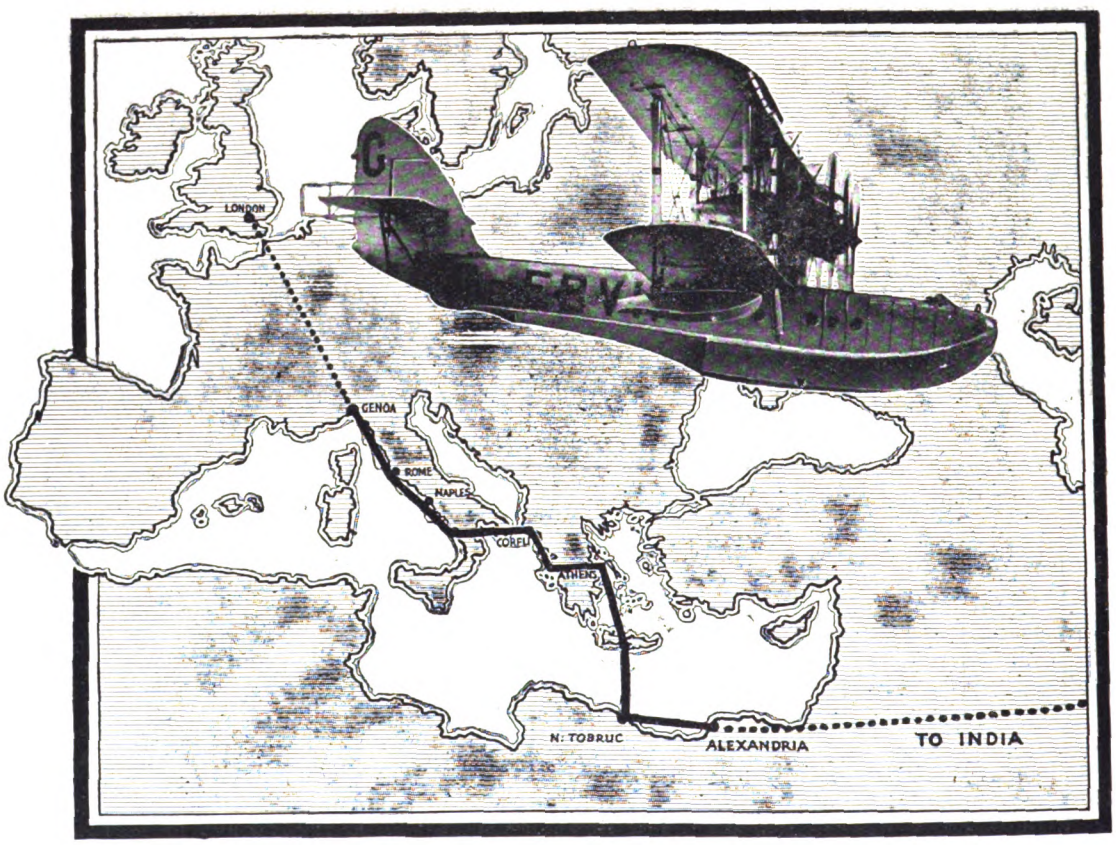

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

THE AERO CLUB OF SOUTH AFRICA.

The third annual meeting of the Aero Club of South Africa (the Union of all the Flying Clubs in South Africa) was held at Bloemfontein on June 29 and 30. The meeting was highly successful and eighteen delegates from all over the Union were present. Bloemfontein has a wonderful aerodrome, a sympathetic Town Council, and, being the central city of the Union, it has wonderful possibilities for air development.

In the course of his Report the Chairman stated that the Club's last chairman, Col. W. D. Beatty, A.F.C., one of the promoters of the Aero Club of South Africa, had laid a valuable foundation and deserved most of the credit for the progress which they were now able to report. Last year five Clubs out of the six had started flying and this year seven Clubs out of nine were flying. The three new clubs were Witbank, Benoni and Germiston.

The Clubs had flown a total of over 4,500 flying hours. Fourteen light aeroplanes were now owned by the Clubs and 10,000 passengers had been carried in these machines. The number of members now flying solo was 91.

Last year, said the Chairman, the Club had recorded long flights of importance, including those of the Hon. Lady Bailey, Lady Heath, Sir Alan Cobham and Lieut. Bentley. During the period under review a number of flights had helped tremendously to further the cause of aviation in South Africa including those of the Hon. Lady Bailey (return flight), Capt. Halse, Lieut. Pat Murdoch, Mr. Van Lear Black and party, Sq. Ldr. Slatter, Lieut. Bentley's honeymoon flight to England and back, the two French officers and the four Portuguese officers. The Club offered them all very hearty congratulations.

Further progress could also be recorded in the establishment of landing grounds. Nearly every town of importance now had its landing grounds and others were preparing grounds. In nearly all cases Town Councils were leading the way and many were prepared to lay down hangar accommodation and erect workshops.

Imperial Airways in conjunction with the Blackburn-Cobham Aviation firm had completed negotiations for an air service from the Union to Egypt. The Union Government had decided to assist with a subsidy for this line.

The annual output of gold in the Union was approximately 400 tons (about 40 million pounds sterling). Interest on this for a fortnight was tremendous and could be saved by exporting gold by air instead of by sea. Similar conditions could be applied to other precious stones and metals.

The Minister of Posts and Telegraphs, whose Department controlled Civil Aviation in South Africa, had recently stated that the population of the Union was unconcerned about aviation. In reply the Club would remind him that it had over 1,400 members. If the number of passengers carried by the small aircraft companies was added to the 10,000 carried by the Club the total would probably be nearly 20,000, of whom perhaps 15,000 might be said to be permanently converted "air-minded" citizens.

In conclusion the Chairman asked the delegates to go back to their centres determined to preach the good of their cause. Hundreds of people would like to join the movement but they might be shy at first. If they were treated with hospitality and kindness and given willing help to make a start, they would join and bring others. He asked them to draw into their confidence representatives from existing organisations such as Town Councils, Chambers of Commerce, Rotarians and Publicity Associations. In such bodies they would find men with wide experience in administration, organisation, finance and law.

Finally he wished to congratulate the Press for the very able manner in which they had handled aviation matters. It was their business to be farseeing in all matters and as far as aviation was concerned they had not deviated from their policy.

THE MONTREAL LIGHT AEROPLANE CLUB.

Owing to the bad weather and wet condition of the Airport at St. Hubert serious flying did not start until the middle of May. Since then the weather has been good and the aerodrome excellent. After a few minor mishaps early in May the Club has been free from accidents and four machines have been always in commission. During May and up till June 28 the flying hours reached 256. The amount of solo flying has been disappointing. There are over 40 *ab initio* soloists and over 20 old pilots flying solo and the small amount of time flown indicates that many of them have lost interest.

During the period under review five members have passed their tests for private licences, including one woman, Miss Patterson, who did her first solo after 7 hours 20 minutes dual.

The Club sent three machines to the Ottawa Flying Club Meeting on June 3 and won one first, two seconds and a third prize. The following day two of the machines went on to the Kingston Meeting, where they won the Cup presented to the Club sending the greatest number of machines. The Club was also represented at Hamilton on June 5.

A Rumble Club has been formed to improve the standard

AMERICA'S FIRST FLYING CLUB.—Here are seen some of the company at the opening of the first Aviation Country Club in the United States, at Hicksville, Long Island. The Club has been backed by a number of sportsmen pilots, and the Club House is said to have cost £6,000 to build. This Club is the first of many of its kind which are being organised for the promotion of sporting, as differentiated from commercial, aeronautics by the better-class people in aviation in the United States.

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of pilotage at the Club. All soloists with five or more hours solo automatically become members and are fined for various offences, such as using the engine to get into the aerodrome, bouncing to the extent of having to use the engine to assist the second landing and so on. The Club held a landing competition on June 23, but the standard was not very high owing to a strong wind.

Arrangements for the erection of a Club house and hangar on the new aerodrome are nearly completed and the Club will move to the new aerodrome in September.

Cross-country flights to various places will be undertaken in future every week by at least two machines so that members will have a chance to learn cross-country flying.

THE AERO CLUB OF BRITISH COLUMBIA.

By the middle of July the Aero Club of British Columbia had done 350 hours of flying time. During this time the two Club aeroplanes G—CAKH and G—CAKW have made 814 flights or operations of all kinds, involving a grand total of 2,613 landings. None of the landings has been bad enough to render the aircraft unserviceable.

Of the fifty active flying members of the Club, forty have at one time or another been under the instruction of Mr. P. A. Hainstock, and five of these have taken their pilot's certificates. Under a recent classification of members under instruction, 15% are well above the average, 30% are above average, 50% are average and 15% are below average.

Two members of the Club, Messrs. D. J. Lawson and J. C. Ballard flew to Chilliwack on July 7 returning via Blaine, as part of their qualifying tests for commercial licences.

In reply to an enquiry, the Club has given the following information:—The maximum number of hours put in by any of the Club aircraft in any one day is 7 hours 15 minutes.

A request for figures for a Vancouver height record has been met by Mr. Leonard Foggin, who claims the figure of 15,500 ft. above sea-level. This is an unofficial figure.

THE SINGAPORE FLYING CLUB.

The flying time of the Singapore Flying Club for the first six months of this year amounted to 278 hours and 45 minutes. This makes a total of 545 hours and 17 minutes since the formation of the Club,—which is very good, considering the limitations under which the Club works.

THE LEICESTERSHIRE AERO CLUB.

The Leicestershire Aero Club have just received the license for their aerodrome at Desford, seven miles E.S.E. of Leicester. At present the use of the ground is limited to light aeroplanes and Avro training machines.

A club house has been built which is 36 ft. by 12 ft. It is divided into two rooms, and has a covered verandah 5 ft. wide along the front.

At present there is only one shed, 30 ft. by 12 ft., whic accommodates the Club Gipsy-Moth with wings folde Two full-size sheds are to be put up shortly.

There is a 1,000 gallon petrol tank with a five gallo pump on the ground, and arrangements are being mad to keep supplies of the various brands of oil in addition the Club's own bulk storage of Castrol XXL.

Mr. R. C. Winn, the Chairman of Committee, has mad several landings on the new aerodrome and has found th surface excellent.

The Leicester Club proposes to hold an opening meetin on Sept. 28. All communications should be made to th Hon. Secretary, Mr. H. Purt, Leicester Chamber of Com merce, 3, Granby Street, Leicester.

TO DEVON BY THE SEA.

Mr. W. R. Parkhouse, of the Agra Engineering Co. Lt who runs the Haldon Aerodrome and School of Flyi at Teignmouth, South Devon, states that an Air Rally a Demonstration of light aeroplanes will be held at Hald on Sept. 21 and 22. A dinner and dance is being arrang for the evening, and for the Sunday morning he hopes arrange a golf match between a team of visitors and local club whose course adjoins the aerodrome.

The Haldon people do not propose to organise anythi so ambitious as has been done by more important clu and air-parks, but they assure visitors a pleasant we end in what is in fact one of the most beautiful parts England.

The Haldon Aerodrome is doing surprisingly well co sidering that it has the sea on one side of it and is limi in its scope in all other directions by the narrowness England in that particular area. The aerodrome was o started a year ago, by the Agra Engineering Co. Ltd., it now houses six machines permanently. One belongs the firm, and the others have been sold to private own

Two of the private owners are the Honourable Rich Westenra (brother of the Honourable Lady Bailey) and wife. This is one of the few instances, in this coun at any rate, of there being two machines in one fami

Pupils continue to join the School and are turning quite satisfactorily. Also a gratifying number of priv owners have visited the aerodrome, and find that part Devonshire a very pleasing week-end resort.

OUT ON THE PRAIRIES.

A correspondent in Winnipeg writes:—

We have had a little fun here in various ways. organised a flying picnic the other day and six of us t off in two Moths and an Avian to visit a farmer about miles out. The silly beggar had ploughed his stubble f the wrong way of the wind, and although we didn't land

SOCIETY FLYING IN THE STATES.—Baptising the first aeroplane of the new Aviation Country Club at Hicksville, Long Island, which is being run by quite the best people in New York Society. The personalities in the picture, reading from left to right, are:—Mr. Edward O. McDonnell, Vice-President of the Aviation Country Club; the Military Attaché to the Japanese Embassy in Washington; Mr. F. Trubee Davison, Assistant Secretary of War for Aviation; Miss Ann McDonnell; Miss Emily Lawrence; Miss Frances Reaves; Miss Eleanor Hoyt; Mr. Charles L. Lawrance, famous as the pioneer of the radial engine movement in the States; and Mr. John S. Reaves. There is interest in noting that the Club's first aeroplane is a slotted Gipsy-Moth.

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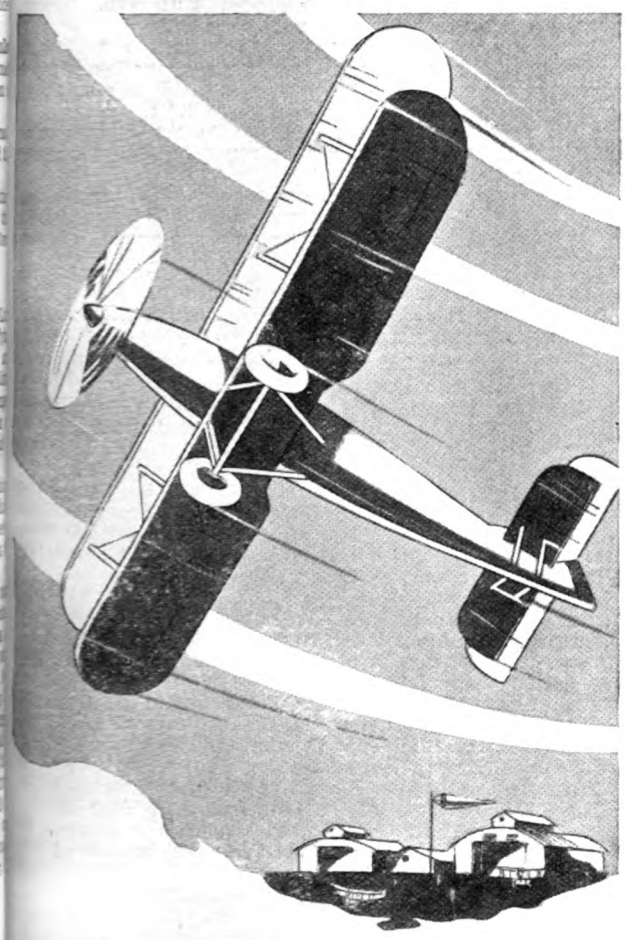

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When completed, the N.F.S. organisation will form a chain of 71 flying clubs and landing stations, with the London Air Park at Hanworth as the centre. The facilities at each air park will embrace a comfortable club-house, hangars, and technical staff; besides lock-up facilities for members who fly their own machines.

HANWORTH—OPEN IN SEPTEMBER.

A limited number of members are now being admitted to the Hanworth Club at the following special rates: Flying Members, 5 gns. entrance fee, and 5 gns. annual subscription; Non-flying **Members, 3 gns. in each case. For this year up to 31st December, two-thirds of the annual subscription is rebated.**

Write to-day for the N.F.S. brochure describing the privileges of membership and the services offered to all who wish to fly.

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our noses we couldn't get our passengers off again. Had to ferry the buses solo to a pasture a mile away.

On the way home we met a storm and two machines had to land owing to one girl pilot and one lady passenger. Michael de Blicquy was in charge of the latter and judged best not to chance the moral effects of lightning at close range. Two of us got back to Winnipeg all right and took out a car for them. The planes were brought back next day.

On Sunday a townsman of yours drifted out to the aerodrome and asked the price of an hour's flying. He was told, and he handed over the cash in a sort of limp haste and said he wanted to cool off. It *was* rather warm. However, with the aid of the Gipsy he found it very nice at 10,000 and there were samples of every known cloud formation for study. He saw one comic thunderstorm flashing away a mile-and-a-half below.

He had hardly got down when Mike asked the pilot to go on an emergency errand of mercy. One of our private owners had landed on a narrow beach about 50 miles up the shore of Lake Winnipeg and nosed onto his prop. As a matter of fact there were some other small matters, but not enough to prevent him from flying home.

As always in these cases the directions were vague and the rescuers searched for an hour and a half before finding the Avian. Our air engineer was one of the crew and the machine carried a spare prop for the marooned beachcombers. When the pilot saw the spot he cursed the silly lack of foresight by which a Gipsy prop goes the other way. He had a feeling he might need a spare himself. However, the Gipsy is more tail-heavy on the ground than our Avians, and he came in between forest and lake hoping against hope that there was something fit to land on in the blind spot. the machine bounced a bit, but both flew home again.

FLYING WITHOUT TEARS.

The Cinque Ports Flying Club has produced a very comprehensive guide for prospective members. It is well illustrated with photographs of the Club, the machines, the surrounding country and some of the members.

This handbook starts by giving a list of the Directors of the controlling company, and having thus inspired confidence it becomes patriotic and explains how the reader can help his or her country by learning to fly. This is followed by a chapter on accidents, which explains to what sort of people accidents happen and why, and adds that in 1927 the Flying Clubs had 2,744 members, and flew 6,158 hours in club aircraft without a single fatal accident to a club member flying a club machine.

The handbook lets itself go on the advantages of flying for business and pleasure, and then describes, most vividly, a first lesson in flying. Prospective members are told what to wear in the air and how to behave on the ground. A clear statement is given of what the Club membership and flying tuition will cost them according to their adaptability.

Copies of this interesting document may be had from the Secretary, Cinque Ports Flying Club, Lympne, Kent, for 6d. post free—and very good value it is at the price.

THE AERO SHOW FLYING COMPETITION.

Miss A. M. Macdonald, of Egham, Surrey, and Mr. W. L. Selkirk, of Grays, Essex, have been declared winners of the Second Flying Competition which was held at the Olympia Aero Show. The final selection was made at the Air Ministry by Sir Sefton Brancker, Lady Bailey, Group Captain Flack, and Squadron Leader Reid, who acted as judges on behalf of the Aero Show Committee.

A remarkable feature of the tests at Olympia on the Reid Pilot Indicator was the high standard of aptitude shown by the women competitors. The charts of the six women selected for the final tests were definitely superior to those of the six men. Miss Macdonald, who recorded the best results on the Reid machine, and was awarded the women's prize in the second competition, was the runner-up to Miss Sale Barker in the first competition.

The winners in both competitions, two women and two men, are being taught to fly by National Flying Services Ltd. at their aerodrome at Hanworth.

Miss Sale Barker and Mr. H. Henry, winners of the first competition, have now about ended their instruction.

Mr. Henry, handicapped by the difficulty of sparing time for instruction, got special leave from his employers, and has been doing very well.

These competitions aroused widespread interest and the two Reid machines installed at Olympia were kept working at full pressure to cope with the daily rush of entrants.

MOTH DISTRIBUTION.

The following new Gipsy Moths have been sold by Malcolm Campbell (London), 1927, Ltd., distributors for the Gipsy Moth, since June 22, 1929:—G-AAKX, to Group Capt. J. E. A. Baldwin, D.S.O., Central Flying School, R.A.F.; G-AAIM, to Capt. Shaw, Shell-Mex Ltd.; G-AAJV, to Lt. Cmdr. Glen Kidston; G-AAJR, to the Hampshire Aeroplane Club; G-AAKW, to Mr. Irvin, the Irving Air Chute Co. Ltd.; G-AAKF, to Mr. H. Armstrong, of New Zealand; G-AAKD, to Mr. A. Methley, of Birmingham; G-AAJN, to Mr. Leslie F. Horne, London; G-AAFL, to Mr. T. O. Mill of Bournemouth; and another to Mr. A. H. Downes Shaw of Bristol.

Malcolm Campbell Ltd. have also sold the following second-hand machines which had previously been taken in part exchange for new or second-hand machines during the same period:—

Cirrus Mark II Moth G-EBQE, to Comte A. Costard Beauregarde, France; Cirrus Mark II Moth G-AABH, to Lt. Col. G. L. P. Henderson; Cirrus Mark II Moth G-EBT to the Brooklands School of Flying; Cirrus Mark II Moth G-EBWY, to the London Aeroplane Club; and Cirrus Mark II Moth G-EBRX, to the Brooklands School of Flying; pre-X Mark II Moth G-EBST, to Mr. W. G. Andrews, of Sunbury; and Gipsy Moth G-AADP, to the Household Brigade Flying Club.

THE DESOUTTER MONOPLANE.

Now that the Aero Show is over the Desoutter Aircraft Company Ltd. is going ahead as rapidly as possible with the production of the D.A.C. 3-seater sports coupé monoplane which was exhibited at Olympia.

One or two developments are being incorporated in the new machine and an interesting new wing-section is being tried which is expected to make the cruising speed even better than it is already.

A number of these machines have been ordered by National Flying Services and will be put into use as soon as delivered.

The announcements of the Desoutter Company, which appear every week in the advertisement pages of THE AEROPLANE will describe the various advantages claimed for the cabin monoplane over the open cockpit type. Those who wish to keep themselves thoroughly up to date with the latest developments of saloon aeroplanes should study these advertisements carefully.

NEW FLYING SUITS.—Some of the pilots and machines of National Flying Services in their N.F.Ss.
—("Aeroplane" photograph.)

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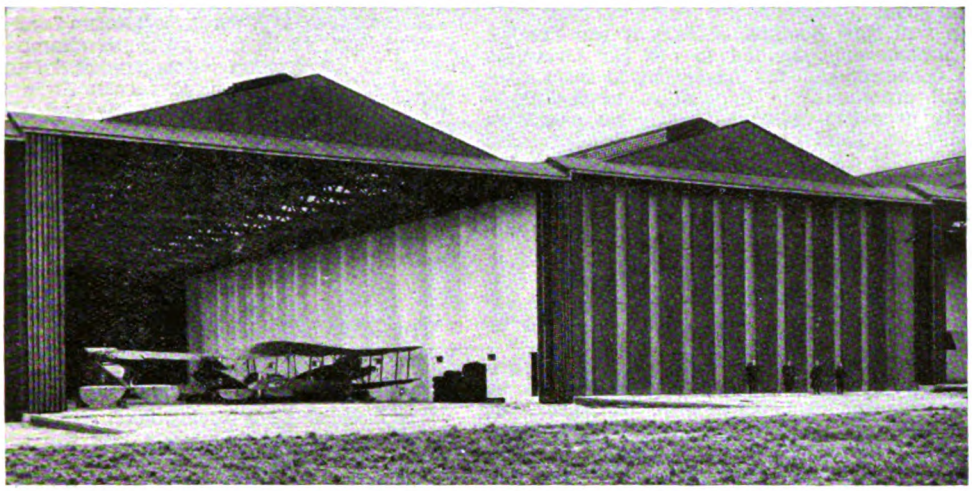
ESAVIAN
Folding & Sliding
DOORS

FOR
AEROPLANE HANGARS

ESAVIAN
Folding & Sliding
DOORS

The Unique Principle

The Esavian Folding and Sliding Doors are hinged to **Sliding Uprights** (patented) These uprights slide with the greatest ease, being fitted with purpose made Ball-Bearing Runners which carry the weight of doors of any height. Esavian Doors over 20 feet high can be fitted with Winding Gear (patented) so that they can be opened by one man.



The Test

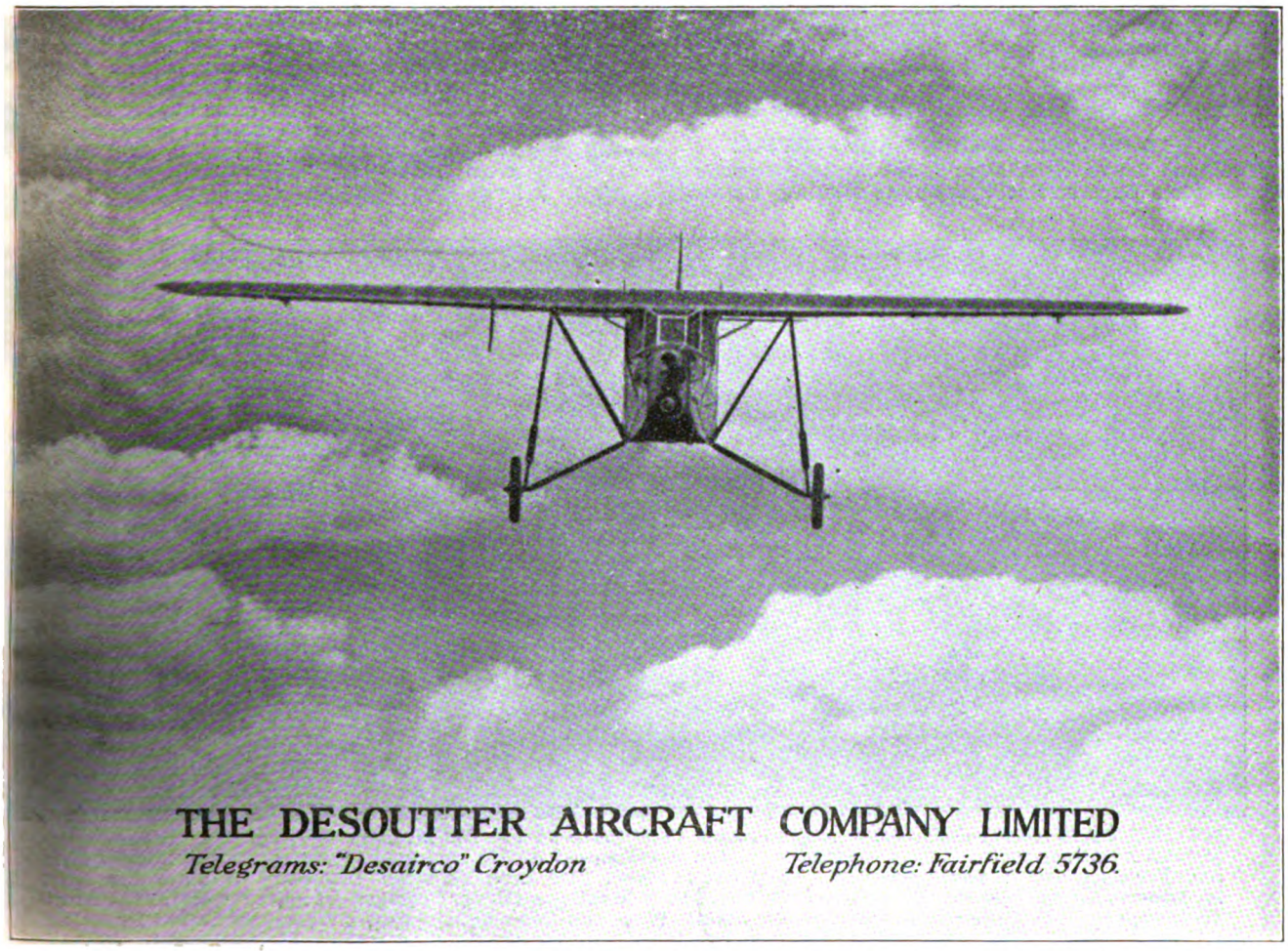
Esavian Fittings have been supplied to the Government for Doors to cover over **Ten miles** of openings. These openings vary in height up to 32 feet and in length to 100 feet. Esavian Doors were fitted to the Hangar at Heston Aerodrome, 19 feet in height and 100 feet in length, and are also being supplied to Hanworth Park.

Esavian Doors, 32 ft. high and 70 ft. long, fitted at Henlow Aerodrome.

PAMPHLETS AND DETAIL PRINTS GLADLY SUPPLIED ON APPLICATION.

E. S. A., Esavian House, 171-181, High Holborn, London, W.C.1.

'Phone: Holborn 9116.



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COMMERCIAL AERONAUTICS.

THE F.B.I. AND THE AIR MAIL.

The Federation of British Industries are pressing for the development of the air mail to Australia and an over-night air mail to European capitals. Both of these objects are of immediate importance and that such an influential body should press the Government towards such sound development is all to the good.

The Australian and New Zealand Section of the London Chamber of Commerce has decided to ask Sir Granville Ryrie, the High Commissioner for Australia, to fix a date on which he will accompany a deputation to the Postmaster-General to urge the latter to secure an extension of the air mail from Karachi to Bombay, Madras and Colombo.

Further work is also being undertaken by the R.A.F. to secure meteorological data in connection with the eventual opening of the line between Singapore, Rangoon and Calcutta.

IRELAND TO ENGLAND WITH MAILS.

With the idea of speeding up delivery of incoming air mails from America and Canada, an experiment will be made on Saturday, August 24.

The Post Office, in co-operation with the Harbour authorities at Galway, are arranging for some mail-bags to be placed ready for despatch from Oranmore Aerodrome at 8 a.m. on Saturday morning. The ship from which these mails will be taken is the North German Lloyd *Karlsruhe*.

The aeroplane to be used for this flight will be a Vickers Vivid (Napier Lion XIa engine), which has been loaned to Irish Airways Ltd. by Sir Robert McLean, Chairman of Vickers (Aviation) Limited. Col. Russell, of Irish Airways Ltd., together with Mr. J. Summers, of Vickers (Aviation) Limited, will be the two pilots.

With favourable weather the machine should reach Croydon about noon on Saturday,—so that they will not be delivered till Monday, by which time they would have come by sea.

Outward mail is to be picked up at Croydon and carried back to Galway and transferred to an outbound ship.

Col. Russell was Chief of the Irish Free State Air Force. He hopes that this enterprise, which has been made possible by the loan of the machine by Vickers (Aviation) Ltd., will help to popularise flying in Ireland.

The Vivid will leave Weybridge on August 21 for Baldonnell, so as to be ready for a prompt start on the Saturday morning, three days later—doubtless to allow for Irish time.

THE CHANNEL ISLANDS AIR SERVICE.

Tour and Travel Association Ltd. who have recently acquired some Supermarine flying-boats and are running a service to Jersey from the air-port of Woolston, Southampton, have recently had some busy weeks. Unfortunately right in the thick of things one of the boats was fouled by an outboard craft which damaged the boat's hull and laid it up for repairs. To relieve the congestion on the service another craft has been duly baptised and set to work.

Information is that the "Bosun" and office boy have agreed that, as there is so much champagne flowing about owing to honeymoon passengers and launching ceremonies and baptisms, they must return their teetotal badges to the Birmingham Medal Company and will not be sailing to the United Dry States of America after all.

The Aviation Manager of the firm wishes to deny the rumour that they are buying the Dornier Do.*x*. This ship is not considered suitable for the present requirements of the Southampton—Jersey service. But, all the same, there is every hope of the Do.*x* visiting Southampton during the Schneider Week.

STAG LANE NOTES.

The Archdukes Antony and Francis of Hapsburg-Tuscany called at Stag Lane during the week to take delivery of another Moth for their school in Spain. Before taking the machine back they are making a tour of British aerodromes.

The London Club having been closed for the annual holiday, the school pupils have had the aerodrome to themselves. The school appears to be very busy just now, and in addition to a number of English pupils there are Indian, Swiss and Czechs undergoing instruction. The London Club re-opened at the beginning of this week.

Those who saw the two Moths at the Aero Show will be interested to learn that they are both now on active service. The one finished in white and yellow, which was mounted on top of the case of trophies, is taking part in the Norwegian Antarctic Whaling Expedition, piloted by Mr. Lief Lier, who recently flew it from Stag Lane to Gothenburg in the good time of eight hours.

The second machine was sold very soon after the Show opened to M. André Jomain of Paris.

Air Taxis finished up a busy week of newspaper work by sending three machines to Ireland for the T.T. race.

Another newspaper to be added to the list of those regularly using aircraft for newsgathering is *The Newcastle Evening World*, which has just placed an order for a Gipsy Moth with a six-hour tank. The same newspaper has just awarded ten free scholarships in flying to its readers. They will be given instruction at the Newcastle Aero Club.

A note from Canada tells a story concerning the Moth which belongs to the Canadian Aviation League. Piloted

AN HISTORIC OCCASION.—The Anglo-French Conference at the Air Ministry on Aug. 7 to discuss commercial aviation, particularly co-operation in the development of air transport in Africa, in the Middle East and Far East, and in South America. From left to right: The Lord Thomson (Secretary of State for Air), M. Laurent Eynac (the French Minister for Air), Mr. F. Montague (Under-Secretary of State for Air), M. Vivant (representing M. Camerman, Director of Aerial Ways and Communications in France), Sir Sefton Brancker (Director of Civil Aviation), Lieut. de Vaisseau Bos (also representing M. Camerman), Air Commodore Newall (Deputy Chief of the Air Staff), Lieut. de Vaisseau Sala (French Air Attaché), and Mr. Burkett (Directorate of Civil Aviation).

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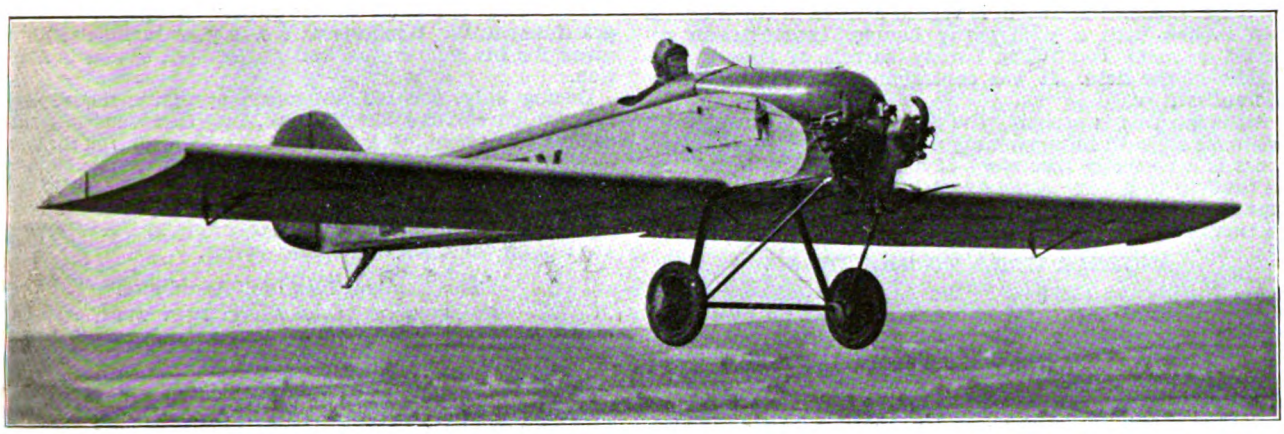

The "GADFLY" Scorpion

holds the World's Height Record

for Single Seater Light Aeroplanes.

3021 metres.

4th Category (under 200 Kilos).

Full particulars from Makers—

With Ordinary Ailerons £360

With Pearson Rotary Ailerons £370

GLENNY & HENDERSON

YORK ROAD, BYFLEET, SURREY.

HANDLEY PAGE

AUTOMATIC SLOT CONTROL

"That the slotted wing has been found to be particularly useful in landing in water, is the opinion of the Director of the Provincial Air Service, who contends that a pilot is thus enabled to 'flatten out' ten or more feet above the surface, without resulting damage, in a 'pancake' landing. Among fliers it is generally conceded that unless there is a ripple to serve as a guide, it is practically impossible to judge distance accurately in landing on calm water."

"EVENING TELEGRAM,"
TORONTO.

HANDLEY PAGE, LTD.,
Cricklewood,
LONDON, N.W.2.

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by Major-General McBrien, it visited a farm in Nova Scotia and landed with a good many bumps. Investigation revealed a cache containing twenty barrels of rum in the middle of the field. It was contraband and was seized by the authorities.

Although this is probably the first instance of an aircraft acting as a sleuth in unearthing a particularly "rum" affair, there is a perfectly true story of a D.H.9a which tipped up on landing in a very remote spot in the desert and the excavation work by the airscrew brought to light some fine specimens of old Roman coins.—C. A. S.

ANOTHER WORD TO THE TRADE.

An Englishman resident in the Argentine and concerned with aircraft writes: "What we are chiefly up against is American competition in the 3-seater 150-200 h.p. class, which are being showered into the country *on consignment*, but although very dear are extremely attractive."

That is exactly the type of aeroplane that does not exist in this country, and it is exactly the type which is wanted in most parts of the World. The other type which we have not got in this country is the 450-500 h.p. 5-seater or 6-seater cabin job, similar to, but an improvement on, the aged Fokker on which the Duchess of Bedford and her crew flew to India and back. The Americans have lots of them.

Also, if the Americans are going to start pushing out machines to foreign countries "on sale and return,"—which is what this correspondent means by "on consignment,"—the British Aircraft Trade will have to wake up very wide if it is going to compete for the business.

CROYDON NOTES.

Leaving Croydon the other day by Moth for Athens, General Brancker attired in a padded kapok life-belt, and in the act of having his helmet fixed on, presented a tableau irresistibly reminiscent of the illustration in "Alice Through The Looking Glass," where Tweedledum (or Dee) is being fixed up with mattrasses and a saucepan helmet by Alice, a part gracefully played by Major Richard on this occasion. Local colour in the shape of the "monstrous crow" was provided by the K.L.M. Fokker F.VIII just about to take off.

Flt. Lt. Wilson of *The Daily Mail* has been provided with an inflatable coracle of indiarubber with a bicycle pump to blow it up with, in case *Geraldine* should prove fickle any time when crossing to Ireland. One pictures Flt. Lt. Wilson as a sort of barnacle-festooned Rip van Winkle arriving in Fleet Street with photographs so out of date as to be of immense historic value, and bringing a strange tale of being obliged to abandon *Geraldine* at sea, months before, and thereafter being baffled by contrary winds, the swirl of the Gulf Stream and the well-known adverse influence of the moon upon indiarubber, as well as being subjected to dastardly attempts to puncture his boat on the part of anti-Northcliffian sword-fish, frustrated by friendly limpets insured under *The Daily Mail* scheme and willing to assist by acting as adhesive patches.

Jolly Rogers, our piratical aeronaut, being athirst the other day en route for Paris, was properly pirated by an Argosy steward, who handed him a small lemonade, which owing to atmospheric pressure, mostly frothed away into his nostrils when he attempted to quaff it. The worst came later however, when Rogers was charged one and sixpence for the beverage. He is said to have invented several highly original explosive epithets on learning the price.

It is understood that a court of inquiry, consisting of Directors of Carrs biscuits, Armstrong Siddeley Motors and Imperial Airways is being held over a biscuit recently thrown into an Argosy engine during a tea flight. Carrs are understood to maintain that the Jaguar enjoyed the biscuit, but the other members of the Inquiry maintain that this engine still has croup in the carburettor and continually coughs crumbs.

On Monday there were as many as ten French aeroplanes at Croydon. They are believed to have come from far and near to congratulate Mr. Bouderie upon the receipt of an entirely well-earned decoration.

It is particularly gratifying to Mr. Bouderie's many friends to see his years of real hard work for Civil Aviation rewarded with the Cross of the Legion of Honour, and it is gratifying to Mr. Bouderie as a war pilot that the award is given for his Military as well as his Civil services to Aviation.

During July, the K.L.M. passenger figures showed 40% American travellers, 25% British, 20% Dutch and 15% miscellaneous nationalities. If these are the figures on the lines most likely to carry the largest number of genuine business passengers to places like Rotterdam, Hamburg, Berlin and the Scandinavian countries, it seems likely that the Paris lines must have an even greater proportion of American tourists on their passenger lists.—SPRY.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 22; Monday, 44; Tuesday, 45; Wednesday, 41; Thursday, 44; Friday, 39; Saturday, 45.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 105, passengers 1,005, freight 25¾ tons. India Route: Inward, passengers 1 mail 724 lbs.; outwards: passengers 1, mail 625 lbs.

AIR UNION:

Paris—London and return: Machines 82, passengers 440, freight 20 tons.

K.L.M.:

Amsterdam—Rotterdam—London and return: Machines 42, passengers 332, freight 17¼ tons.

SABENA:

Brussels—London and return: Machines 12, passengers 51, freigh 3¼ tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London and return: Machines 26, passengers 68, freigh 6¾ tons.

MISCELLANEOUS:

British machines 12, passengers 5.

Foreign machines 1, passengers 0.

Total number of trips by British machines 117, carrying 1,010 passengers. Foreign machines 163, carrying 891 passengers.

COMPARATIVE FIGURES.

Week ending Aug. 17:
Machines, 280; Passengers, 1,901; Crews, 621; Total personnel, 2,52

Corresponding week, 1928:
Machines, 264; Passengers, 2,024; Crews, 506; Total personnel, 2,53

Corresponding week, 1927:
Machines, 188; Passengers, 1,231; Crews, 376; Total personnel, 1,60

Corresponding week, 1926:
Machines, 186; Passengers, 1,272; Crews, 226; Total personnel, 1,49

Corresponding week, 1925:
Machines, 196; Passengers, 1,125; Crews, 281; Total personnel, 1,40

Corresponding week, 1924:
Machines, 176; Passengers, 904; Crews, 223; Total personnel, 1,1

Corresponding week, 1923:
Machines, 144; Passengers, 724; Crews, 231; Total personnel, 955.

Corresponding week, 1922:
Machines, 176; Passengers, 642; Crews, 303; Total personnel, 945.

Corresponding week, 1921:
Machines, 114; Passengers, 437; Crews, 140; Total personnel, 57

Corresponding week, 1920:
Machines, 123; Passengers, 262; Crews, 154; Total personnel, 461.

CLARITY IN SAFETY GLASS.

One of the principal problems that has to be faced producers of splinterless glass is the difficulty of preventi the material which forms, so to speak, the "meat in t sandwich" from discolouring under conditions of inte sunlight and heat. In some cases the discolouration whi occurs is so pronounced that a mere glance at the saf screen and windows of a car is sufficient to tell the dea how old it is.

Anyone who has driven behind a discoloured scr knows how it is liable to cause errors in judging speed distance. The result of such errors in landing or taking an aeroplane is easy to imagine.

Splintex Safety Glass Ltd. have adopted a met of testing their product which is singularly interesting cause it is so thorough. At frequent intervals the cellu acetate layer is submitted to a lengthy ordeal of ultra-v rays at the new works at Wimbledon. The apparatus is capable in a few hours of reproducing an intensity light equivalent to the full glare of sunlight of three nor English summers. [Is that enough to hurt anyone?—E

It may be mentioned that, up to date, no sampl Splintex has shown any signs of failing in this rigorous It is, however, well known that laboratory conditions s

MALLITE PLYWOOD
USED BY THE LEADING AIRCRAFT MANUFACTURERS
THROUGHOUT THE WORLD.
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Telegrams: VICPLY KINLAND LONDON

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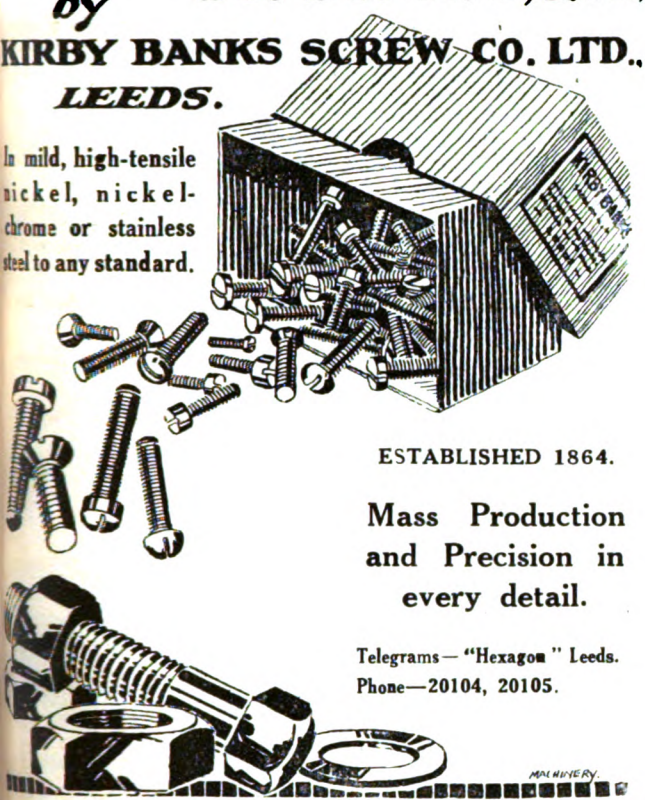
KIRBY BANKS SCREW CO. LTD.,
LEEDS.

In mild, high-tensile nickel, nickel-chrome or stainless steel to any standard.



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Quick Deliveries

From stock of fittings and Accessories, passed and guaranteed as to materials and specification. We specialise in Press Work and Machined Parts and would appreciate an opportunity to quote.

Stocks include—

Aero Fabric to Spec. 4-F1 A.G.S. 167 Taper Pins, A.G.S. Electrical Fittings, Turnbuckles, Fork Joints, Bolts, Nuts, etc.

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THE AUTOGIRO

The C 19 Machine, with device for starting the rotor blades.

The Autogiro constitutes the first practical solution of the problem of completely controlled flight.

It ensures safety.

It cannot stall.

It can ascend and descend in a small area.

For further particulars apply to:

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CIERVA AUTOGIRO COMPANY Ltd.

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times fall short of those which occur in nature. The Splintex Company, therefore, made arrangements some time ago for their splinterless glass to be tested in places where the most searching conditions exist, namely, at Singapore and at Death's Valley, California.

Reports from the latter place show that samples have withstood equatorial heat and the rays of the burning sun for nine months, without any sign of discolouration. From Borneo, where the torrid temperature is combined with intense moisture, similar reports have come. The definite statement has been made from this testing ground that Splintex withstands the action of intense sunshine, high temperature and moisture far better than any other glass.

OXYGEN FOR ALTITUDES.

Siebe, Gorman and Co. Ltd., who are best known as Government contractors for, and as builders of, diving apparatus, write correcting the statement which appeared in The Aeroplane's Second Show Report to the effect that they were requested to produce oxygen apparatus for high-flying as the result of their experience with oxygen apparatus during the War 1914.

The firm point out that they did in fact make oxygen apparatus for various purposes, including its use at high altitudes in balloons, as well as in aeroplanes, many years before the War.

They also make such useful things as inflatable rubber boats and pontoons and life jackets, and other things of interest to private owners.

THE FIRST AIR LEGEND.

Probably the earliest legends concerning flying is that of Daedalus and his son Icarus. According to the story they made their escape from captivity with wings fashioned by Daedalus from feathers and wax. The son, more reckless than his father, flew too near to the sun so that his wings melted and he fell into what is now known as the Icarian Sea.

The Vacuum Oil Company Ltd., in producing a mascot-plate for aeroplanes has incorporated the legendary figures, using a pair of huge wings and the sun's rays as a background. The plate, which is reproduced in blue and gold, bears the words "Fly with Daedalus in Safety—Mobiloil for Reliability."

BIRMINGHAM MEDAL CO., LTD.,
Silversmiths, Badge & Name-Plate Manufacturers,
SUMMERHILL TERRACE, BIRMINGHAM.

MANUFACTURERS OF
ENAMELLED BADGES OF EVERY DESCRIPTION.
NAME PLATES FOR ALL PURPOSES.
CUPS, SHIELDS, TROPHIES, MASCOTS & MODELS.

CORRECT SCALE MODEL AIRPLANE MASCOTS, "MOTH," "BLUEBIRD," "SPARTAN," £3 3s. each.

Catalogues & Special Designs Free on Request.

WACO AIRPLANES

THE winning of last season's major air events again demonstrated the characteristic performance responsible for WACO'S leading position in the American Aircraft Industry.

Overseas representation is now being arranged.

INQUIRIES INVITED.

THE ADVANCE AIRCRAFT COMPANY,
TROY, OHIO, U.S.A.
CABLE ADDRESS : : WACO.

NEW COMPANIES.

E. J. Bowman (Birmingham) Ltd.—Private company. Registered July 25. Capital, £2,000 in £1 shares Objects: To acquire the business of a radiator manufacturer now carried on by E. J. Bowman at 56, Pritchett Street, Birmingham, as "Bowman Radiators," and to carry on the business of manufacturers of radiators for motor-cars, aeroplanes and airships, oil coolers for engines, etc. The directors are: E. J. Bowman, 110, Trinity Road, Birchfield, Birmingham. Maud G Bowman, 110, Trinity Road, Birchfield, Birmingham. The said E. J. Bowman shall be permanent so long as he holds 25 shares. Registered office: 56, Pritchett Street, Birmingham.

Blackburn Consolidated.—Blackburn Consolidated Limited was registered as a "private" company on July 27, with a nominal capital of £140,000 in £1 shares. The objects are to acquire and hold shares, stocks, debentures, debenture stocks, bonds and other securities; to manufacture airships, aeroplanes, seaplanes, flying-boats, helicopters, ships, launches, barges, vessels, and air, sea and other craft and conveyances, and to carry on the business of managers of aerodromes, seaplane bases, motor services and shipping property, etc.

The subscribers (each with one share) are: C. H. S. Millis, 18, Austin Friars, E.C.2, solicitor. C. E. Nisbet, 18, Austin Friars, E.C.2, solicitor.

The first directors are: A. P. Holt, chairman; R. Blackburn and E. Hudson, appointed by R. Blackburn; and H. C. Bevan, appointed by Andrew Holt and Co. (all permanent). So long as R. Blackburn holds 25% of the issued share capital, both he and E. Hudson shall be removable by the said R. Blackburn, but not otherwise, and so long as Andrew Holt and Co. hold a like percentage of shares H. C. Bevan shall be removable by the company, but not otherwise. The expression Andrew Holt and Company, means Andrew Holt and Co., of 7, Gracechurch Street, E.C.3, and any person or corporation to whom or which the benefits accruing to Andrew Holt and Co. under a contract dated June 24, 1929, made between R. Blackburn and that company, may be assigned.

Qualification of ordinary directors: 1. Remuneration: As fixed by the company. Solicitors: Slaughter and May, 18, Austin Friars, E.C.2.

The Robinson Aircraft Company Ltd.—Private company. Registered Aug. 12. Capital £100 in £1 shares. Objects: To carry on the business of mechanical and aeronautical engineers, manufacturers of aircraft, flying machines, water planes, motor boats and balloons, and component parts and accessories, etc. The directors are: R. C. Bartlett (governing director), 53a, Holland Park, W.11, solicitor. Capt. P. G. Robinson (managing director), "Seacroft," Salisbury Road Carshalton, Surrey, engineer. Solicitors: R. C. Bartlett and Co., 44, Bedford Row, W.C. Registered office: 44, Bedford Row, W.C.1.

PERSONAL NOTICES.

Births.

NORMAN.—On Tuesday, Aug. 13, at 27, Welbeck Street, to Patricia, wife of Nigel Norman—a son.

NORTH.—On Aug. 11, to Phyllis, wife of John Dudley North, Hill House, Eaton Hall, Norwich—a daughter.

POBJOY.—On Aug. 13, at Streatham Manor, S.W.16, to Elaine, wife of Douglas R. Pobjoy—a daughter.

Forthcoming Marriage.

GRACE—HEWITT.—An engagement is announced between Charles Frederick Hallyburton Grace, Flt. Lt., R.A.F., son of the late Major C. H. Campbell Grace, Indian Army, and Miss Irene Mary Hewitt, elder daughter of Mr. and Mrs. J. Roland Hewitt, of Foxhall, Ipswich.

Marriages.

WARD—ETHERIDGE.—The marriage took place at Littleham Parish Church on Aug. 16 of Flg. Off. Ellacott Lyne Stephens Ward, R.A.F., only son of Lt.-Col. E. L. Ward, I.M.S. (retired), and Mrs. Ward, of Sidcup, Kent, and Miss Sylvia Etheridge, eldest daughter of Lt.-Col. F Etheridge, 7th Rajput Regiment, and Mrs. Etheridge, of Exmouth.

ZEPPELIN—McEWEN.—The marriage took place quietly at Roquebrune, Cap Martin, France, on Aug. 12, of Leo Parcus, Count von Zeppelin, and Amethe McEwen, daughter of the late Donald Smeaton, C.S.I., M.P.

Death

JONES.—On Aug. 14, at Sutton Bridge, Lincolnshire, as the result of a flying accident, Charles Henry Jones, Flg. Off., No. 23 (Fighter) Squadron, R.A.F.

Mr. Jones was born in 1905 at Penicuik, Midlothian, and entered the Royal Air Force with a short service commission in September 1925. He was posted at that time to No. 23 (Fighter) Squadron for a course of flying training, and remained with the Squadron throughout his Service career.

In May of this year Mr. Jones, with Mr. H. A. Purvis, won the Aerobatics Competition for Fighter Pilots of the Air Defence Command, R.A.F., and consequently were selected to give the demonstration of Individual Aerobatics at the R.A.F. Display in July.

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AUTHORISED AIR MINISTRY SUPPLIERS
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in Brass, Copper, Duralumin and approved non-ferrous Alloys
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MISCELLANEOUS ADVERTISEMENTS.

All Advertisements for this column should arrive at this office by 6 p.m. MONDAY, to ensure insertion.

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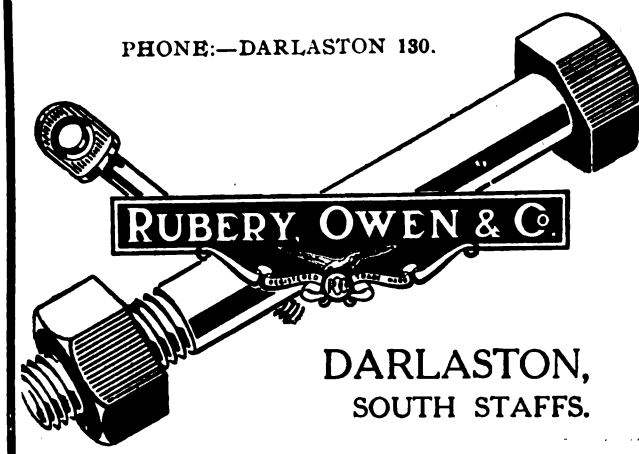

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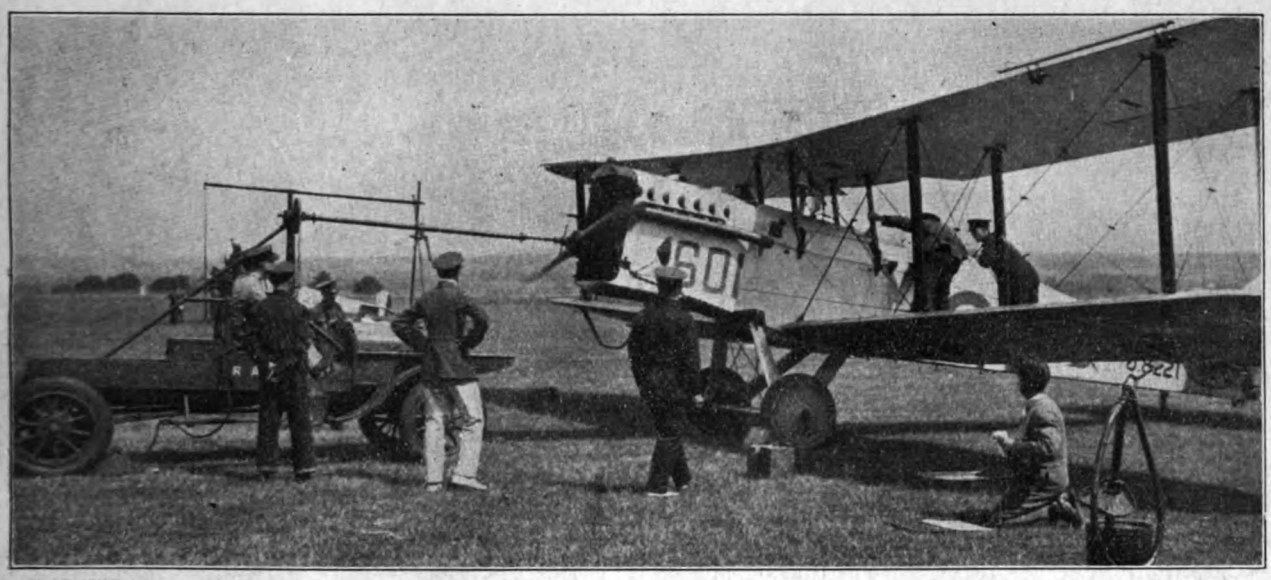
THE AEROPLANE
INCORPORATING AERONAUTICAL ENGINEERING
Edited by C. G. Grey

Vol. XXXVII. No. 9. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

"TO TURN AND WIND A FIERY PEGASUS."

(SHAKSPEARE—*Henry IV.*)



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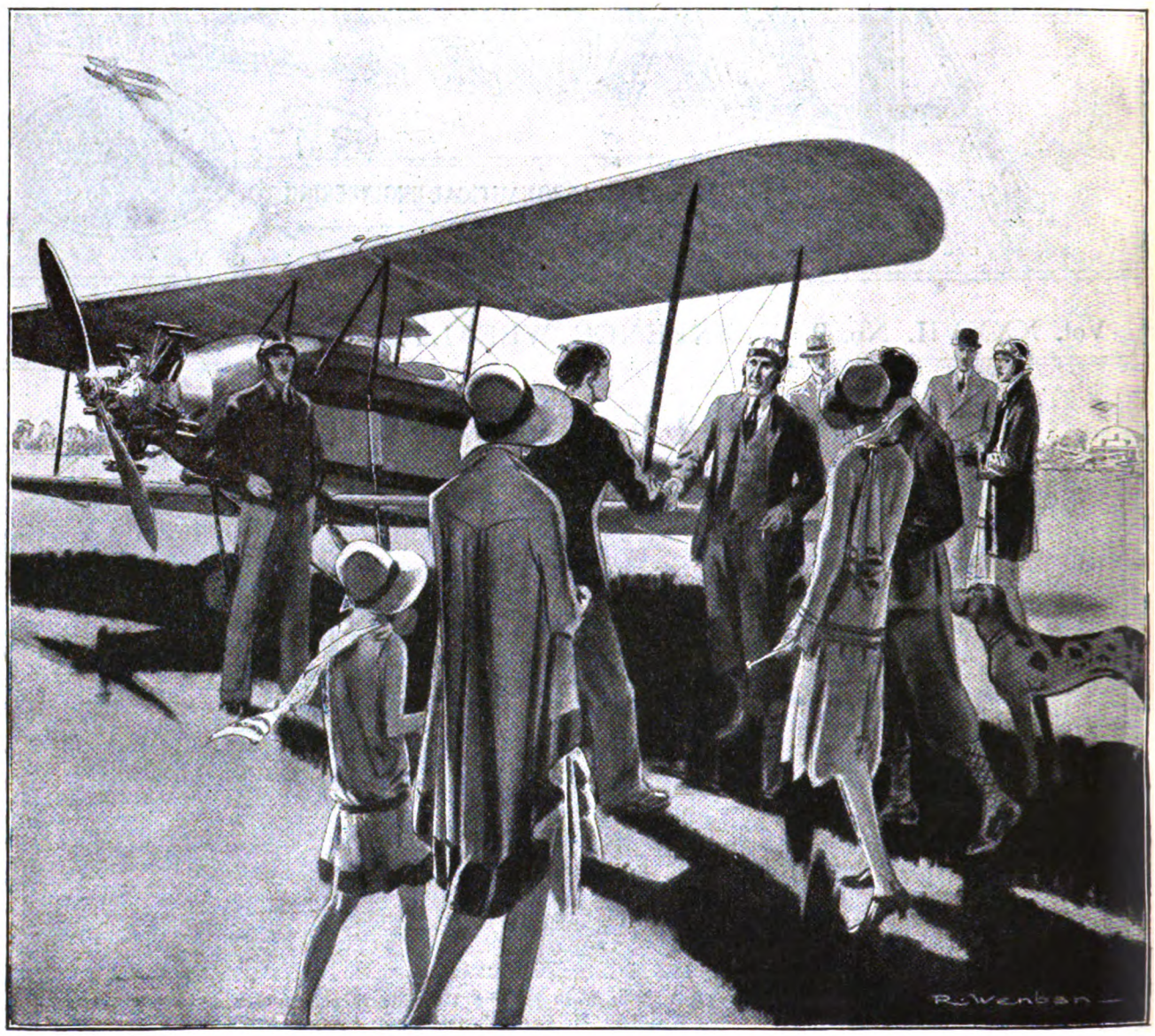

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AUG. 28, 1929.

THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXXVII No. 9.

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ON POSTPONEMENT OR CANCELLATION.

The sympathy of all in the World who are interested either in flying as a sport or in the development of aircraft as vehicles for transport will go out to Italian Aviation in the unfortunate state in which it now finds itself. By the death of Lieutenant Motta in Lake Garda on Thursday, Aug. 22, the *Regia Aeronautica* has lost a very able pilot who distinguished himself during the War 1914-1918. And in the breaking up of the various aircraft and motors specially built for the Schneider Trophy contest a severe blow has been given to that justifiable pride which Italy as a nation has taken in her aeronautical progress, to which Signor Mussolini and his able friend and helper General Balbo have given so much impetus in recent years.

Italy's preparations for the Schneider Trophy Contest have been made as far as possible in secret, just like our own. But such information as can be got indicates that 27 motors and ten aeroplanes have been built in Italy, with the intention that the three aircraft and their motors to compete in the contest should be selected from that number.

According to the accounts from Italy, only one aeroplane which has any chance of competing creditably is left of this fleet. For some reason the tandem-engined Savoia-Marchettis do not seem to have been a success, though whether this is because their performance is inferior, or merely because they were not built in time to be tested, is not yet known. Similarly, the twin-engined machine, with motors side by side, have not been successful. Last Saturday week (Aug. 17) the Fiat C29 was crashed in Lake Garda, happily without killing her pilot. And so all the responsibility has fallen on the Macchis, of which only one is left.

Somewhat naturally, under the circumstances, Italy asked for a postponement of the competition—apparently hoping that by delaying for a month some of the other machines, say the Savoias or reserve Macchis or something, might be fettled up for the competition.

A Matter of Rules.

The Royal Aero Club answered officially that according to the rules of the *Fédération Aéronautique Internationale* the Contest could not be postponed when once the date had been fixed except from day to day because of bad weather.

There is in fact precedent for such a postponement, because in 1926 the date of the Contest was postponed from October 24 until November 11 by the American authorities, because certain of the Italian material had not arrived. And the Contest was actually flown on November 13, when Major de Bernardi won.

The Contest was postponed then by mutual agreement between the only two countries,—Italy and America. But that postponement was considered by other nations, including Great Britain, to be contrary to the rules of the F.A.I. And so that contest should by right have been declared null and void.

Since then the F.A.I. has made a rule that the Contest shall be held once every two years. And a rule has been made that, in the January of the year preceding the year in which the Contest is to be held, the country in which the Contest is to be held shall fix a period of six weeks inside of which the Contest shall be held: and that three months before the holding of the Contest the actual date is to be announced. Thereafter that date can only be postponed owing to bad weather.

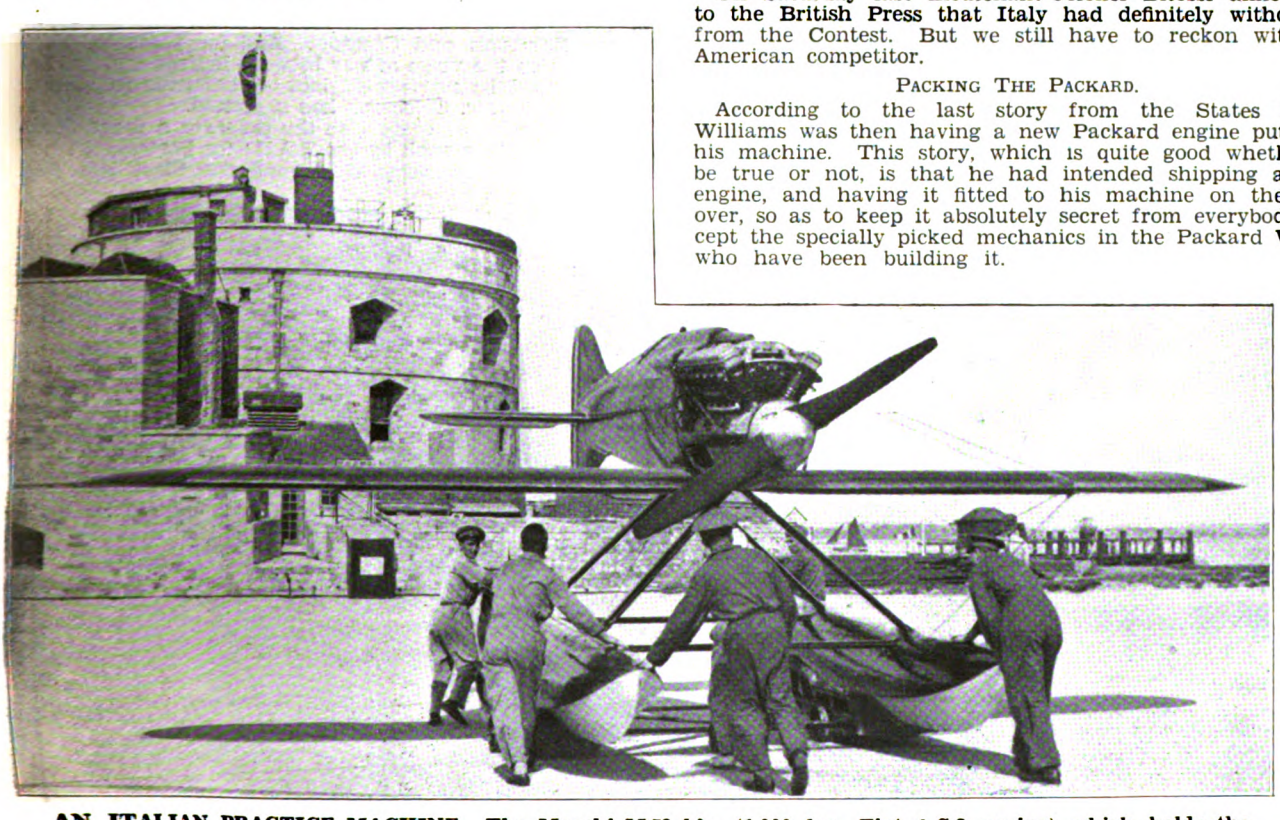
There are the rules, and we are bound to stick by them.

Moreover, this year there are not two countries only concerned. There is also the American representative to be considered. Whether Lieutenant Williams, U.S.N., will get here in time for the date fixed or not, nobody knows. But anyhow, so far as can be learned, the Aeronautical Association of America, which corresponds to our Royal Aero Club, has not asked for a postponement.

On Saturday last Lieutenant-Colonel Bitossi announced to the British Press that Italy had definitely withdrawn from the Contest. But we still have to reckon with an American competitor.

Packing The Packard.

According to the last story from the States Lieut. Williams was then having a new Packard engine put into his machine. This story, which is quite good whether it be true or not, is that he had intended shipping a new engine, and having it fitted to his machine on the way over, so as to keep it absolutely secret from everybody except the specially picked mechanics in the Packard Works who have been building it.



AN ITALIAN PRACTICE MACHINE.—The Macchi M.52 bis (1,000 h.p. Fiat A.S.3 engine) which holds the World's Speed Record for seaplanes at 318.4 m.p.h. and will be used as a practice machine for the Italian team at Calshot.

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This may be true, but it is very unlike the open way in which everything is done in the States. And anyhow it does not match up with the U.S. Navy's very wise ruling that they will not let Lieut. Williams and his machine come over here until he has shown them that it can fly.

Thus, at the time of writing, the Royal Aero Club, which is the party most concerned, has had no official intimation from the Italian authorities that they have withdrawn, and it has no information that America has withdrawn. An evening newspaper states definitely that the Italians are coming with two Savoias, two Macchis and a Fiat. But they may not arrive or may not fly when they do arrive. So there is a distinct probability that on the day fixed for the Contest we shall find ourselves perfectly ready to compete, and without any competitors. And the question is what are we going to do about it?

Solving The Problem.

That question resolves itself into three alternatives. Are we going to be sportsmen and cancel the Contest? Or are we going to be commercial and fly over the course and claim a win? Or are we going to let the English Non-Conformist Conscience get to work, and by pretending to be good sportsmen actually be thoroughly commercial in the most far-sighted way possible? That is, cancel the Contest as a gesture to our competitors and then send our own defenders to break all existing records—and afterwards advertise the fact all over the World that British Aircraft Break Records Without Breaking Themeselves.

If we consider the question purely as sportsmen we shall declare the Contest off, just as the U.S. Navy did in 1924 when our one machine crashed and we sent the designer and the pilot to America without any machine.

If we are going to behave like ordinary short-sighted shopkeepers, we shall fly our machines over the course and then claim a win on the Trophy. The result will be that all our possible competitors, the Americans, the French and the Italians, will in future say that of course it was all very fine for us to secure a win becaues we had nothing up against us, and that any of them could have beaten us if we had waited for them to be ready.

The fact that they have all had two clear years in which to build new aircraft to beat our one machine which won the Trophy for us in 1927 at Venice will not count in the argument. The bald fact remains that our foreign competitors have failed to be ready in time, just as we ourselves have failed to be ready in time, so often in so many things, from the outbreak of War in 1914 upwards and downwards.

England The Unready.

One remembers very well on that famous morning in 1924 when the U.S. Navy so sportingly cancelled their right to fly over the Course, and claim a win on the Schneider Trophy, at Baltimore, that an Englishman walked into the hotel at breakfast-time and was introduced to a group of American Naval Air Service officers, who cooed over him sympathetically about the mishap to the English challenger.

Somewhat tactlessly he announced that they would be interested to know that work had already begun on next year's challenger. Whereupon another Englishman remarked that he was glad to hear it, because we should then have a chance of finishing the machine on the boat on its way to America next year.

When the Contest was held a year later we still were not ready, for the only British machine that covered the course was consistently 30 miles an hour slower than the American winner, lap after lap of the course. And our management was so bad that when one of our machines crashed before the Contest our reserve machine was not even assembled and ready to fly.

The trouble with all scientists and artists is that they are never content to let well alone and do the best they can with what they have produced. They will always go on trying to improve things, instead of making existing things reliable. Several of the best aircraft designers in the World have never had a chance of showing how good their products are simply because they have never had a business man to take their designs away from them and to make them stop improving them.

That probably is what is at the bottom of the Italian and French failure to be ready in time. They have probably allowed their designers to go on introducing new ideas, instead of stopping the designs six months ago and simply finding out the weak spots in their aeroplanes and engines,—in other words, getting the bugs out of them, as they call it in America.

A Suggestion and a Precedent.

Anyhow, here we are, apparently, without anybody to put up a competition against us. Or at best with only one Italian machine and one American machine. So what are we going to do, and what are a few million British taxpayers who have helped to pay for the Schneider defenders, going to do on September 7 if it should happen to be a nice fine day and affords no excuse for postponing the Contest?

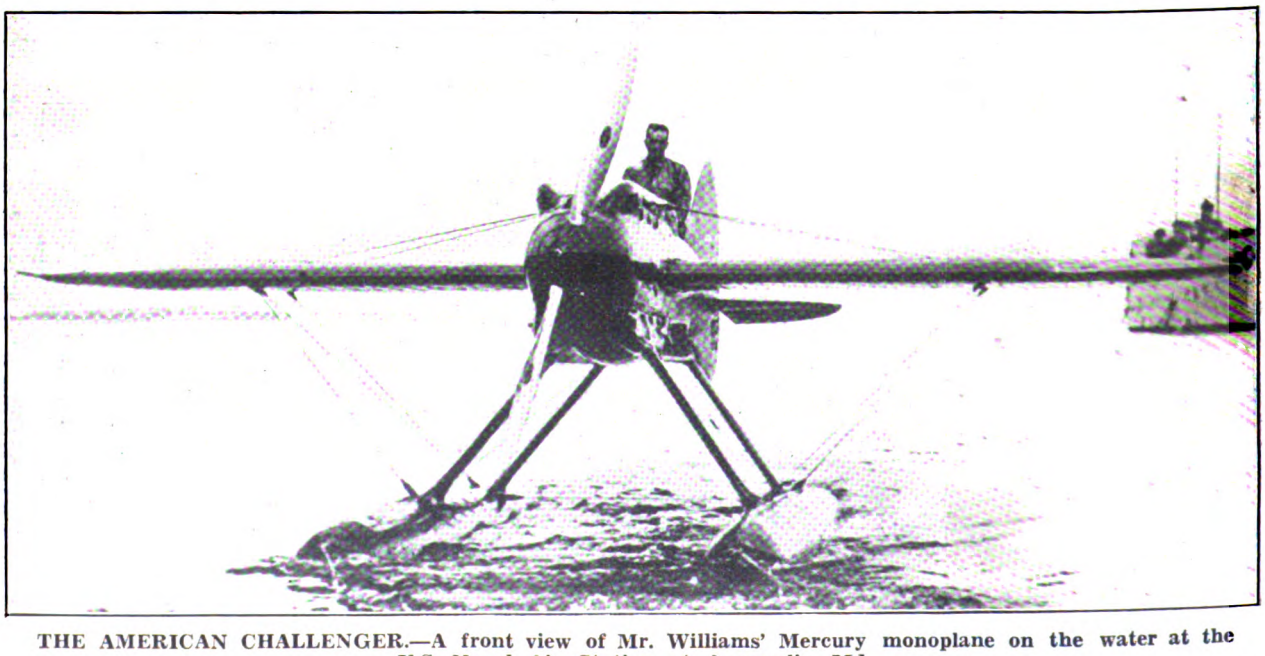
Certainly the best thing we can do is to adapt what the Americans did at Baltimore in 1924. That is, quite simply, to hold a Seaplane Meeting of our own. The Americans, having declared the Contest off, sent their machines over the Schneider course to go for records, and organised some quite interesting races for their standard Naval float seaplanes and flying boats.

We can do better than that, for, as Mr. Colebrook of *The Times* has suggested, we can have a team race between the two Gloster Napiers and the two Supermarine Rolls-Royces. To this we may add, if so desired, a Gloster and a Supermarine of the 1927 vintage which would make interesting tails to the teams.

This idea is very well worth working. The rivalry between an Italian team and a British team would be nothing when compared with the rivalry between two British teams. A civil-war is always far more bitter than an international war.

One has always claimed that given command of the press, and the removal of the police, one could work up a bloody war within six weeks between Liverpool and Manchester, or between Edinbugh and Glasgow. And for years we have been living on the verge of war between Belfast and Dublin. So there need be no fear of lack of keenness in such a competition as Mr. Colebrook has suggested.

On top of that we could give the taxpayer a magnificent display of seaplane work by the R.A.F.; for Portsmouth has just been having a Navy Week, and the Fleet Air Arm



THE AMERICAN CHALLENGER.—A front view of Mr. Williams' Mercury monoplane on the water at the U.S. Naval Air Station at Annapolis, Md.

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Napier engines were installed in the four Supermarine-Napier "Southampton" flying boats which made the greatest formation flight ever attempted. These machines flew from England to Australia, round Australia and back to Singapore, covering 180,800 engine miles without mechanical trouble.

The fastest speeds ever attained in the air and on land were secured with machines fitted with the Napier engine.

The first non-stop flight from England to India was carried out with a Napier-engined Fairey monoplane, when 4,130 miles were covered in 50 hrs. 38 mins.

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assisted by the Navy at Portsmouth might very well give a display of what can be done in the way of catapulting aeroplanes off warships and flying them off the decks of carriers.

One feels sure that the nobility and gentry assembled on the *Orford* and *Orontes*, not to mention the mere commoners on the steamships engaged by our old friends Mr. Thomas Cook and his Sons, and the Aero Club's day-trippers from Town, would greatly admire to have such an exhibition staged between those vessels and Ryde Pier,—on which apparently are likely to be assembled also most of the profiteers of the Isle of Wight,—resident and visiting.

Excellent displays could be given by flying-boats from Calshot and Cattewater. A race might be arranged for standard type float-seaplanes and for standard type deck-flying machines of the Fleet Air Arm. Squadrons of big bombers could come over from Salisbury Plain and Manston. In fact there is no reason why the R.A.F. should not put up a pageant for the Fleet Air Arm and the Coast Defence Stations.

A Business Proposition.

This excellent suggestion of Mr. Colebrook's is not supported because one has any sympathy for the people who are trying to enrich themselves by running trips to the Schneider Contest, nor for the lodging-house keepers of the Isle of Wight, nor for the hotel-keepers of Southsea or Portsmouth. The reason is merely that all our daily papers have been worked up to the point of getting their half-witted readers thoroughly excited about air speeds so we may as well show them what speed is. And as so many people have definitely arranged bits of their holiday to go and see what real speed looks like, whether we have foreign competitors or not will make no difference to the public. Our machines will be travelling just as fast as any of the foreign machines would have travelled, and anyhow, even to the trained eye,—unless it has become accustomed to machines passing definitely along one line of country,—there is practically no difference at all between an aeroplane travelling at 250 m.p.h. and one travelling at 350 m.p.h.

In fact, if there are no foreign competitors, and if we have our own team-race all to ourselves, there will be more time left in which the Fleet Air Arm and the Coast Defence Stations can put up a good show.

Practically no organisation is needed beyond a little regulating of times for the different events by the R.A.F., and the Air Force is used to doing that. The arrangement for handling crowds and housing them and so forth has already been done—and it will not be done any better or any worse because of the absence of foreign competitors.

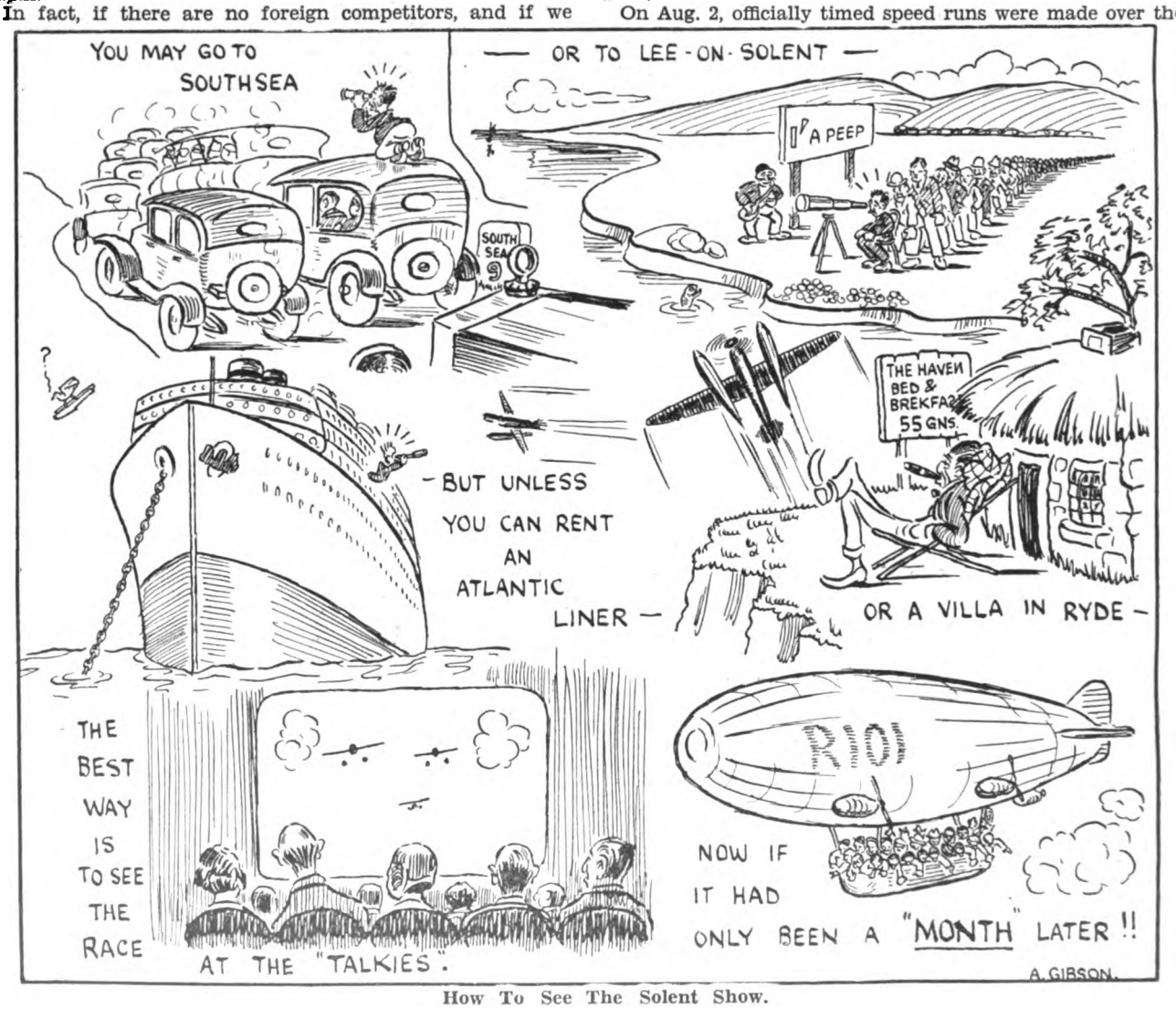
It Pays To Advertise.

Therefore, let us have our sea-going air display and get all the publicity we can out of it,—just as the Silent Service does with its Navy Weeks. If we merely cancel the whole show our various foreign competitors will say we are very good sportsmen and very big fools. If we fly over the course and claim a win on the Trophy, everybody will say that we are commercially minded and bad sportsmen. But if we refuse to claim the Trophy and put up a good show and beat all the World's Records for speed,—from the absolute speed record over the measured three kilometres course all the way up to 250 kilometres,—then we shall have the credit of being good sportsmen, and we shall get a splendid advertisement for our aircraft. And we shall have given several hundreds of thousands of people an air display such as they could not see anywhere else in the World and to that extent we shall have made them air-minded. In other words we shall have cast our bread upon the waters, and it will return unto us after many days, plus that profit which is so consistently promised to all right-doers by the best people.—C. G. G.

THE WEEK AT CALSHOT.

Preparations for the Schneider Trophy Contest are going on at Calshot in that calm, unhurried manner which is such an amusing contrast with the confused excitability of certain civilian organisations concerned with the Contest. The entire fleet of sea-going surface craft of the R.A.F. is being concentrated at Calshot and, under Wing Cdr. B. L. Huskisson, D.S.C., will operate from there during the Contest for transport, communications, patrols and ambulance work.

On Aug. 2, officially timed speed runs were made over the



How To See The Solent Show.

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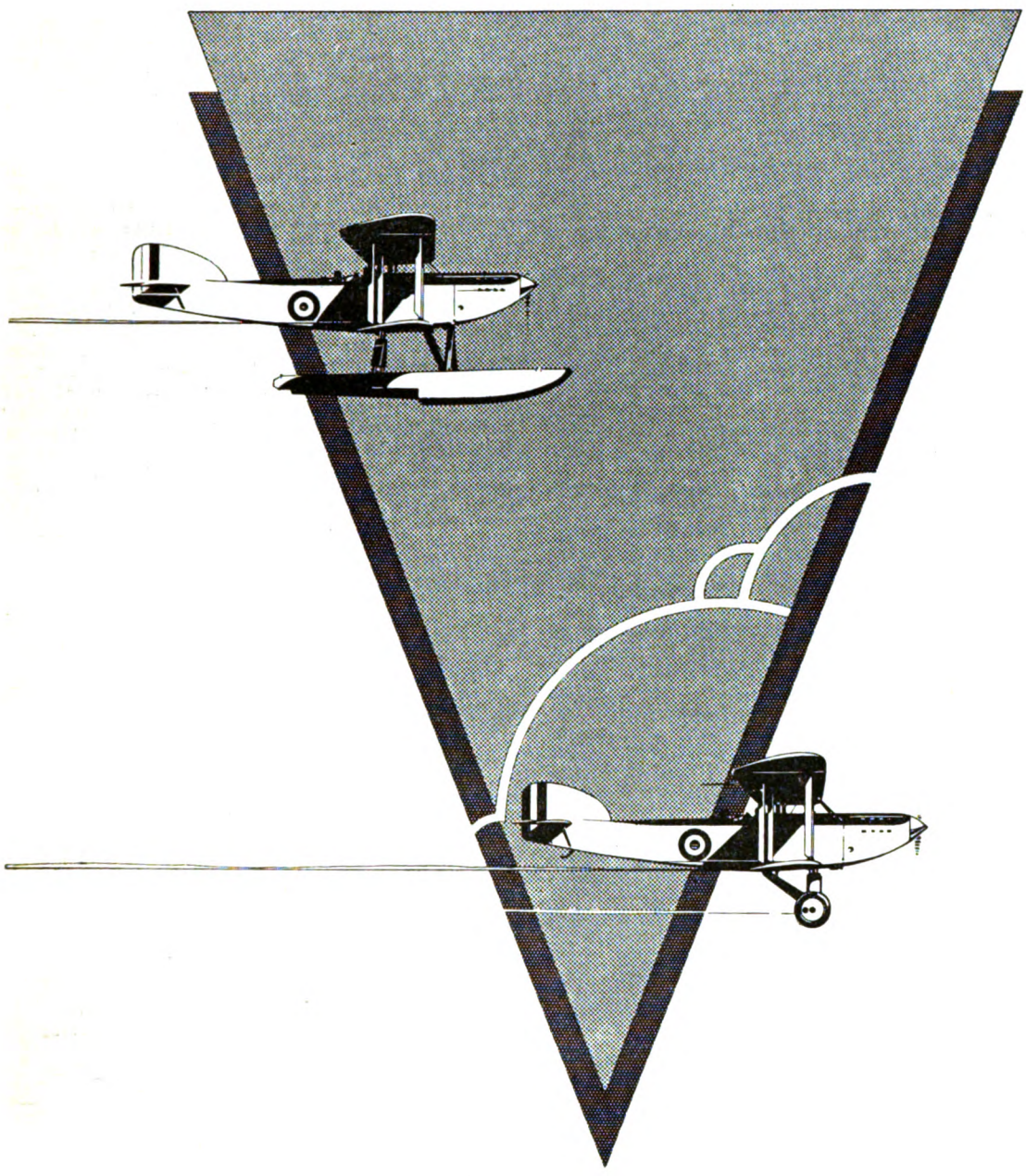

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AIRCRAFT

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course with the first Supermarine-Rolls-Royce S.6 piloted by Flg. Off. H. R. D. Waghorn. No speeds were divulged at that or any other time to the Press and readers of the daily press can therefore assume with perfect safety that the speeds given to them exist, so far as these machines are concerned, in the too vivid imaginations of the respective Air Correspondents. An improved timing apparatus was used on this occasion which, so far as one can gather, consists of a cinema apparatus combined with a tuning fork. The latter is set to make 20 vibrations a second and controls a rotating metal shutter with perforated numbers inside the camera. These are photographed at the same time as the passage of the machine across the lens. The apparatus is claimed to record speed within 100th part of a second.

After he had flown over the course Mr. Waghorn made various other tests with the machine, including a trial of its stalling-speed. He finished a forty-minute flight with some steeply-banked turns over the air station in the course of which he came down to within a few hundred feet of the roofs of the sheds. This latter part of that flight caused so much perturbation to the Italian team's special cook—who incidentally is not as was supposed, a stranger in a strange land, but a famous chef who has been in London for nineteen years—that he disappeared and was not discovered for several hours afterwards.

The S.6 had just alighted on the water when the *Mauretania*, swollen with American millionaires and self-esteem and with very much blackened funnels, came up the Solent at a most reckless speed. Frantic signals from Calshot plus uncurbed expressions of distaste for her and all her kin did not deter this "Queen of the Atlantic" from her unladylike behaviour and the S.6 was very nearly engulfed in the subsequent wash. At the same time the new Gloster-Napier VI was on the slipway ready for her first floating tests but she was hurriedly hauled back out of danger. This machine was launched again later and put through her taxy-ing trials by Sq. Ldr. Orlebar.

Late that night the first cases containing the Italian Team's practice machines arrived at Calshot. The cases had been sent by train and ferry to Harwich and thence by road. Some of the non-commissioned officers and men of the team also arrived.

News arrived at Calshot that the Navy Department of the U.S.A. had refused permission to Lieutenant Alford Williams to send his machine to England to compete until it had been given a further trial.

One of the best stories at Calshot concerns the member of the staff of the excellent temporary Post and Telegraph Office on the Station, who innocently went past the guard by jumping a lift on the back of the fire tender. The driver was unaware of his passenger, but the sentry spotted him, so the guard was turned out and a careful and systematic search was made for the "spy."

Eventually somebody had the bright idea of asking the various civilian organisations camped at the station who had ridden in, with the result that the culprit owned up at once, blissfully unconscious of the enormity of his crime.

On Aug. 22 the wind at Calshot had increased to between 15 and 20 m.p.h. on the surface and up to 25 m.p.h. at 2,000 ft. The Gloster machine was launched and pulled onto a float. The float was then towed about four miles in the direction of Lee-on-Solent. However a heavy swell was running and Sq. Ldr. Orlebar decided not to take the machine up. During the afternoon the second Supermarine-Napier arrived from the Supermarine works in tow behind a motor-boat and was landed and her engine run up. The first Supermarine, having completed three hours in the air, was taken back to the works where her engine will be dismantled for a complete overhaul.

R.A.F. personnel and the Italian mechanics were busy in the Italian hangar all day unpacking and erecting the two Macchi machines which are to be used for training. All the competing machines are housed in the big shed which normally belongs to No. 201 (Flying-Boat) Squadron. Partitions have been built to separate the competing teams. No. 201 (Flying-Boat) Squadron has been sent to Rosyth where the boats are anchored out. The personnel are quartered at Donibristle. Press representatives were duly impressed, not to say thrilled, with the fact that an armed guard was mounted at the sheds for the first time on the evening of this day. There was very little else to be thrilled by as there was no flying at all, and a very poor catch in the super-optimists's lobster-pot.

On Aug. 23 the wind had increased 25 m.p.h. on the surface and was squally higher. A Service Southampton arrived early from No. 204 (Flying-Boat) Squadron, Cattewater, and anchored. It left later to escort H.R.H. the Prince of Wales across the Channel in a Moth piloted by Sq. Ldr. Don.

At midday the Chief of the Air Staff, Marshal of the R.A.F. Sir Hugh Trenchard arrived by flying-boat from Cattewater for an unofficial visit to the High Speed Flight.

The news of the fatal accident to the second-in-command of the Italian Schneider Team reached Calshot during the morning. Capt. Giuseppi Motta was testing a new S.67 seaplane at Desenzano on Lake Garda when after a few minutes' flight the machine dived into the water from a height of about 300 feet. The wreck has not yet been recovered.

Later in the day the Italian Air Attaché in London asked the Royal Aero Club of Great Britain for the postponement of the contest for one month. At a meeting of the Royal Aero Club the Attaché was informed that the rules of the *Fédération Aéronautique Internationale* did not permit the Club to postpone the contest.

On Aug. 24 unsuitable weather again prevented any flying in the new machines.

On Aug. 25 the Gloster-Napier VI was towed on one of the pontoons out into the Solent and Sq. Ldr. Orlebar made a trial flight with the machine. After making a taxy-ing test Sq. Ldr. Orlebar flew the machine for a few seconds. A minor trouble developed in the petrol feed and the machine was towed in again. Later Sq. Ldr. Orlebar tested the second Supermarine S.6. He took the machine four times over the speed course and put it into some steep banks.—C. M. MCA.

THE SCHNEIDER TROPHY COURSE.

An Air Ministry Notice to Airmen makes the following regulations which are illustrated by a sketch map:—

1. Flight in the neighbourhood of the Schneider Trophy Contest will be subject to the following restrictions:—

(*a*) During the period from 24.00 hours B.S.T. on 5th September 1929, to 24.00 hours B.S.T. on 19th September, 1929, or to 24.00 hours B.S.T. on the day on which the Schneider Trophy Contest is completed, whichever is the earlier, no aircraft other than aircraft competing in the Contest, may fly over the area bounded as follows:—

Straight lines joining Yarmouth Pier, Lymington Pier and Netley Castle. High-water mark between Netley Castle and Hamble Spit. Straight lines joining Hamble Spit, Cosham railway station, Selsey Bill coast-guard station, Bembridge railway station and Gurnard village. High-water mark between Gurnard village and Yarmouth Pier.

(*b*) During the same period, no kite or fixed balloon may be flown over the area bounded as follows:—

Straight lines joining Yarmouth Pier, Lymington Pier, Woolston Ferry (Southampton), Cosham railway station, Selsey Bill coast-guard station, Bembridge railway station and Yarmouth Pier.

2. It should be observed that Cowes seaplane station, which was notified in Notice to Airmen No. 32 of 1929 as available for use by visitng marine aircraft lies within the prohibited area described in (*a*) above. Aircraft desiring to use this seaplane station must, therefore, arrive before the commencement of the period of prohibition defined at (*a*) above, and will not be free to depart until the period is concluded.

A SCHNEIDER SOUVENIR.

The Royal Aero Club have placed on the market an official souvenir programme of the Schneider Trophy Contest, 1929, price 1s. It contains a history of the Contest for the Schneider Trophy contributed by the Editor of *Flight*, some interesting remarks on speed and power by Mr. C. G. Colebrook of *The Times*, the Rules of the Competition as laid down by the *Fédération Aéronautique Internationale*, various remarks on the Contest of 1929 by Lieut.-Col. W. A. Bristow and by Major R. H. Mayo, some laudatory remarks by Lord Thomson and M. Laurent Ey, a few colour pictures of Schneider speed machines—some are badly out of drawing—and a number of illustrations which are printed in that irritating chocolate-coloured ink and are about as badly produced as any pictures that has ever seen. In kindness to the printers and publishers one refrains from mentioning them. But the Aero Club wants 1s. for the publication,—which will not impress foreign visitors with our capacity as producers of artistic printing.

THE DANGER POINT.

A regular reader writes:—

I trust that I have been wrongly informed, for the safety of water-borne during the period of the Schneider Trophy Contest, I say that I have heard that the S.S. *Orford* is going to be gated personally by Commander Perrin.

Our reader's terrors may be allayed. Lt.-Comdr. P will be in command of Ryde Pier, which can only be a sive and not an active participant in any marine col which may happen,—though one does not guarantee Pier against temperamental collisions.

One is able, also, to deny the rumour that Lt. C Perrin was doing a trick at the wheel of the S.S. *Orfo* way of practising for the Schneider Course, when about-to-be-historic vessel took the mud at Copen recently.—C. G. G.

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CIRRUS HERMES

AN APPRECIATION!

The following are Extracts from a letter received from Mr. J. E. Carberry.

"With reference to my participation in the Challenge de Tourisme Internationale with my CIRRUS 'HERMES' engined machine, and in which I was successful in returning the fastest time over the course of approximately 4,000 miles round Europe, I wish to take this early opportunity of congratulating you upon the remarkably efficient running that was given by the engine throughout the race."

"Throughout the 4,000 miles flight the CIRRUS 'HERMES' engine ran splendidly and demonstrated the inherent characteristics of efficiency and reliability."

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THE "GRAF ZEPPELIN."

On Aug. 23, at 15.14 hrs. (Tokyo Time) the *Graf Zeppelin* left Kasumigaura Naval Air Station near Tokyo for Los Angeles on the third stage of its flight round the World. Its departure had been delayed a day owing to the accidental breaking of a strut of the rear engine gondola while the ship was being walked out of its shed. This was repaired in twelve hours and further delay was then caused by unfavourable weather and thunderstorms.

On the same day at 16.00 hrs. (G.M.T.) the ship wirelessed its position as latitude 36 deg. N. and longitude 151 deg. E. or about 600 miles from Tokyo.

Through Saturday and Sunday she was forging ahead at speeds varying from 60 to 90 m.p.h. and at 08.15 hrs. on Aug. 25 she announced her position as latitude 41 deg. N. and longitude 144 deg. E., or about 1,320 miles from Los Angeles.

On Aug. 26 at 05.11 hrs. (Pacific Coast time) the *Graf Zeppelin* landed her 19 passengers at Los Angeles after having flown the 5,800 miles from Tokyo in 68 hrs. 14 mins.

The ship was actually sighted 15 miles from the Golden Gate, San Francisco, at 18.00 hrs. the previous evening. She was met by a flock of aircraft carrying newspaper correspondents and photographers and a convoy of Army aircraft and conducted over the city of San Francisco. By 01.16 hrs. she was over Los Angeles, but to avoid risk of damage by landing in the dark she flew round in circles until dawn.

Only 10,000 people, of whom 2,000 were military, naval and civil police and the ground crew, were admitted to the aerodrome before the ship landed, but over the surrounding country and on the roads twice as many more were awaiting its arrival.

The crew and passengers of the ship were entertained at a banquet in the evening.

ANOTHER ATLANTIC FAILURE.

On Aug. 19, M. Oscar Kaesar and M. Kurt Luescher, two Swiss aviators, left Lisbon in an attempt to fly across the Atlantic in a Farman F.190 monoplane (230 h.p. Gnôme-Rhône Titan).

The route chosen was across the Azores, and the machine was seen passing over one of these islands on the same day. Since then no further information about the machine or its crew has been received.

M. Kaeser will be remembered as the sportsman who flew from Zurich to Bombay in a Comte "Gentleman" light aeroplane last year.

THE STOCKHOLM—NEW YORK ATTEMPT.

Captain Ahrenberg, who has passed the mid-summer months in an attempt to fly to New York from Stockholm via Iceland and Greenland, has abandoned his attempt.

Captain Ahrenberg and his crew are returning to Copenhagen by boat bringing their seaplane with them.

SPOKANE—NEW YORK—SPOKANE NON-STOP.

On Aug. 17, Mr. N. B. Namer and Mr. A. Walker left Spokane, Wash., in the Buhl biplane *Spokane Sun God* to fly to New York and back without a stop.

They reached New York on the following day, after having taken in petrol, oil and food three times *en route* from other machines. They were again re-fuelled and re-victualled over Roosevelt Field, Long Island, N.Y., before starting on the return trip.

They landed at Spokane on Aug. 20, again after having been refuelled three times between New York and Spokane.

The total distance covered was approximately 7,200 miles, and the flying time was 120 hrs. 2 mins.

A NEW HEIGHT RECORD.

A report in *The Times* states the altitude record for aeroplanes carrying a weight of 500 kilogrammes (about 1,100 lb.) is reported to have been broken on Aug. 23 at Toussus-le-Noble by an aviator named Burten in a Bréguet biplane with a 500 h.p supercharged Farman engine. The barograph machine recorded a height of 9,500 metres (31,168 ft.). The previous record was 9,188 metres (30,145 ft.).

U.S. AIRCRAFT FOR MEXICO.

The Mexican Government has acquired twelve Vought Corsair two-seat reconnaissance biplanes (Pratt and Whitney Wasp engines).

These machines were originally contracted for during the last Mexican revolution, and the first nine were delivered by the Chance Vought Corporation seven days after receiving the contract.

The last three of the order left New York for Mexico City on June 9, but as the revolution had by then been suppressed, their delivery was not so urgent.

The Vought company has also sold Corsairs to the Argentine, Cuba, and Peru. The export business of the company during the first five months of 1929 has amounted to $750,000 (£150,000).

A MEDITERRANEAN AGREEMENT.

A report in *The Times* of Aug. 27 states that an Air Agreement between Spain and Italy was ratified on Aug. 26 by the Spanish Prime Minister and the Italian Ambassador to Spain.

LORD EDWARD GROSVENOR.

Everybody who has ever met him will learn with sorrow of the death of Lord Edward Grosvenor, who died on Aug. 26 in the Isle of Wight after a long illness.

Edward Arthur Grosvenor, was born in October, 1892, the ninth son of the first Duke of Westminster. He was a son of the Duke's second marriage and so was considerably younger than his nephew the present Duke.

He was educated at Eton, and was given a commission in the Royal Horse Guards in 1912. In the following year he learned to fly at the Bristol School at Brooklands. His certificate, No. 607, is dated Aug. 29, 1913. Thereafter he bought a 50 h.p. Blériot monoplane and did a considerable amount of flying at the Blériot School at Hendon.

On the outbreak of war he transferred to the Royal Naval Air Service. His two Blériot monoplanes were taken over by the Admiralty. And he crashed one of them himself at Dunkerque, in the retreat from Antwerp.

He served with the R.N.A.S. in France and Italy. And was awarded the Order of St. Maurice and St. Lazarus by the Italian Government.

After flying aeroplanes in France he transferred to kite balloons and was one of the first officers to give serious attention to the problems of bombing. Those who served with him at Roehampton will remember his bomb-dropping experiments from kite-balloons. When he went to Italy he served with airships. Later on he returned to France and became a Wing Armament officer, specialising on bombs and machine-guns.

After the War, when the Auxiliary Air Force came into being Lord Edward Grosvenor was appointed to command No. 601 County of London (Bomber) Squadron as Squadron Leader with date Aug. 1, 1925.

In 1914 he married Lady Dorothy Margaret Browne, elder daughter of the 5th Earl of Kenmare, by whom he had two daughters.

Ned Grosvenor, as he was generally called, was one of the most wholly amiable men whom one could hope to meet. All who have ever served with him or under him will bear witness to his good nature and kindness of heart. Above all he had an exquisite sense of humour, and any time spent in his company was an entertainment in itself. He was intensely keen on the Service and made his Auxiliary Squadron his chief hobby.

Early in the development of Civil Aviation after the War he showed his interest in sporting flying by presenting to the Royal Aero Club the Grosvenor Cup which is one of the very few trophies which rouses interest among our sporting aviators.

On few men is the gift conferred of being missed as many of us will miss Edward Grosvenor.—

C. G. G.

Edward Grosvenor.

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THE ROYAL AIR FORCE.

The London Gazette.

Aug. 20.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—Lt.-Cdr. H. L. St. J. Fancourt, R.N., is re-attached to the R.A.F. as a Flg. Off. with effect from Aug. 1, and with seniority of June 16, 1924; Lt.-Cdr. R. St. A. Malleson, R.N., is re-attached to the R.A.F. as a Flt. Lt. with effect from Aug. 1 and with seniority of Mar. 8, 1927.

The following Plt. Offs. on probation are confirmed in rank:—K. G. Vandyck (Aug. 2); F. K. Wood (Aug. 7).

The following Plt. Offs. are promoted to the rank of Flg. Off.:—H. J. Cross (Jan. 8) (substituted for the notification in the *Gazette* of June 21), A. G. Lester (April 9); A. W. Hunt (June 17); J. B. Mackenzie (June 30); J. H. T. Simpson (June 30); N. C. Odbert (July 9); E. J. H. F. Moreton (July 13); W. R. C. Wilkins (July 15); B. W. Piggins (July 15).

Flt. Lt. F. L. Luxmoore, D.F.C., is placed on the retired list at his own request (Aug. 3); Flg. Off. M. F. Morris is placed on the retired list on account of ill-health (Aug. 17).

The following cease to be attached to the R.A.F. on return to Naval duty (Aug. 1):—LT.-CDR., R.N., FLG. OFF., R.A.F.—J. H. I. Wood. Lrs., R.N., FLG. OFFS., R.A.F.—G. C. Dickins, L. G. Richardson, J. E. Vallance, T. H. Villiers.

The S.S. comn. of Plt. Off. on probation F. N. D. Scally is terminated on cessation of duty (July 23).

RESERVE OF AIR FORCE OFFCERS.

GENERAL DUTIES BRANCH.—W. T. Taylor is granted a comn. in Class A.A. (ii) as a Plt. Off. (Aug. 7).

The following are granted comns. in Class A.A. (ii) as Plt. Offs. on probation.—T. G. E. Price (Aug. 1); G. P. E. Howard (Aug. 7); H. C. Devitt (Aug. 8). P. Bailey is granted a comn. in Class A as a Flg. Off. on probation (Aug. 10). The following Plt. Offs. on probation are confirmed in rank:—M. G. B. Clark (Aug. 11); A. G. Douglas (Aug. 13); E. F. Briscoe (Aug. 14); M. F. Ogilvie-Forbes (Aug. 20). The following are transferred from Class A to Class C.—Flt. Lt. S. H. Potter (July 26); Flg. Off. J. F. Dewar (May 12); Flg. Off. J. F. Nicolas (Feb. 28). The comns. of the following Plt. Offs. on probation are terminated on cessation of duty.—R. S. Odd (July 31); G. J. Konried (July 25).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 605 COUNTY OF WARWICK (BOMBER) SQUADRON.—The following to be Plt. Offs.—J. V. Wood (July 18); R. P. Gibb (July 19).

Appointments.

Week ending August 26.

GENERAL DUTIES BRANCH.—Group Captain H. M. Cave-Browne-Cave, D.S.O., D.F.C., to 205 (Flying Boat) Squadron, Singapore, 9/8, to Command.

Wing Commanders B. E. Smythies, D.F.C., to Station H.Q., North Weald, 10/8, to Command. G. S. M. Insall, V.C., M.C., to Station H.Q., Donibristle, 10/7, to Command. G. H. Bowman, D.S.O., M.C., D.F.C., to H.Q., Inland Area, 9/8, for Air Staff duties.

Squadron Leaders L. H. Cockey, to H.Q., Inland Area, 13/8. A. G. Bond, A.F.C., to H.Q., Coastal Area, 12/8.

Flight Lieutenants A. R. Churchman, D.F.C., to No. 2 (A.C.) Sqdn., Manston, 16/8. T. B. Bruce, M.C., to Experimental Section, R.A.E., So. Farnborough, 3/8.

Flying Officers R. L. Burnett to R.A.F. Depot, 13/7. R. T. Read to E. and W. School, Cranwell, 15/7. W. J. Coadwell, D.S.M., to R.A.F. Depot, 25/7. J. E. Allen, to No. 9 (Bomber) Sqdn., Manston, 10/8. G. V. Carey, to C.F.S., Wittering, 6/8. G. B. Beardsworth, to H.A.D., Henlow, 13/7.

Pilot Officers E. H. Jennings to No. 2 Armoured Car Company, Middle East, 9/8. A. C. P. Westhorpe to Armoured Car Wing, Hinaidi, 9/8.

STORES BRANCH.—Squadron Leader W. C. Clark, to H.Q., A.D.G.B., Uxbridge, Middlesex, 15/8.

Flying Officer P. H. Wilcox to Supply Depot, Aden, 10/8.

ACCOUNTANT BRANCH.—Flight Lieutenant J. L. Armstrong to Station H.Q., Upavon, 24/7. F. W. Arthurton, to R.A.F. Base, Calshot, 1/9.

Flying Officer V. H. Lewis to No. 2 (A.C.) Sqdn., Manston, 8/8.

CHAPLAINS BRANCH.—The Rev. D. F. Blackburn to H.Q., R.A.F., Cranwell, 8.7.

LEGAL BRANCH.—Flight Lieutenant G. S. Marshall, O.B.E., to H.Q., Middle East, 9/8.

A Fatal Accident.

The Air Ministry regrets to announce that as the result of an accident at Heliopolis, Egypt, to a Victoria machine of No. 216 (Bomber) Squadron, Heliopolis, on Aug. 24, 86011 Sjt. John Melville, the first pilot of the aircraft, Plt. Off. John Wilson, the second pilot of the aircraft, and 335956 L-AC. Charles Ernest Langan, were killed. Of the three other members of the crew, 354179 L-AC. Mervyn Henry Creed was dangerously injured and died in Station Sick Quarters, Heliopolis, on Aug. 25, 363187 AC.1. Frank Wilfred Mabbett was dangerously injured and 335284 Sjt. Sydney Deacon slightly injured.

The Riots in Jerusalem.

The precautions taken by the authorities following the rioting and disturbances which occurred at the Wailing Wall in Jerusalem on August 23 and 24 included the despatch by air of two officers and fifty men of the South Wales Borderers from Egypt to Palestine. The rest of the battalion travelled by train.

On Aug. 25 the War Office made the following announcement:—

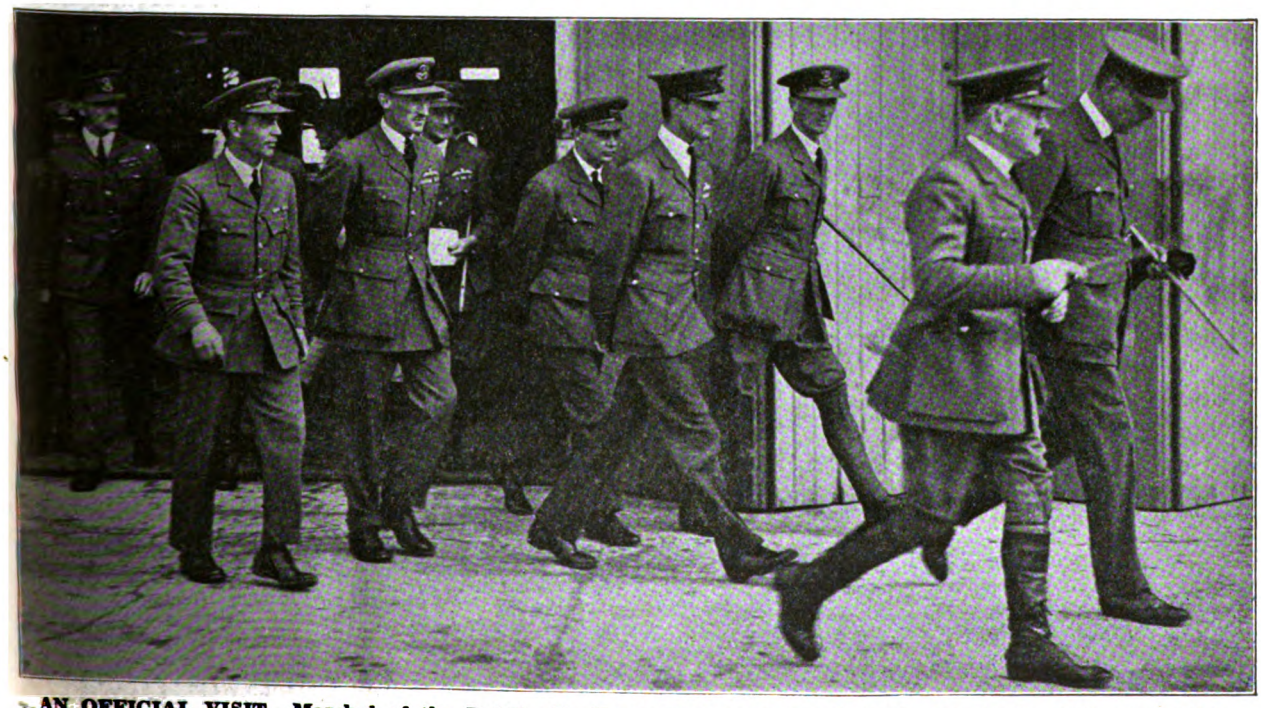
At the request of the High Commissioner for Palestine, the Governor and Commander-in-Chief, Malta, has been instructed to dispatch the 2nd Battalion, The South Staffordshire Regiment, to Palestine, on board H.M. Aircraft-carrier *Courageous*.

The first detachment of Infantry arrived in Jerusalem by troop-carrying aeroplanes within seven hours of the decision being taken to send troops from Egypt.

The official communiqué, which was issued in Jerusalem on the evening of Aug. 25, includes the following reference to the R.A.F.:—

Hebron.—A serious attack on the Jewish quarter of Hebron yester day morning resulted in heavy loss of life. It is reported that more than 45 Jews and eight Moslems were killed, and more than 59 Jews and 10 Moslems wounded. A strong detachment of Royal Air Force *personnel* and British Police was despatched from Jerusalem and re-established order. They are remaining at Hebron for the present. The Jewish population of Hebron has been evacuated from the Jewish quarters and accommodated in the Police barracks under guard.

General.—Aircraft and armoured cars from Amman are now operating in various parts of Palestine; a detachment of 50 British troops from Egypt arrived yesterday evening by air and took up position in



AN OFFICIAL VISIT.—Marshal of the R.A.F., Sir Hugh Trenchard, Chief of the Air Staff, visiting the High Speed Flight at Calshot. On Sir Hugh Trenchard's right is Grp. Capt. Nanson, O.C. R.A.F. Base, Calshot, and behind them are the officers of the High Speed Flight.

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CHALLENGE INTERNATIO

"THIS RESULT D

THE GIPSY MOTH TH

AEROPLANE OF IT

Not one single repair. Not one single major adjustment. With the single replacement of just one sparking plug (owing to doubtful thread).

RESULTS

SUBJECT TO CONFIRMATION.

1st Category (larger type light aircraft) — Captain Broad, **100 h.p. Gipsy Moth** **FIRST**

Aggregate Classification, subject to confirmation — Herr Morzick, B.F.W. 70 h.p. Siemens engine — First.

Captain Broad, 100 h.p. Gipsy Moth — Second.

GIPSY MOTH

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Sterling Tower, 372 Bay Street, Toronto 2, Canada
Telegrams: Moth, Toronto

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Telegrams: Moth, Melbourne

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E DE TOURISME 1929

NITELY PROCLAIMS HAMPION LIGHT ME."

— *The Aeroplane.*

Captain Broad and Miss Spooner who flew their Gipsy Moths consistently at 2,000 r.p.m. over a combined mileage of 7,814 miles, averaging 96 and 90 m.p.h respectively.

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Jerusalem; 600 British troops from Egypt arrived in Palestine this afternoon, and a further 450 troops will arrive to-morrow. H.M. cruiser *Sussex* arrives at Jaffa from Malta to-morrow morning and will land a party; H.M. battleship *Barham* will arrive at Jaffa from Malta on Tuesday morning and will land a party if necessary. The situation is well in hand.

The R.A.F. Units in Transjordan and Palestine are Headquarters at Amman, No. 14 (Bomber) Squadron at Amman, No. 2 Armoured Car Company (H.Q. and two Sections) at Amman, a Supply Depot, and a Hospital at Sarafand, Meteorological Stations at Amman and Ramleh and W/T Stations at Jerusalem and Ma'an.

No. 14 (Bomber) Squadron is equipped with D.H.9as and is commanded by Sq. Ldr. E. G. Hopcraft, D.S.C.

The Royal Air Force College.

The Air Ministry announces that the following Flight Cadets successfully completed on July 26 their course of training at the Royal Air Force College. The names are arranged in alphabetical order:—

Barrett, G. G., Burke, W. I. H., Cole, F. C. (winner of R. M. Groves Memorial Prize), Corbally, E. J., Crocker, L., Douglas-Hamilton, Lord M. A., Douthwaite, D. J., Drew, F. R., Fairtlough, G. K., Heath, M. L., Hebden, W. S., Hood, H. R. L., Keary, R. C., Lane, D. W. (winner of Air Ministry Prize for Aeronautical Engineering), Lewis, K. P., Lucas, L. E. J., Mead, R. C., Molesworth, A. O., Murray, S. S., Newbigging, I. B., Niblett, K. W. (winner of Sword of Honour), Phillips, R. L. (winner of Abdy Gerrard Fellowes Memorial Prize), Pollock-Gore, F. A. J., Powell, J. A., Selway, A. D., Simonds, E. R., Spendlove, W. V. L., Stannard, F. W., Vintras, R. E. de T. (winner of Air Ministry Prize for Humanistic Subjects), Watt, C. A., and Wightman, W. T. F.

The Engineering Course.

The following officers of the R.A.F. have successfully passed the Engineering Course which ended at the Home Aircraft Depot, Henlow, on June 30 and are granted the symbol E in the Air Force List:—

Flight Lieutenants.—C. E. H. Allen, N. Carter, G. D. Daly, F. G. Gibbons, H. A. Hamersley, H. O. Long, A. E. Paish, B. K. D. Robertson, G. J. Southam, R. A. B. Stone, W. A. Tattersall, A. J. Warwick and H. M. S. Wright.

Flying Officers.—J. M. Cohu, C. D. Green, A. W. B. MacDonald, H. G. M. Parker, J. H. C. McC. Reynolds, G. B. M. Rhind and A. H. Wheeler.

The following have been selected to attend Cambridge University course "A," beginning on July 8, 1929:—

Flight Lieutenants.—C. E. H. Allen and H. M. S. Wright.

Flying Officers.—J. M. Cohu, A. W. B. MacDonald and G. B. M. Rhind.

The R.A.F. and Fishery Protection.

A report appeared in a number of daily papers recently to the effect that the vigilance of Flg. Off. L. L. King, R.A.F., while on fishery protection flying patrol in the North Sea, has resulted in the conviction of the Master of a French trawler on the charge of fishing within the three-mile limit.

The Air Ministry have informed The Aeroplane that the duty of fishery protection has not been taken over from the Royal Navy by the R.A.F. in whole or in part, but that reporting the presence and activities of such vessels in British waters is included in the duties of the crew of any R.A.F. seaplane or flying-boat engaged on normal patrol duties.

According to the current Air Force List, Mr. L. L. King is attached to the Flying-boat Development Flight, R.A.F., Felixstowe.

H.M.S. Argus.

The appointment of Captain C. A. M. Sarel, O.B.E., to command the Aircraft-Carrier *Argus* is dated Aug. 27.

The Pembroke Air Base.

Mr. George Hall, M.P., Civil Lord of the Admiralty, in a statement made on Aug. 20, said that the Admiralty had agreed to representations made by the Air Ministry to delay the establishment of the Air Base at Pembroke Dock until Jan. 1, 1930.

Mr. Hall also said that between 90 and 95 per cent. of the dockyard would be taken over.

International Courtesies.

An *Exchange Telegraph* message from Athens dated Aug. 26 states:—

The captain and crew of the Greek steamer *Hermes*, who were shipwrecked off the coast of Arabia, east of Aden, state that the Arabs stripped them of their clothes.

The Arabs would have killed them, they add, but for the intervention of British aeroplanes from Aden. The captain and crew speak with great gratitude of the British authorities.

The R.A.F. Quarterly.

An Air Ministry Order announces that Gale and Polden Ltd. will publish, in January, 1930, the first number of a periodical entitled *The R.A.F. Quarterly*. It will be devoted to the interests of the R.A.F. and will include articles on all Service subjects.

Officers and airmen are invited to submit articles for publication in this journal. Gale and Polden Ltd. will be responsible for obtaining Air Ministry approval for their publication. All articles accepted for publication will be paid for.

A committee of R.A.F. Officers will be formed who will act with the Editor in a purely advisory capacity.

Prizes for essays will be offered by the publishers of the *R.A.F. Quarterly*.

All inquiries should be addressed to the Editor, *The R.A.F. Quarterly*, Gale and Polden Ltd., Wellington Works, Aldershot.

The Fleet Air Arm.

Portsmouth Navy Week gave the public a welcome and unusual opportunity of having a look at two of the aircraft-carriers of the Royal Navy. The two at Portsmouth were H.M.S. *Furious* and H.M.S. *Argus*. Although the *Furious* is by far the more interesting of the two there were not the same facilities given for viewing the ship. In fact the chief advertised attraction was tea in one of the hangars enlivened by a first class band of the Royal Marines. Apart from a general idea of the size of the flying deck and the enormous accommodation in the six hangars, all of which were empty, there was very little to be seen.

H.M.S. *Furious* has a normal displacement of about 19,100 tons and carries a complement of 748. Her total length is 786¼ feet and beam 89¾ feet. Her armament is ten 5.5 in., six 4 in. A.A., four 3 pounders, four M.G., and ten Lewis guns.

The R.A.F. Units carried are No. 405 (Fleet Fighter) Flight (Flycatchers): No. 443 (Fleet Spotter Reconnaissance) Flight (Fairey IIIF): No. 447 (Fleet Spotter Reconnaissance) Flight (Bison): No. 449 (Fleet Spotter Reconnaissance) Flight (Blackburn): No. 461 (Fleet Torpedo Bomber) Flight, (Dart).

The Senior R.A.F. Officer is Grp. Capt. F. E. T. Hewlett, D.S.O., O.B.E.

The accompanying illustrations were taken on board H.M.S. *Furious* during recent exercises of the Mediterranean and Atlantic Fleets.

H.M.S. *Argus* was so well laid out for inspection that she was uncomfortably crowded during the whole week. Routes were mapped out for the visitors and the directions indi-

ACTION STATIONS.—Fairey Flycatchers and Blackburn Darts ready to take off the flying deck of H.M.S. "Furious" during the Fleet Exercises in the Mediterranean.

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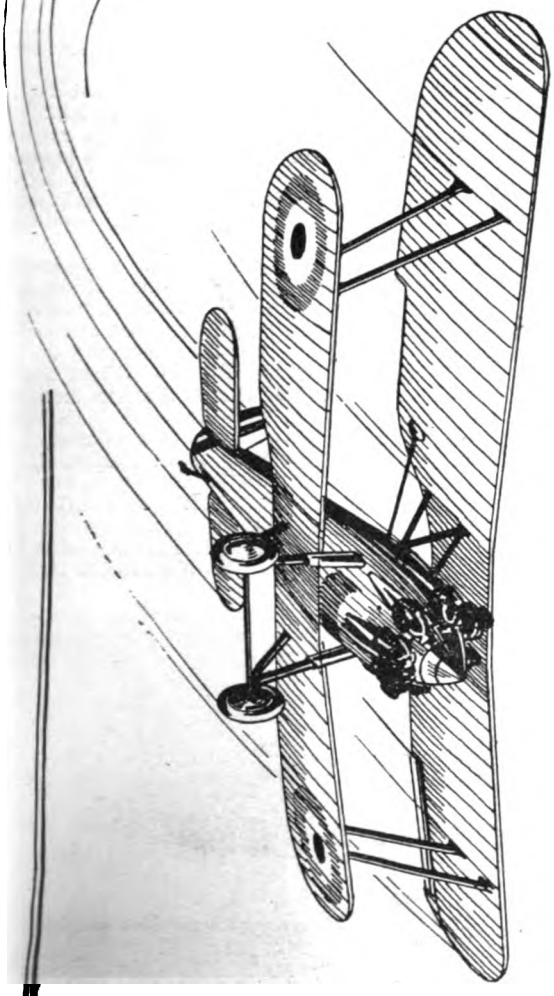
THE "Bristol" BULLDOG



The "Bristol" Bulldog stands out among the single seater fighters of the present day as an example of modern steel aircraft construction unequalled in design and workmanship. The performance of the machine is exceptional and its manœvrability must be seen to be appreciated.

Simplicity is the keynote of the design and although a full military equipment is carried the arrangement and accessibility of all items are matters that have received very careful attention. "Bristol" aircraft have earned a reputation for general excellence that has been enhanced by the advent of the Bulldog single seater day and night fighter.

THE BRISTOL AEROPLANE CO., LTD.,
FILTON, BRISTOL.

Telegrams: "Aviation, Bristol." — Telephone: Bri tol 3906.

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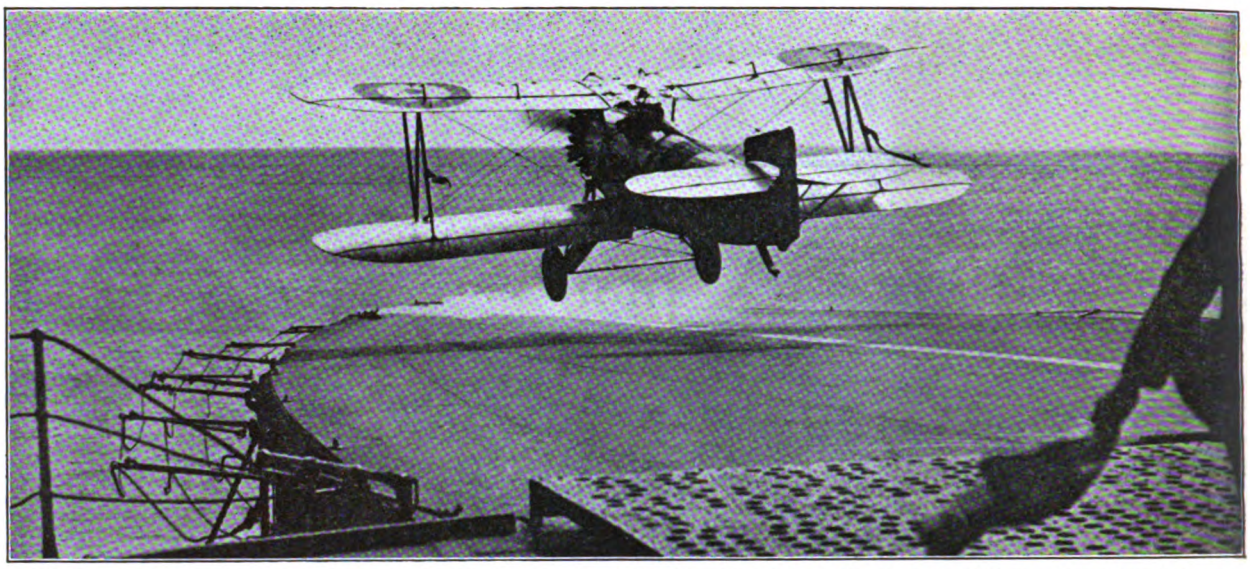


WELL AWAY.—A Fairey Flycatcher (Jaguar engine) of No. 405 (Fleet Fighter) Flight leaving the deck of H.M.S. "Furious." The steam jet and white guiding line can be seen on the deck and on the right is the signalling arm of the Officer in Charge.

cated by arrows of different colours. Thus the hardy and enduring could follow the red arrows on a tour of indescribable stuffiness and discomfort while the weaker brethren followed the blue arrows on a short stroll through the hangars and along the flying deck.

Other notices begged visitors to ask questions as much as they liked and others described the various exhibits which included specimens of the Naval and Air Force uniforms and rank badges, etc. One exhibit was a specimen of the day's rations of a seaman, to which uninteresting diet sympathetic feminine visitors were adding chocolates.

In the hangar was a Blackburn Blackburn, folded, and a Fairey Flycatcher. There was also an obsolete fuselage of a Fairey IIID which is used as an engine test bench.

An electrically-driven lift takes the machines up to the flying deck, the Blackburns folded and the Flycatchers spread. On reaching the flying deck the machines are wheeled to the stern of the vessel where they are chocked fore-and-aft and held down by machine-crews. This part of the deck accommodates nine Blackburns and three Flycatchers and still leaves room for taking off.

In ordinary weather, with the ship steaming into the wind the Blackburns take off in 20 yards and the Flycatchers in 10.

The flying deck slopes slightly fore-and-aft. The wireless masts and other deck structures fold outwards for flying. The total length of the flying deck is 560 feet.

The ship steams head into wind for flying. The machines take off when the correct angle is indicated by a steam-jet in the bows which has to be blowing straight along a white line painted on the deck. They dive slightly on leaving the deck to gain speed to rise on the turn outward. Each aeroplane has its own flag and a machine may not alight again on the deck unless its own flag is flying. The steam-jet and the Wing Commander's signalling arm can be see in one of the photographs.

When the machines are ready to land again the crew stand round the sides of the deck, and hang onto the win and tail immediately the machine touches the deck. Fo men are allotted to each machine.

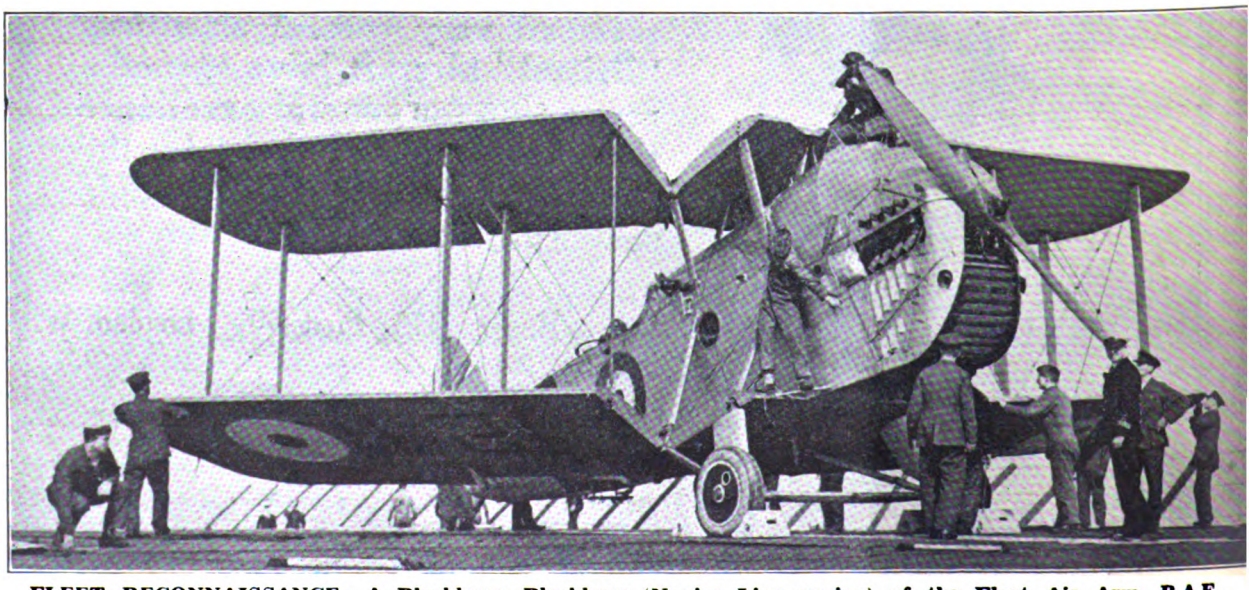
In addition to the hangars, H.M.S. *Argus* has a machin shop for repairing engines and carries six spare Lions a two spare Jupiters. Another workshop is used for repai ing other parts of the machines, doping, etc.

H.M.S. *Argus* is a converted liner with a normal displac ment of 14,450 tons and carries a complement of 373. H total length is 560 feet and her beam 68 feet excludi bulges. Her armament is six 4 in. A.A.; four 3 pounde four M.G., and ten Lewis guns. The hangar is 350 fe long by 68 ft. wide and is divided into four sections by fi proof screens. The two electrically-controlled lifts are ft. by 36 ft. and 60 ft. by 18 ft.

The aircraft have "dog-leash" grabs on the undercarria which grip the safety net on landing and check spe There are two derricks with electric winches amidships the flying deck and two electric cranes at the stern on t hangar deck level to pick up aircraft out of the water.

The R.A.F. Units carried are No. 401 (Fleet Fighte Flight (Flycatchers): No. 441 (Fleet Spotter Reconna sance) Flight (Fairey IIIDs): and No. 450 (Fleet Spot Reconnaissance) Flight (Blackburn Blackburns). T senior R.A.F. Officer is Wing Cdr. J. H. S. Tyssen, M.C.

The other Aircraft-Carriers are H.M.S. *Courageous* w six Flights under Wing Cdr. R. Collishaw, D.S.O., O.B D.S.C., D.F.C.; H.M.S. *Eagle* with three Flights under W Cdr. R. M. Field, H.M.S. *Hermes* with two Flights under W Cdr. A. H. S. Steele-Perkins, O.B.E.; and H.M.S. *Vindict* with one Flight.—C. M. MCA.



FLEET RECONNAISSANCE.—A Blackburn Blackburn (Napier Lion engine) of the Fleet Air Arm, R.A.F., being spread for flight on the flying deck of H.M.S. "Furious." These machines are used for Fleet Spotter Reconnaissance.

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"TITANINE" DOPE AND THE KING'S CUP AIR RACE 1929

1ST GLOSTER "GREBE" Pilot: Flying Officer R. L. R. ATCHERLEY
2ND D.H. MOTH Pilot: Lieut. L. G. RICHARDSON, R.N.
3RD D.H. GIPSY MOTH Pilot: Capt. W. L. HOPE.

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A Country Club for everyone interested in flying.

HANWORTH

The London Air Park, will be formally opened on Saturday next, 31st August, by Her Grace the Duchess of Bedford.

THE occasion marks the first stage towards the realisation of a country-wide scheme of facilities for the private owner and the club flyer.

Hanworth is the most modern and the best-equipped private flying centre in the country. The amenities of the Club include a ball-room, lounges, drawing and writing rooms, dressing rooms, and first-class residential accommodation, besides the provision of tennis and squash rackets courts, and an excellent standard of catering. Wooded gardens and lawns surround the club-house, and the whole estate covers an area of 230 acres, including the two aerodromes of the London Air Park.

The most modern machines of various types are available for instructional and touring flights. Special provision is made for the housing and servicing of privately owned machines.

Hanworth is the ideal flying centre, and is only 30 minutes by road from Hyde Park Corner.

A limited number of members are being enrolled, to enjoy all the privileges and benefits of the N.F.S. organisation, at the following rates: Flying Members, 5 gns. entrance fee, and 5 gns. annual subscription; Non-flying Members, 3 gns. in each case. For this year two-thirds of the annual subscription is rebated. Serving Officers of H.M. Regular Forces are admitted without entrance fee. Membership of the Hanworth Club confers Honorary Membership of all other N.F.S. Clubs, and free use of every N.F.S. station.

Qualified flying members will be able to hire two-seater light aeroplanes at rates as low as £1 1 0 an hour (3½d. a mile) from any N.F.S. club. Residential terms at Hanworth range from 5½ gns. to 7 gns. per week.

An illustrated brochure, detailing the services offered to all who wish to fly, will be sent on request.

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AERONAUTICAL ENGINEERING

SUPPLEMENT TO "THE AEROPLANE"

A NEW BARREL ENGINE.

For many years much interest has been taken in the possibilities of that type of aero-engine known variously as the swash-plate type or the wobble-plate type or the barrel type.

Some of these have been designed so that the barrel revolves. In this group are the Almen barrel engine which flew many years ago in America, and the Statax engine which was produced before the War and has flown recently in Switzerland, according to the claims made by those who are now interested in it. The objections which apply to rotary radial engines apply also to the rotary barrel engines with the additional objection that centrifugal force throws the pistons out against the cylinder walls and puts strange strains on the connecting-rods.

Among stationary barrel, or swash-plate, engines there is the Redrup engine which was shown at Olympia, and has quite definitely flown in a Spartan light aeroplane. Though nothing has been published about it there has been for several years much talk in the Aircraft Industry about a swash-plate engine with which Rolls-Royce Ltd. have been experimenting. And experiments with a number of other engines on these lines have undoubtedly been tried in the past fifteen years or so.

For engines of low power, as used in light aeroplanes, the advantages of the barrel-type engine are not so obvious as they are for the bigger types. In the 100 h.p. class an inverted Cirrus or Gipsy would probably fit into the nose of an aeroplane just as well as would a barrel engine of the same power,—simply because the barrel engine would be so much smaller than the frontal area of the fuselage itself. But if a barrel engine can be made to work as efficiently and as reliably as engines of other types, and if it can be produced as cheaply and at no more weight per h.p., then undoubtedly a 200 h.p. engine could be made which would fit quite comfortably into the fuselage of any standard type light aeroplane.

The real advantage of the barrel engine appears when designs for engines of 400 h.p. or more are considered. If such engines can be made then they will fit into fuselages as neatly as do our highest powered water-cooled racing engines of to-day.

There are undoubtedly immense possibilities for engines of this type, and consequently anything new in this direction must obviously be of considerable interest.

A swash-plate on original lines has recently been introduced to certain people in the English Aircraft Trade by Mr. K. K. Turner, an Australian engineer who is in England partly on business and partly on holiday.

Mr. Turner was an officer in the R.F.C. during the War. He was shot down and spent the last year or so of the War in various prison-camps in Germany, including the famous Klausthal Camp. Late in 1918 he escaped, and after numerous exciting adventures, including stealing a fishing-boat and sailing it single-handed up the Baltic for three days without food or water, he landed in Denmark on the day of the Armistice.

As a matter of purely personal interest, he was in the same prison-camp with Sq. Ldr. Reid, the inventor of the famous Turn Indicator and of the Reid Aptitude Indicator for testing pilots. By a curious coincidence they met at THE AEROPLANE stand at Olympia during the Aero Show for the first time since they had tried to escape together from Germany.—C. G. G.

The following notes explain how the "X" engine converts presumably, because its obviously important possibilities are still an unknown quantity—has been contributed by Mr. Turner.

The following notes explain how the "X" engine converts the reciprocating motion of a piston into the rotary motion of a shaft, and at the same time effects a speed reduction between the cycle of operation of the piston and the final revolution of the shaft. The ratio may be 1 : 1 or if desirable any ratio up to infinity.

Fig. 1 shows a 6 h.p. demonstration engine operating on compressed air incorporating a 5 : 1 ratio,—that is to say, the pistons operate at 2,500 cycles per minute and the shaft O rotates at 500 revolutions per minute.

Fig. 2 shows the engine in its two main components. All that is necessary to accomplish this is to remove set screws T, and the engine is open for inspection. Nothing in the mechanism is disturbed by doing this.

Fig. 3 shows the oscillating member with the piston as-

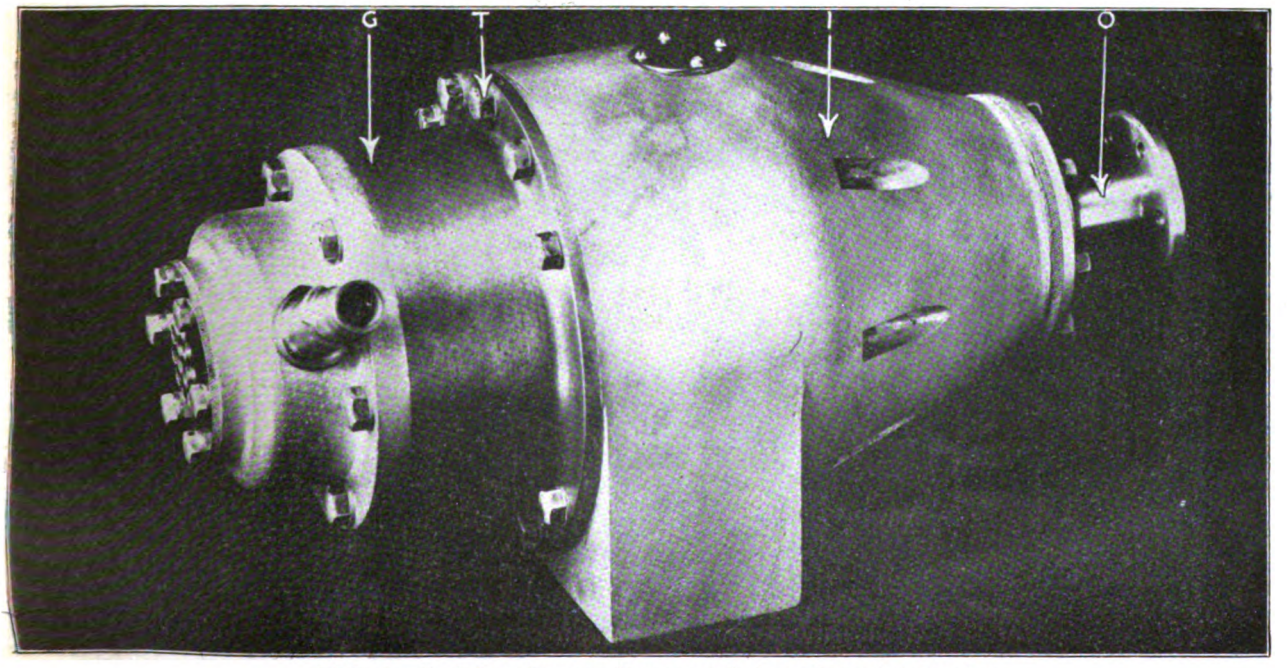

FIG. 1.—A 6 h.p. Turner Compressed-air wobble-plate engine.

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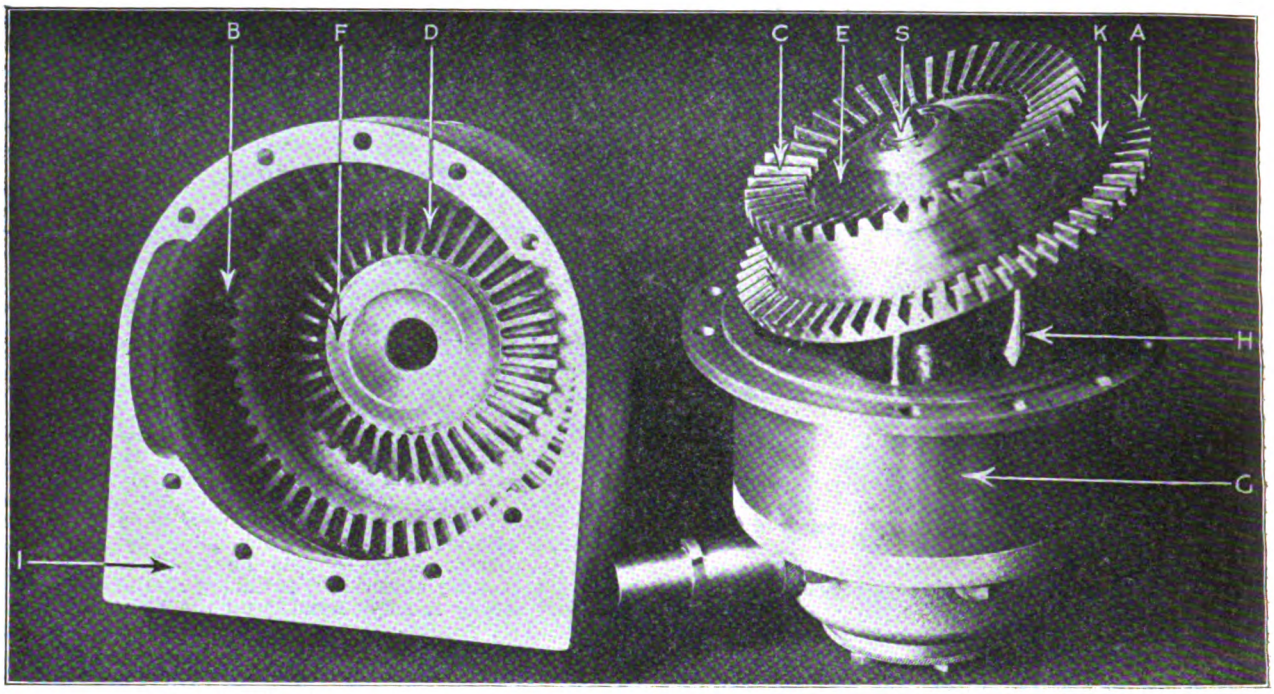

FIG. 2.—The two main components of the small 6 h.p. Turner compressed-air engine.

sembly removed from the cylinder block. This only necessitates the removal of nut S. Ease of assembly and dissembly is a great feature of this machine.

METHOD OF OPERATION.

The power impulses in the cylinders cause the pistons to reciprocate. They in turn impart an oscillating or undulatory movement to the oscillating member K. This undulatory movement is a rolling motion, and causes the ring of teeth A to roll on the ring of teeth B, which is bolted to the casing I.

These two rings A and B have the same number of teeth, so that at the finish of each complete roll, during which each piston has made one complete reciprocation, the oscillating member K has returned to its original position.

In the same manner the ring of teeth C rolls on the ring of teeth D. But in this case the ring C has 42 teeth and the ring D has 35 teeth, so it follows that the ring D is displaced 42 minus 35 (=7) teeth for each complete roll of the oscillating member K.

As there are 35 teeth in the ring D, it follows that it requires 35 divided by 7 (=5) complete rolls of the oscillating member K to rotate the ring D one revolution.

This ring D is attached to the shaft O. The thrust of the pistons is carried in the following manner:—The concave surface E corresponds to the pitch cone of the gear C and rolls on the convex surface F which corresponds to the pitch cone of the gear D. There is no sliding, as these surfaces are the rolling cones of the gears C and D, and the thrust is taken from the surface F by means of the shaft O to the casing I, by an ordinary ball-thrust bearing.

In larger engines these thrust-surfaces are incorporated with the rings A and B, and the thrust is then imparted direct to the casing I. The skew shaft L, on which is mounted on ball bearings the oscillating member K, makes one complete revolution for each complete oscillation of the member K.

No loads are borne by this shaft other than those developed by the power required to operate the valve mechanism.

There is no departure from standard practice on the cylinder end of the engine, except that the cylinders are arranged in a circle instead of in a straight line, or radially.

The valve operating mechanism is substantially the same as that used on standard radial engines, and the principle may be adapted for use with either petrol or crude oil. If crude oil be used, the same type of fuel injection mechanism as is used in any other engine may be adopted. Further, in high-powered engines banks of cylinders may be arranged on both sides of the oscillating member. ?

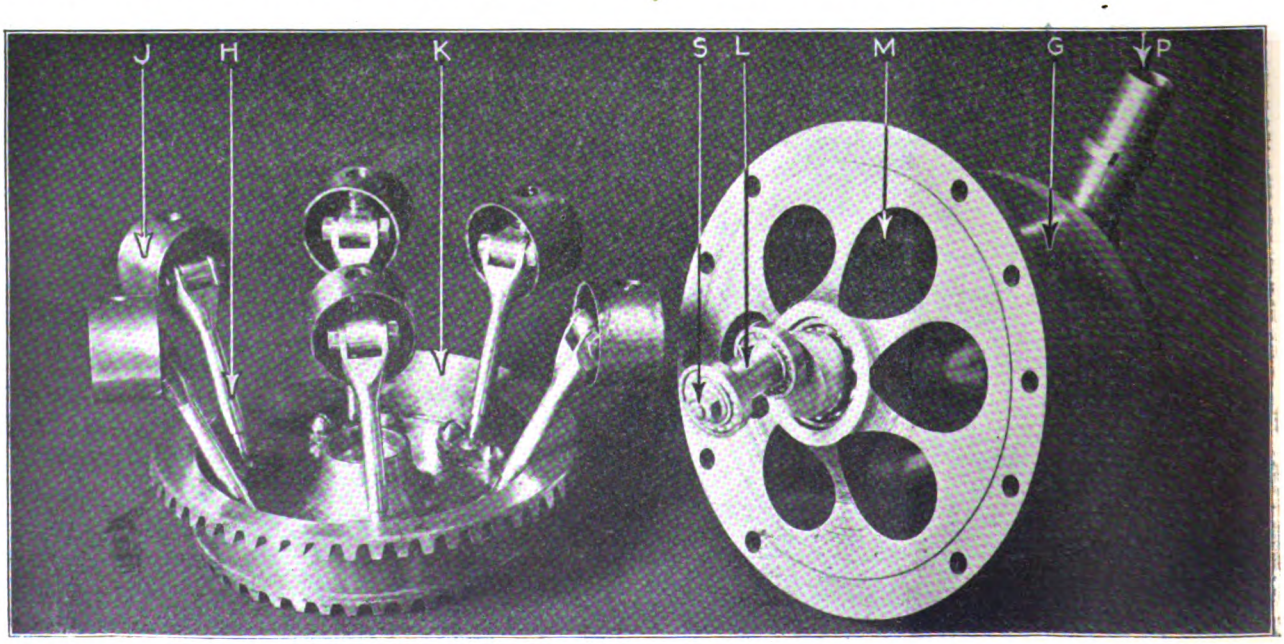

FIG. 3.—The oscillating member with the piston assembly removed from the cylinder-block.

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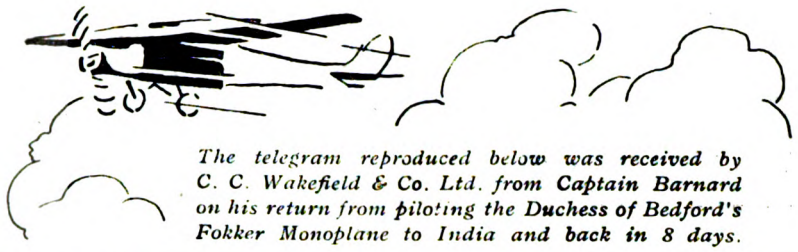
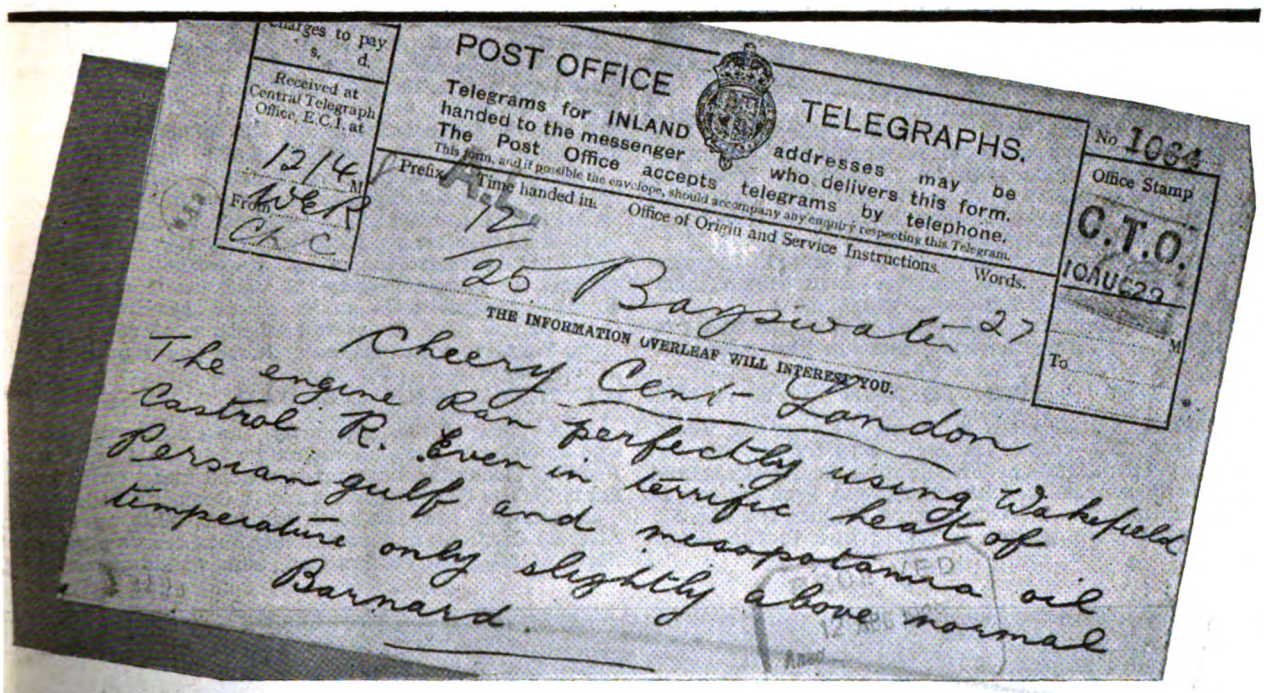


The telegram reproduced below was received by C. C. Wakefield & Co. Ltd. from Captain Barnard on his return from piloting the Duchess of Bedford's Fokker Monoplane to India and back in 8 days.

Captain Barnard

"Says" ENGINE RAN PERFECTLY USING WAKEFIELD CASTROL"



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ADVANTAGES.

The great advantages claimed for the "X" engine for aircraft propulsion may be summarised as follows:—

(1) All surfaces under load are in rolling contact, giving the minimum of friction and the maximum freedom from lubrication difficulties.

(2) The airscrew can be designed to suit the operating conditions of the aircraft, without having to study the engine revolutions, and the correct gear ratio can be incorporated in the engine to make the engine revolutions harmonise with the required airscrew revolutions.

(3) The "X" engine is suitable for either air, fluid or water cooling and in either case gives an engine with a very low frontal area and therefore far less head-resistance than the engines of to-day. In fact, it is in itself almost streamline in form.

(4) As may be seen from the foregoing description, the assembly and dissembly of the engine is simplicity itself. There are no parts on the engine that require any hand-fitting.

(5) The "X" engine enables perfect dynamic balance to be achieved.

(6) The weight-to-power ratio of the "X" engine is extremely good, for two reasons. The engine functions as a high-speed, and therefore a light-weight, machine, but is further enabled to produce a high tractive effort as it is able to rotate the airscrew at its most efficient speed.

(7) The engine readily lends itself to standardisation. In an engine of a certain power, for example, say, 100 B.h.p., the pistons, casings, valve mechanism, and etc., can remain identical and by varying the ratio of the teeth in the rings C and D, the final airscrew shaft-revolutions may be varied to suit the airscrew of the particular machine to which it is being applied, an advantage beyond attainment by present day engines. *This necessitates no alterations, except in the rings C and D.*

EFFICIENCY.

The efficiency of this mechanism is very high. This is due probably to two facts more than any other, namely, that all parts under load are in rolling contact with other parts, and as the connecting rods have practically no angularity there are no side-thrusts to be taken up on the cylinder-walls or cross-heads, which create a large amount of the frictional loss in an ordinary type of engine.

DURABILITY.

Owing to freedom from lubrication difficulties, this mechanism has proved to be more than ordinarily durable.

Another feature which is of great assistance from this aspect is the fact that the whole of the inertia forces are absorbed in the oscillating member itself, and are not imparted to the main transmission bearings.

The relative slowness of the rubbing velocity in the connections between the pistons and the oscillating member further eliminates any difficulties at these points.

In the engine illustrated the reader may notice that two different types of connecting-rod joints are illustrated, one a double gudgeon-pin joint and the other a ball-type joint. The designers have found from experimental work that, where the forces in the rod are always of a compressive nature, the ball type of joint is the simpler and the better of the two, but where the forces in the connecting-rod change sign, as in an ordinary double-acting steam or four-cycle internal-combustion motor, a departure has to be made from this type of joint and the one illustrated on the piston end of the connecting-rod has to be used.

SAVING IN FIRST COST.

The saving on the cost of construction is particularly noticeable in the case of the larger engines. In the first case a simple disc replaces the long and awkwardly shaped crank-shaft.

In the larger engines this disc can be fabricated from ordinary steel plate by either riveted or welded construction, and in the small engines from a single steel pressing. A disc of this type is eminently suited for carrying the loads to which it is subjected, whereas the crank-shaft, with its old and awkward shape, presents difficulties during forging and machining, and when finished has to be maintained with all its bearings in accurate alignment.

Further, as the general design of the engine is studied, the reader will realise how extraordinarily the metal disposes itself to carry the stresses which are imparted to it. This is much more so than in the ordinary type of engine.

Most commercial applications require a reasonably slow speed on the final shaft. Which means that unless a reduction gear is incorporated between the means supplying the power and the shaft, the power-unit has to be of the massive slow-speed type. This is not so in the case of the "X" engine as it combines the high-speed light-weight engine with the desired slow-speed output without its high initial cost.

Further, no great essential accuracy in its manufacture is required to produce excellent results. In fact a 50 h.p. steam winch has been constructed on this principle, with all its gears cast, and it gave excellent results without the gears being machined or hand-finished in any way.

Running engines at a high speed might be thought advisable, but, on examination, the main difficulties in the older types will be found to have been created by the inertia forces generating excessive side-thrusts, with consequent loss due to the angularity of the connecting rods. This does not happen with the "X" engine.

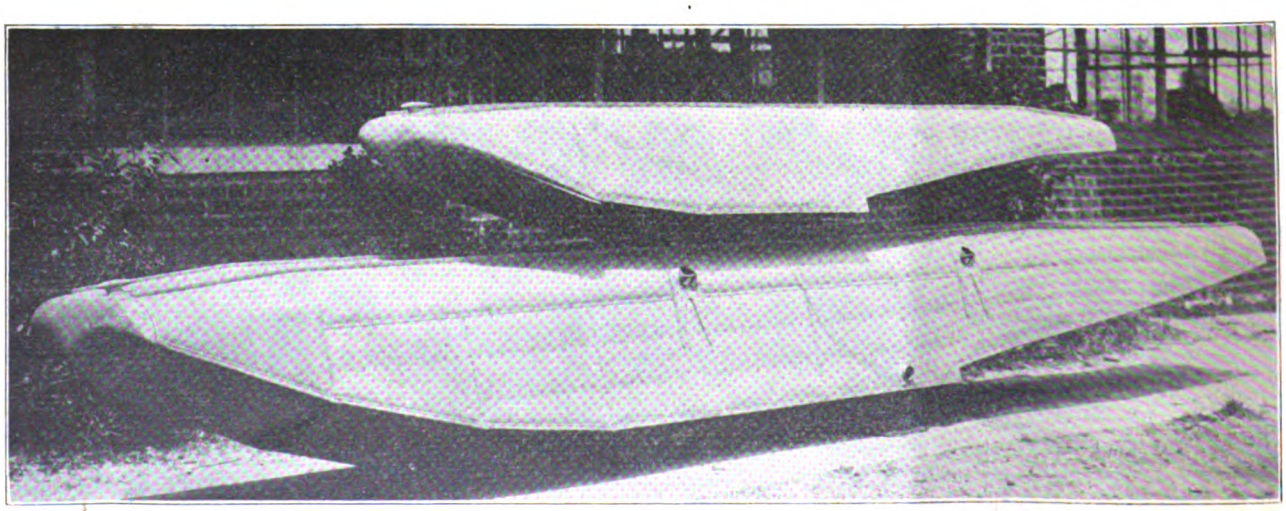
This principle of force-conversion has been thoroughly tried out. Large heavy-duty pumps are in successful operation. The largest set is at Bairnsdale, in the State of Victoria, Australia, where electrically driven pumps capable of delivering 50,000 gallons per hour against a total head of 350 feet are in operation by the Victorian Government, and during practical tests under actual working conditions these pumps gave an overall efficiency of 90% from the pump coupling to actual water horse power output.

FLOATS FOR THE MOTH AT HOME AND ABROAD.

The ubiquitous D.H. Moth is in use all over the World as a seaplane. Not only is the Moth used for training but for Forestry Patrol and the Fire-fighting, Seal-spotting and other work in connection with fishing. In Sarawak use is made of the machine for Government Liaison and the Sir Douglas Mawson Expedition is taking one to the South Pole.

As a result of this popularity, the making of floats for this machine is quite a production job. In England Short Bros., of Rochester, have made a good many score pairs of floats for the De Havilland Aircraft Company Ltd.

In America, the first Moth seaplane, built by the Moth Aircraft Corporation, Lowell, Mass., has been equipped with floats of all-metal construction, built and designed by the



STANDARDISED METAL FLOATS.—Two of the eight standard sizes of metal floats made by the Edo Aircraft Corporation of College Point, Long Island, New York.

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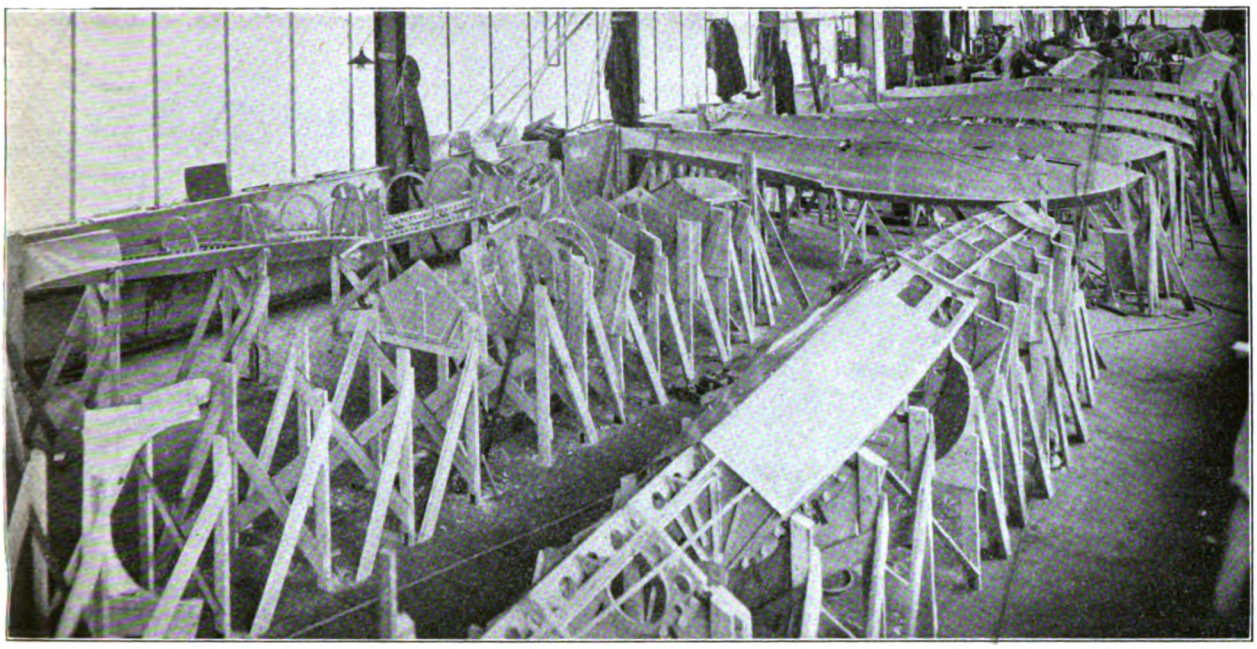

SHORT METAL FLOATS.—A view of the Float Shop of Short Bros. at Rochester showing Moth floats in various stages of construction.

Edo Aircraft Corporation, College Point, Long Island, N.Y. The Moth had a 85/100 h.p. Gipsy engine.

Take-off time with only the pilot on board was 12 seconds. With pilot and passenger the time was increased to 14 seconds. A run was finally made with the engine throttled back to 55% of its power and the Moth with both pilot and passenger aboard succeeded in taking off in one minute fifty-five seconds.

In Finland the Government Aircraft Works have produced a set of wooden floats for the D.H. Moth and as a result of successful trials, 100 pairs are to be built.

These Finnish-built floats are of 3-ply which has been especially treated to reduce soakage. The upper surface of the floats have a curve of constant radius from nose to stern. The forebody appears to have the normal concavely-curved undersurface. To obviate the difficulty of bending the 3-ply in more than one plane, the chine-lines of the after-body run straight from the step to the aftermost point of the deck. For the same reason, although the keel of the after-body slopes up towards the sternpost at the normal angle, the sternpost rakes aft. These floats though nine pounds heavier than their metal counterparts, can be produced in Finland for half the cost.

The floats built by the Edo Aircraft Corporation are the second smallest size in their standard range of eight types. This range is from 1,100 lbs. to 5,100 lbs., and in each category the floats have a Reserve Buoyancy of over 100%.

The flat tops of these floats offer special advantages for getting in and out of the machine to which they are fitted. One has a specially stiffened surface on which to walk with no tendency to slide off.

The Edo floats are built of anodically treated duralumin sheet rivetted over a structure of extruded duralumin angles. These floats have flat tops, fairing through a constant radius to the flat sides, which have a marked tumble home.

There appears to be no panel-beating except for the nose cap.

The bottoms appear to be concave Vees forward of the step with a flat Vee aft. The concave Vee bottom is shown in drawings as changing into two further curves making a section at the step of four concave curves. The floats are built with water-tight bulkheads, and mooring cleats. In Canada the Aircraft Dept. of General Auto Body Ltd. are producing floats for D.H. Moths, though no information is available as to the methods of construction employed.

Short Bros., who have specialised in the production of all-metal floats for seaplanes, have been producing for some time now standard floats for D.H. Moths. These floats may also be fitted to machines with a similar performance and weight.

These Short floats have only reached their present high efficiency after extensive model tests made on the firm's experimental tank. These trials have resulted in a float shape which offers minimum resistance on the water and in the air.

The forebody of the Short float has the normal concave surface on its underside, aft of the step the bottom is of Vee section with a slowly decreasing included angle. The top surface is a rounded section and is of streamline form.

The internal structure consists of bulkheads and longitudinals made up from duralumin sheet. The keelson is made from members folded to shape and rivetted to the bulkheads. To add lightness and stiffness flanged holes are punched in these intercostals. To increase the stiffness of the bottom further intercostals are added between the keelson and chine angles. The upper portion of the floats have angle stiffeners between the bulkheads.

The whole float is then covered with duralumin sheet. The only panel-beating is at the extreme nose-portion and the stern-piece. The float fittings which are die-cast are attached to troughs which form part of the top-skin. No packing material is used, water-tight rivetting of adequate pitch being quite satisfactory.

To the nose of each float is attached a mooring eye of stainless steel. Each watertight section of the float, and there are four, have special arrangements for draining. In the bottom of each float is a removable screw of stainless steel. On the top of the float over each compartment is a neat fitting to which a force pump can be attached. These fittings have suction pipes down to the bottom of the compartment. Besides these devices there are the usual inspection covers.

A SINGLE-WHEEL AMPHIBIAN.

In 1924, Mr. Grover Loening, of the Loening Aeronautical Engineering Corporation, of New York, applied for a patent for a single-wheel amphibian landing-gear.

In 1926, the Army Air Corps equipped an old training landplane with a single-wheel landing gear based on the Loening patents, and tests with this machine proved that the device was fundamentally sound. This machine took-off and landed with ease, and showed no inclination to turn over on the ground.

As the result of these tests, the U.S. Army Air Corps Engineering Division placed an order with the company in 1927 for one experimental Loening Amphibian incorporating the single landing wheel device.

This machine was test flown by Lieut. Julian B. Hadden, of the Test Division, Wright Field, Dayton, Ohio, on June 27, 1929, and it was immediately accepted by the Air Corps.

In the meantime, Mr. Loening applied his patent to his own privately-owned D.H. Moth. This machine has been tested by Mr. B. Allison Gillies, the chief test pilot of the Loening Company, and has proved to be very successful.

The Moth amphibian gear consists of a single-step central float, 17½ ft. long by 30 in. wide, and two wing-tip floats, all of a simple welded duralumin construction. Forward of the step is mounted the central wheel which rides up and down in a water-tight box similar to the centre-board box in a yacht. The mechanism to raise and lower the wheel consists of two toggle-levers so hinged that when the wheel is out the toggles are locked and support the full load of the machine when landing. This device is balanced with springs so that the operation of raising and lowering the wheel by a lever in the cockpit is rapid and light. When the wheel is raised two hinged flaps close

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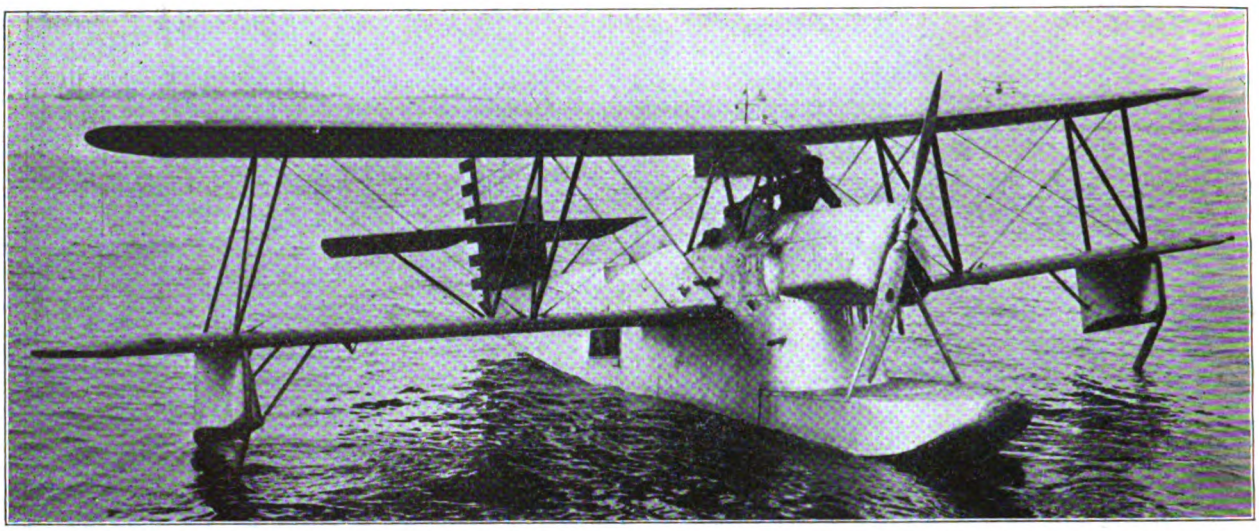


AFLOAT.—The Loening XO-10 with the 500 h.p. Wright Typhoon inverted twelve-cylinder air-cooled engine.

behind the wheel and seal the hole in the bottom of the float. The wheel is sprung on compression rubber discs.

The two wing-tip floats are fitted with two long skids which swivel on the noses of the floats.

The Moth with the Loening amphibian gear weighs 1,020 lb. empty. The Moth so fitted shows a top speed which is only 4 m.p.h. less than the standard land Moth.

The Loening amphibian with the single-wheel landing device is known as the XO-10 and is an experimental observation aircraft which, in addition to the one-wheel landing gear, is fitted with the new Wright Typhoon inverted twelve-cylinder air-cooled Vee engine which develops 500 h.p. at 2,000 r.p.m.

Under test this machine handled very well in the air, and the pilot was able to taxi in any direction on both land and water. Its characteristics are no different from those of the standard two-wheeled Loening amphibians. On land it stays on nearly an even keel owing to the long wing-tip skids, each of which has a small wheel at its tip Taking off on land, the machine runs on the main wheel and on one or the other wing-tip skid until about 25-30 m.p.h. is reached. After this the machine runs and takes-off from its single central wheel. The single wheel eliminates a quantity of external bracing and resistance and prevents the danger of damaging the machine should a pilot forget to retract his wheel before alighting.

The new inverted air-cooled power-plant is almost completely cowled in, and, apart from its comparatively small frontal area, provides excellent visibility for the pilot.

SPECIFICATION.

TYPE.—Two-seat observation amphibian.

WING.—Two-bay slightly staggered biplane. Upper wings in two sections joined together over an inverted Vee cabane. Lower wings, of bigger span than the upper wings, mounted high up the side of the body. Two sets of "N" type interplane struts on either side of the body. Wing structure consists of two spruce spars and "Alclad" ribs, the whole being fabric-covered. Ailerons on lower wings only.

FUSELAGE AND HULL.—Typical Loening amphibian structure of all-duralumin construction. Main members are of specially designed extruded duralumin sections with "Alclad" duralumin sheet bolted to the structure.

TAIL UNIT.—Monoplane type of standard Loening type and construction. Adjustable tail-plane operated by torque tubes and bevel gears from the pilot's cockpit.

LANDING GEAR.—One central 40in. by 10in. wheel operating vertically in a water-tight box in bottom of hull in advance of the main-step. Wheel is retracted by worm-gear in pilot's cockpit. Two small positively operated doors close the hole in the bottom when the wheel is retracted. Lateral balance is provided by skids on the noses of the wing-tip floats. The tail-skid is of the standard Loening type, with rubber-disc springing.

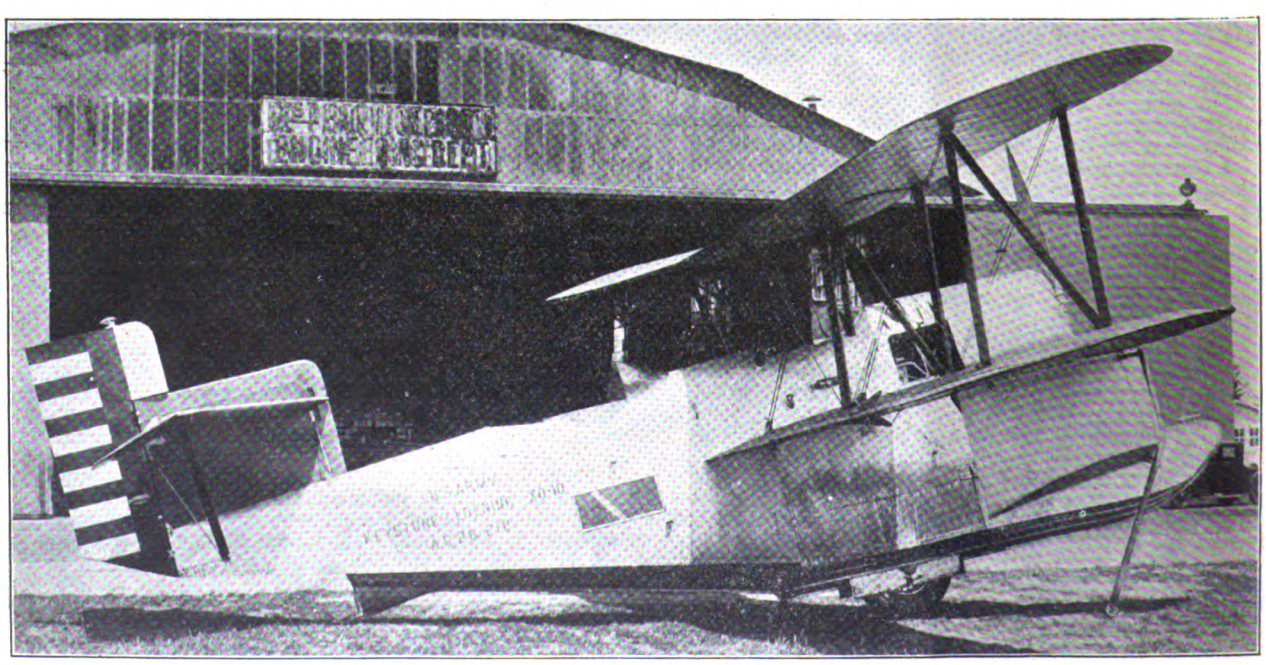
POWER-PLANT.—One 500 h.p. inverted Wright Typhoon twelve-cylinder Vee air-cooled engine. Main fuel tank of 140 U.S. gallons (=117 Imp. gals.=530 litres) in body. Two-blade Standard Steel air-screw and Eclipse electric inertia-starter.

ACCOMMODATION.—Pilot's cockpit under the upper wings with an observer's cockpit well aft of the wings. Back cockpit equipped with standard Lewis-gun ring. Also has a folding seat for use when operating the auxiliary control or the wireless spotting equipment. A large photographic hatch is installed in the bottom of the hull for the use of the standard Air Corps tri-lense mapping camera. A water-tight plug seals this opening when alighting on the water.

DIMENSIONS.—Span 46 ft. 3 in. (14.1 m.), Length 35 ft. (10.67 m.), Height 12 ft. 11 in. (3.94 m.), Chord 6 ft. (1.83 m.), Wing area 494 sq. ft. (45.8 sq. m.).

WEIGHTS AND LOADINGS.—Weight empty 3,200 lb. (1,450 kgs.), Disposable load 1,900 lb. (863 kgs.), Weight loaded 5,100 lb. (2,313 kgs.), Wing loading 10.3 lb./sq. ft. (50.4 kgs./sq. m.), Power loading 10.6 lb./h.p. (4.8 kgs./h.p.).

PERFORMANCE.—Not available until released by U.S. Air Corps.



ASHORE.—The Loening XO-10 single-wheel amphibian on land showing the central wheel between the flaps which close the hole when the wheel is retracted and one of the wing-tip skids armed with a small wheel.

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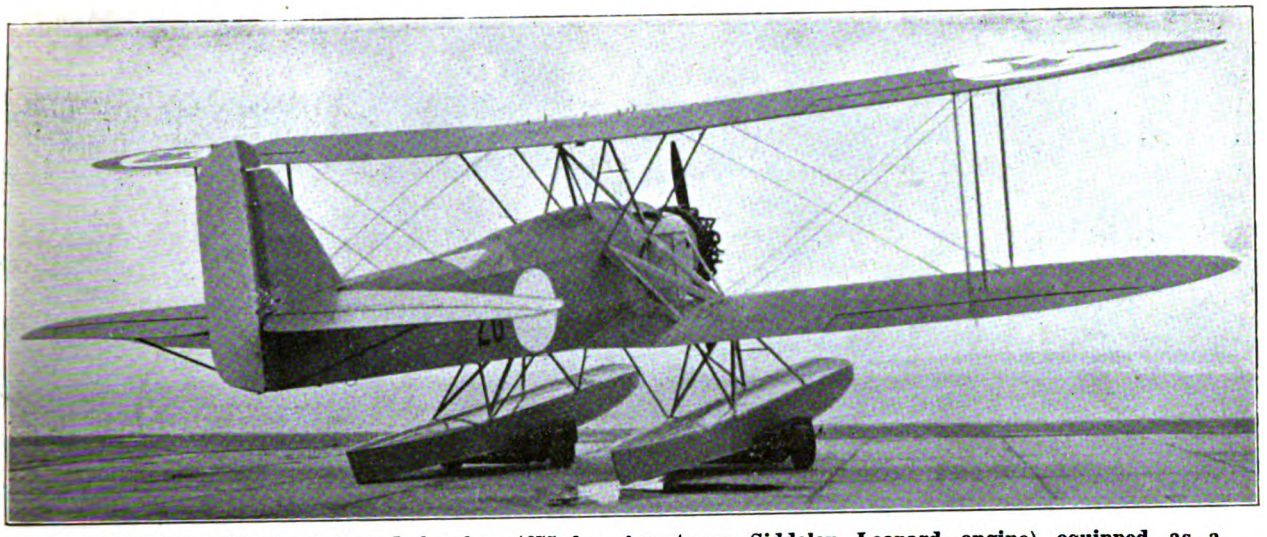


THE HEINKEL H.D.16.—A torpedo-bomber (675 h.p. Armstrong Siddeley Leopard engine) equipped as a seaplane.

THE HEINKEL H.D.16.

DESIGNERS.—Ernst Heinkel Flugzeugwerke G.m.b.H., Warnemünde.

CONSTRUCTORS (under licence).—Svenska Aero A.B., Stockholm.

TYPE.—Two-seat torpedo-bombing land or seaplane.

WING.—Equal-winged single-bay unstaggered biplane. Top centre section carried above fuselage by steel-tube struts welded to fuselage and arranged in form of "W" when viewed from front and "N" when seen from side. Bottom centre-section of steel tubes welded to fuselage and braced to top longerons of fuselage by "N" struts. Outer wing sections of wood covered with fabric and interconnected by one set of "N" type struts on either side. Wing structure consists of two spruce and plywood box spars, box-type ribs and steel-tube compression members, the whole being covered with fabric. Ailerons to all four wings.

FUSELAGE.—Welded steel-tube structure covered with aluminium cowling forward and fabric aft.

TAIL-UNIT.—Normal monoplane type. Welded steel-tube framework covered with fabric. Adjustable tail-plane. Controls for rudder and elevator by cable over ball-bearing pulleys and are duplicated. All controls internal.

UNDERCARRIAGE.—Divided type. Each unit consists of two Vees one under fuselage longerons and one at extremity of bottom centre section. Front leg of outer Vee has also suspension and top and bottom of this leg is connected to apex of inner Vee by bracing tube and axle respectively. Wheel undercarriage interchangeable with float gear.

FLOATS.—Two long single-step wooden floats. Each attached to bottom centre-section root by two sets of "N" type struts in form of inverted Vee. The inner bases of each strut attachment to the float is again braced to the bottom fuselage longeron by inclined struts.

POWER-PLANT.—One 675 h.p. Armstrong-Siddeley Leopard 14-cylinder radial air-cooled engine. Main fuel tanks in centre-section.

ACCOMMODATION.—In front of wings is the pilot's cockpit. Beside and slightly to rear of pilot's seat is a seat for the engineer or navigator. If used for freight-carrying purposes, a compartment 3 m. long is provided behind pilot's cockpit with door at rear behind wings. Provision for a back gunner's cockpit is made midway between wings and tail.

DIMENSIONS.—Span 18 m. (59 ft.), Length (Landplane) 12.5 m. (41 ft.), Length (Seaplane) 13 m. (42 ft. 7 in.), Height (Landplane) 4.6 m. (15 ft. 1 in.), Height (Seaplane) 5.2 m. (17 ft. 1 in.), Wing Area 96.9 sq. m. (1,042 sq. ft.).

WEIGHTS AND LOADINGS.—Landplane: Weight empty 2,170 kgs. (4,780 lb.), Weight loaded 4,170 kgs. (9,200 lb.), Wing loading 43.2 kgs./sq. m. (8.8 lb./sq. ft.), Power loading 6.2 kgs./h.p. (13.7 lb./h.p.).

WEIGHTS AND LOADINGS.—Seaplane: Weight empty 2,570 kgs. (5,670 lb.), Weight loaded 4,570 kgs. (10,080 lb.), Wing loading 47.2 kgs./sq. m. (9.7 lb./sq. ft.), Power loading 6.8 kgs./h.p. (15 lb./h.p.).

PERFORMANCE.—Landplane: Speed max. 190 km.p.h. (118 m.p.h.), Landing speed 86 km.p.h. (53.4 m.p.h.), Climb to 1,000 m. (3,280 ft.), 6 mins.

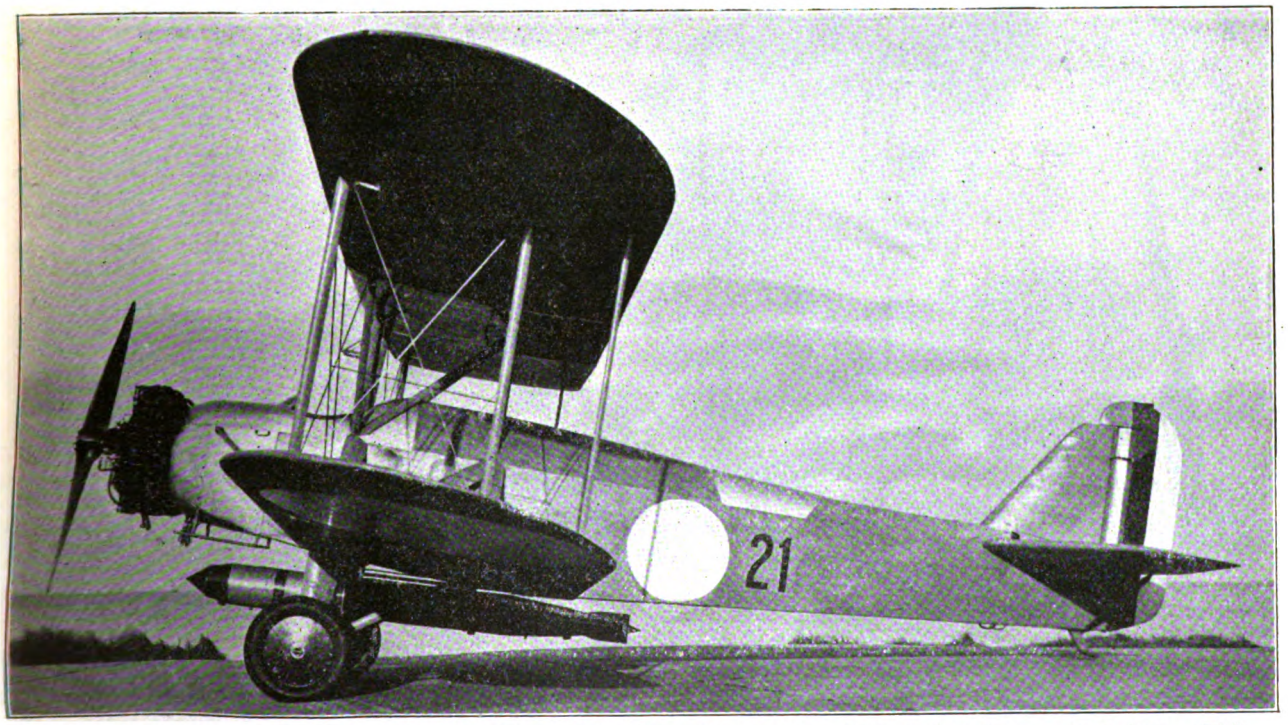
PERFORMANCE.—Seaplane: Speed max. 180 km.p.h. (112 m.p.h.), landing speed 90 km.p.h. (56 m.p.h.), climb to 1,000 m. (3,280 ft.), 7.5 mins.

THE HEINKEL H.D.43.

CONSTRUCTORS.—Ernst Heinkel, Flugzeugwerke, G.m.b.H., Warnemünde.

TYPE.—Single-seat fighter biplane.

WINGS.—Unequal span single-bay staggered biplane. Centre-section carried above fuselage on "N" type steel-tube struts, welded to fuselage structure. Centre-section of thinner section than outer sections to enhance pilot's view. Top outer sections have 3 deg. and bottom outer sections 4 deg. dihedral. One set of "N"



THE HEINKEL H.D.16.—A single-engined torpedo-bomber (Leopard engine) equipped as a landplane. This machine is built under licence in Sweden and examples have been supplied to the Swedish Air Force.

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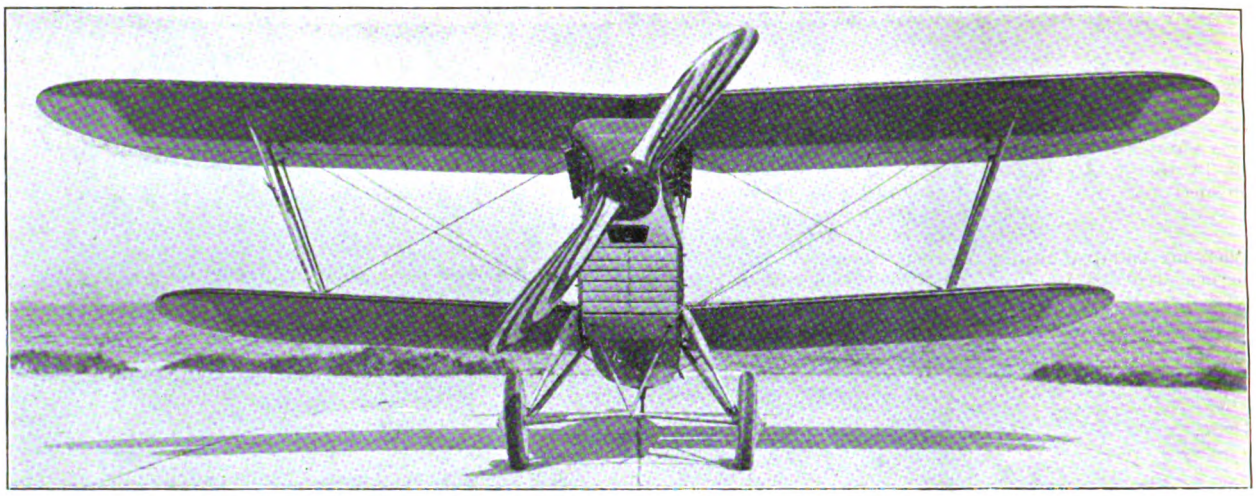


THE HEINKEL H.D.43.—A high-performance single-seat fighter with the 500/700 h.p. B.M.W. VI engine.

type interplane struts on either side of fuselage. Flying wires from top of legs of "N" struts to front spar fitting on bottom wing, single landing wires in plane of top back and bottom front spars. Wing structure built up of two box spars of spruce with plywood webs and spruce and plywood ribs, the whole being covered with fabric. In place of internal bracing the underside of wings are completely covered with plywood between the spars. Ailerons on all four wings.

FUSELAGE.—Rectangular welded steel tube structure covered with aluminium cowling forward and fabric aft.

TAIL UNIT.—Normal monoplane type. Welded steel-tube framework covered with fabric. All surfaces unbalanced. Adjustable tail-plane. Fin can be adjusted on ground.

UNDERCARRIAGE.—Cross axle Vee type. Front legs of side Vees sprung with either oleo-pneumatic or rubber shock-absorber units. Axle divided and centre point braced in transverse plane of front legs of side Vees with steel tube Vee. Rubber-sprung tail-skid.

POWER-PLANT.—One 500/700 h.p. B.M.W.-VI. twelve-cylinder water-cooled engine on detachable steel-tube mounting. Radiator under engine in tunnel with controllable shutters. Main fuel tank of 310 litres (68 gals.) capacity and oil tank of 25 litres (5½ gals.) capacity in fuselage behind fireproof bulkhead. Gravity fuel tank of 80 litres (17½ gals.) capacity in root of right upper wing.

ACCOMMODATION.—Pilot's cockpit behind centre-section. Adustable seat. Oxygen apparatus.

DIMENSIONS.—Span (top) 10 m. (32.8 ft.), Span (bottom) 8 m. (26.2 ft.), Length 7.1 m. (23.3 ft.), Height 3.3 m. (10.8 ft.), Wing Area 26.56 sq. m. (286 sq. ft.).

WEIGHTS AND LOADINGS.—Weight empty 1,280 kgs. (2,820 lb.), Disposable load 420 kgs. (926 lb.), Weight loaded 1,700 kgs. (3,746 lb.), Wing loading 64 kgs./sq. m. (13.1 lb./sq. ft.), Power loading 3.4 kgs./h.p. (7.6 lb./h.p.).

PERFORMANCE.—Speed max. 322 km.p.h. (200 m.p.h.), speed at normal performance of engine 290 km.p.h. (180 m.p.h.), Landing speed 95 km.p.h. (59 m.p.h.), Climb to 3,000 m. (9,840 ft.) 4.9 mins., Climb to 5,000 m. (16,400 ft.) 9.4 mins., Service ceiling 8,400 m. (27,600 ft.).

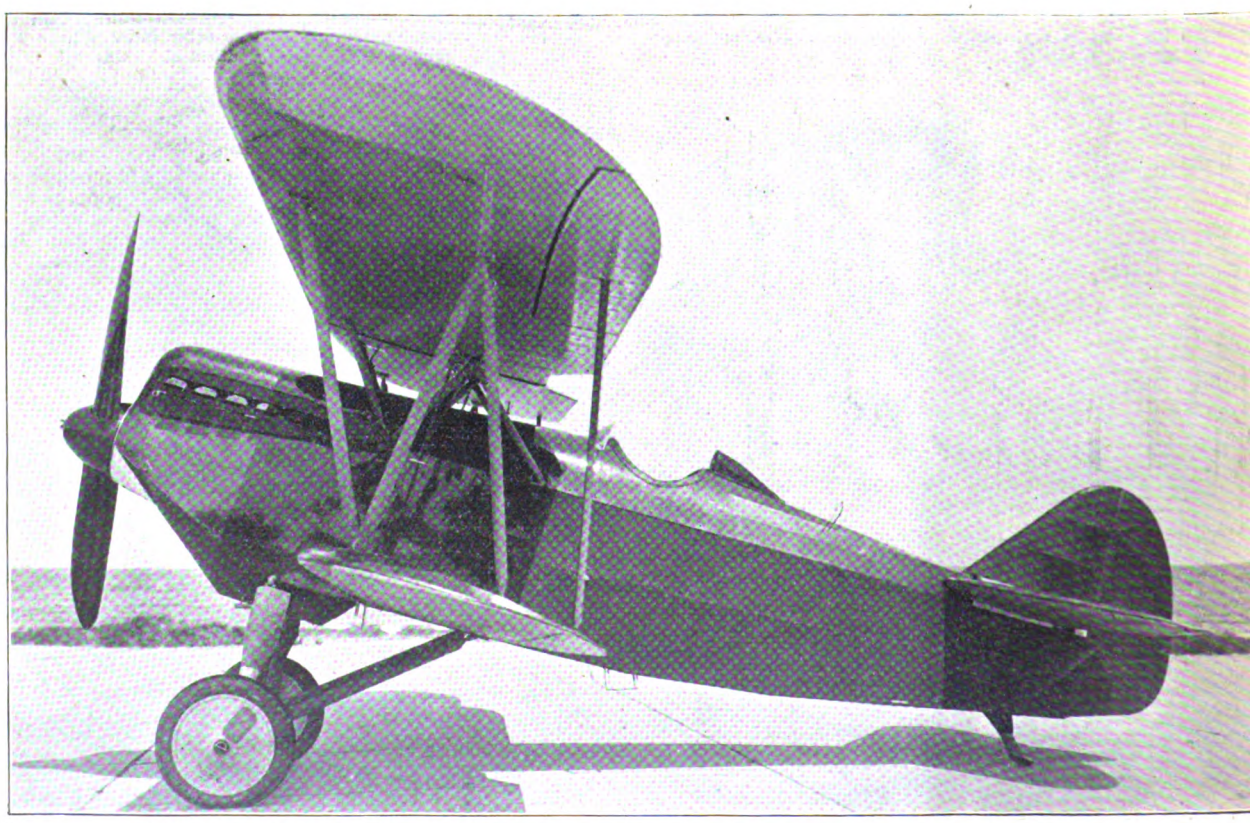
[NOTE.—The above performance figures, which are above the maker's guaranteed figures, have been obtained and certified by the Deutsche Versuchsanstalt für Luftfahrt.]

CRUISING SPEED.

A correspondent writing in the Aug. 3 number of *Aviation*, the oldest American Aeronautical Magazine, raises the query as to what is meant by the term "cruising speed." He suggests that the term "cruising speed" should only be given when the corresponding revs. or power are available.

Aviation says that it is inclined to agree with its correspondent and suggests that cruising speed should be that obtained with the engine running at 85 per cent. of its maximum rated r.p.m.

In this country there appears to be no trouble over the definition at all. "Cruising speed" is supposed to be that obtained when the engine is running at its most economical power-weight ratio. But in practice it means the speed which just happens when the pilot pulls the throttle-lever back a bit so that the engine feels to be running well within its power. So nobody cares whether the engine is doing 70% or 80% or 90% of its power or its revs. or its consumption.



THE HEINKEL H.D.43.—A side view of the machine showing its very compact appearance.

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THE DEVELOPMENT OF SPARKING PLUGS FOR AIRCRAFT ENGINES.

There are many different designs to which sparking plugs can be made, but there is interest in noting that the design which has proved generally most successful for modern aircraft engines is similar to the very earliest type of mica-insulated sparking plugs.

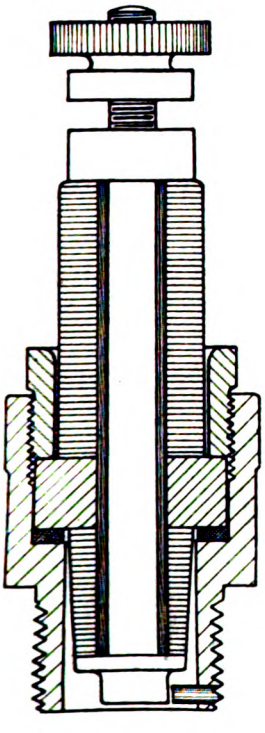
Briefly, the design consists of a central electrode wrapped with sheet mica, and with mica washers then threaded over the wrapping. The central electrode is formed with a head at one end and with a nut at the other end, and the mica washers are clamped firmly between the head and the nut. This insulated electrode, or centre, as it is called, is fixed into the metal body of the plug by means of a screwed gland nut, the latter bearing on a shoulder formed out of the mica washers, or by a metal washer supported between the mica washers. This construction which is shown in Fig. 1 makes the plug conveniently dismountable for inspection and cleaning.

This design is probably the best mechanically, but with the increased efficiency of engines it has suffered from certain defects. To make the plug gastight the mica washers must be clamped under very great pressure, and the great tension which the centre-pin has to withstand necessitates its being made of steel, including the head at the sparking end which is exposed to the flame of the explosions. This steel head has been found to burn and scale under the heat.

Another trouble arising from the great heat was the difference in expansion of the steel centre-pin and the mica washers, which allowed gas to leak through the plug.

In Lodge aero plugs these troubles are overcome by using a non-scaling alloy of steel which has great tensile strength. And the permanent gas-tightness of the plug is ensured by shrinking the steel collar (in the middle of the insulated centre) under great pressure directly onto the mica wrapping. In this way a gastight seal is formed, which is not affected by any variations due to expansion and contraction. This construction is shown in Fig. 2. It is classified as the Lodge A20 plug.

This A20 plug is found to be quite suitable for aircraft engines of medium compression, but when used in high-compression engines at full load it is liable to over-heat and so cause pre-ignition. To make a plug of this design suitable for high-compression engines it was necessary to find a method of improving the heat factor of the sparking plug and this without detracting from its ability to withstand oil and soot. Any design of sparking plug can be made to withstand greater heat by simply reducing the internal air spaces of the plug, but this plan reduces its oil-resisting qualities.



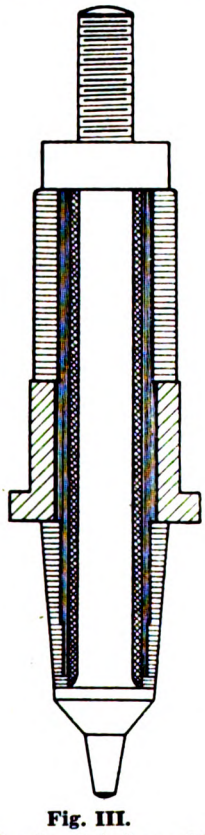


Fig. I. **Fig. III.**

On the left an early design of mica insulated sparking plug. On the right, the Lodge A30 plug showing the patented heat-conducting copper sleeve between the mica and the steel alloy centre-pin.

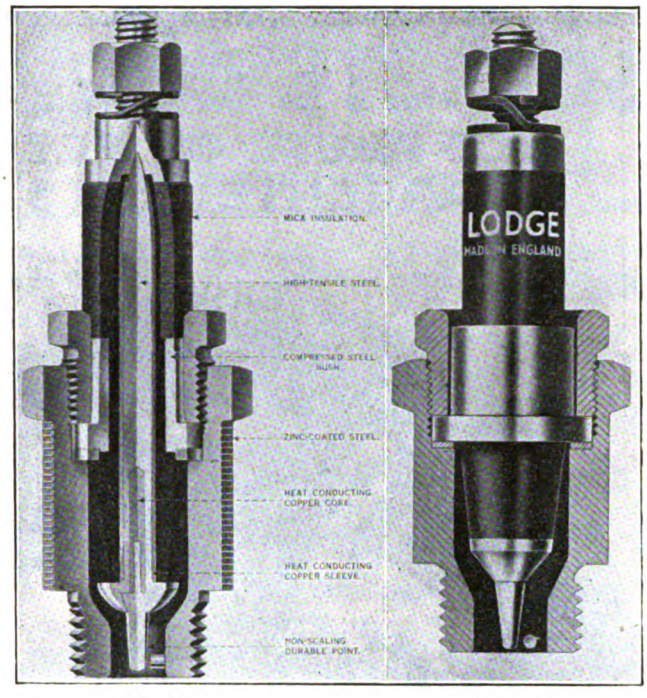


Fig. IV. **Fig. II.**

On the left the Lodge A40 plug in section and on the right the Lodge A20 plug.

When a sparking plug is fitted into a cylinder the inside part of the plug which is exposed to the flame acts as a heat-receiver, while the part of the sparking plug outside the cylinder acts as a heat radiator. The inside part of the plug may be assumed to reach the mean temperature of the combustion chamber,—less the rate at which heat is transferred from the inside of the plug to the air outside.

To improve the heat qualities of a plug without reducing its oil-resisting properties it is necessary to increase the heat conduction through the plug. The obvious way to do this is by the use of copper, but the difficulty is to introduce enough copper without materially reducing the insulation or the strength of the steel centre pin.

A number of different methods were tried, among others that of fitting a thin copper sleeve between the centre pin and the mica insulation. This method was found to make a surprising improvement. The reason for the improvement is first of all that the high conductivity copper used is roughly 30 times as good a heat conductor as the steel alloy used for the centre pin. Another reason is that in sparking plugs like the Lodge A20 it is probable that it is the mica insulation and not the central sparking point which first of all gets hot enough to cause self-ignition and the important improvement produced by the copper sleeve is probably due to its keeping the mica insulation cool.

The construction of such an insulated centre, which is shown in section in Fig. 3, is patented. The sparking plug made to this design is classified as Lodge A30. Such plugs have proved suitable for practically all modern high-compression aircraft engines.

With certain engines of exceptionally high output, such as the Rolls-Royce "F" type, it was found that even the Lodge A30 was not quite capable of withstanding the great heat at full load tests, and it was necessary to make the plug capable of withstanding still greater heat. This was effected by inserting a short copper core into the centre pin at the sparking end.

This method of construction adds considerably to the cost of making the plug, but the combined effect of the copper core and the copper sleeve is to render the plug exceptionally good in withstanding very great heat. And it still has good qualities in withstanding soot and oil. The construction of such a plug is illustrated in section in Fig. 4. This design is classified as the Lodge A40.

Although the A30 and A40 plugs have a little greater internal insulating surface than the A20, yet they lose a little in soot-resisting qualities the centres keep cooler.

Taking the figure 10 as representing both the oil and heat factors of the A20, then the comparative figures for the three plugs are as follows:—

	Oil.	Heat.
A20	10	10
A30	9	15
A40	8	17

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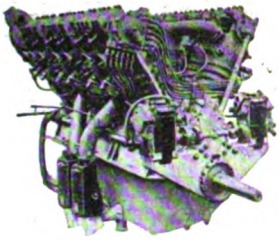
SOCIÉTÉ LORRAINE

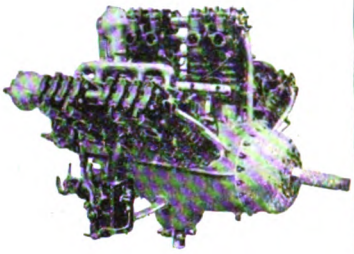
200 ROUTE DE BEZONS
A ARGENTEUIL. (S.&O.)

TÉLÉPHONE
WAGRAM: 99.87

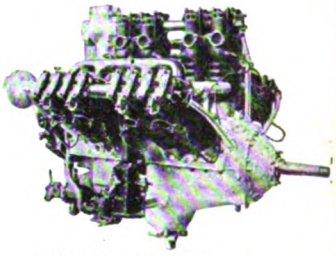
REG. COMMERCE
SEINE. Nº 111·677



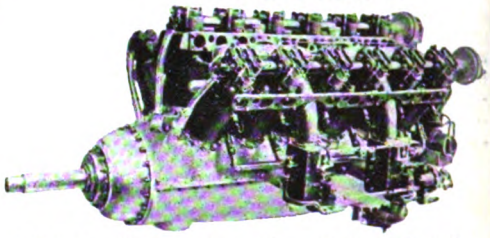
400/410 h.p. 12 Cyl. in V.



450/500 h.p. 12 Cyl. in W.
Direct Drive or Geared.



480/510 h.p. 12 Cyl. in W.

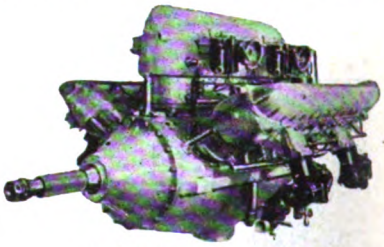


650/750 h.p 18 Cyl. in W. Direct Drive or Geared.

MOTEURS D'AVIATION

LORRAINE

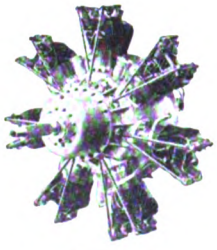
AERO ENGINES.



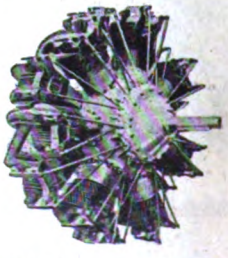
600/700 h.p. 12 Cyl in W
Direct Drive or Geared.

100/120 h.p. 5 Cyl. Radial.

40/270 h.p. 7 Cyl. Radial.



40/270 h.p. Geared.



470/540 h.p. 14 Cyl. Radial.
Direct Drive or Geared.

Marine Engines, 250 h.p. & 500 h p.
15 h.p. Motor Cars, Grand Sports & Touring.

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

LEWIS REDELE.

All those who have had the pleasure of meeting our visitors from Holland at Lympne at the Easter Meeting, or who enjoyed the hospitality of the Rotterdam Aero Club in July, will learn with deep regret of the death of Mr. Lewis Redele, who was one of our visitors.

At Rotterdam Mr. Redele was flying one of the new Pander machines with great skill. He was a prominent and energetic member of the Rotterdam Club, and was very popular among the aeronautical community in the Netherlands.

According to *The Times* of Aug. 24 Mr. Redele was killed on the Bolzano Aerodrome in Italy.

THE CANADIAN LIGHT AEROPLANE CLUBS.

The Canadian Government is spending $140,000 (£28,000) this year on matters directly concerned with the Canadian Flying Clubs . Five new clubs have completed their organisation this year and are already in operation. These clubs, which have received their Government aircraft on loan under the subsidy arrangement, are: Kingston, Fort William, St. Catherines, St. John, N.B., and Sydney, N.S.

Five more clubs have claimed Government aeroplanes, but only three of these will be equipped, as the appropriation for this year will then be exhausted. These three clubs are: Brandon, Man., Stratford, and Brantford, Ont.

During 1928 sixteen new clubs were equipped with Government-loaned aircraft, making a total of twenty-one clubs in operation up to the end of the year.

FROM SINGAPORE.

The Club is going on very well. The only drawback is that the sea is not always sufficiently calm when the weather is otherwise excellent for flying. By dint of plenty of work and exercise of care, the machines have all been kept serviceable during the last two months. Keenness on flying is not confined to members of the Club alone. One has met several people who would readily avail themselves of the opportunity and advantages of air transport to such places as Penang, Batavia, Java, etc.

It is interesting to note that according to the *Singapore Free Press*, the Dutch have made, and are making, great strides in commercial aviation. One wonders why the Dutch (with all due respect to that go-ahead little nation) should be the first people to fly commercially, as it were, from Singapore.

Perhaps the Powers-that-be, and Big Business have adapted a ca'canny see-how-he-gets-on-first policy. However, one watches the march of Progress of British aviation with hope—and optimism.

One is sending this letter by the old and tried method of sea-mail. One would naturally prefer to send it by air, but if we run air mails, with true British modesty, we don't tell the world. At any rate, the Post Office officials could give one no definite information about air mail services to the United Kingdom.

[The England—India Air Mail Service is useless for any point outside India. Letters sent to Singapore by Air Mail arrive, as a rule, slightly after those sent by boat, owing to the slowness of mail communication between India and the Malay States.—C. G. G.]

THE MONTREAL LIGHT AEROPLANE CLUB.

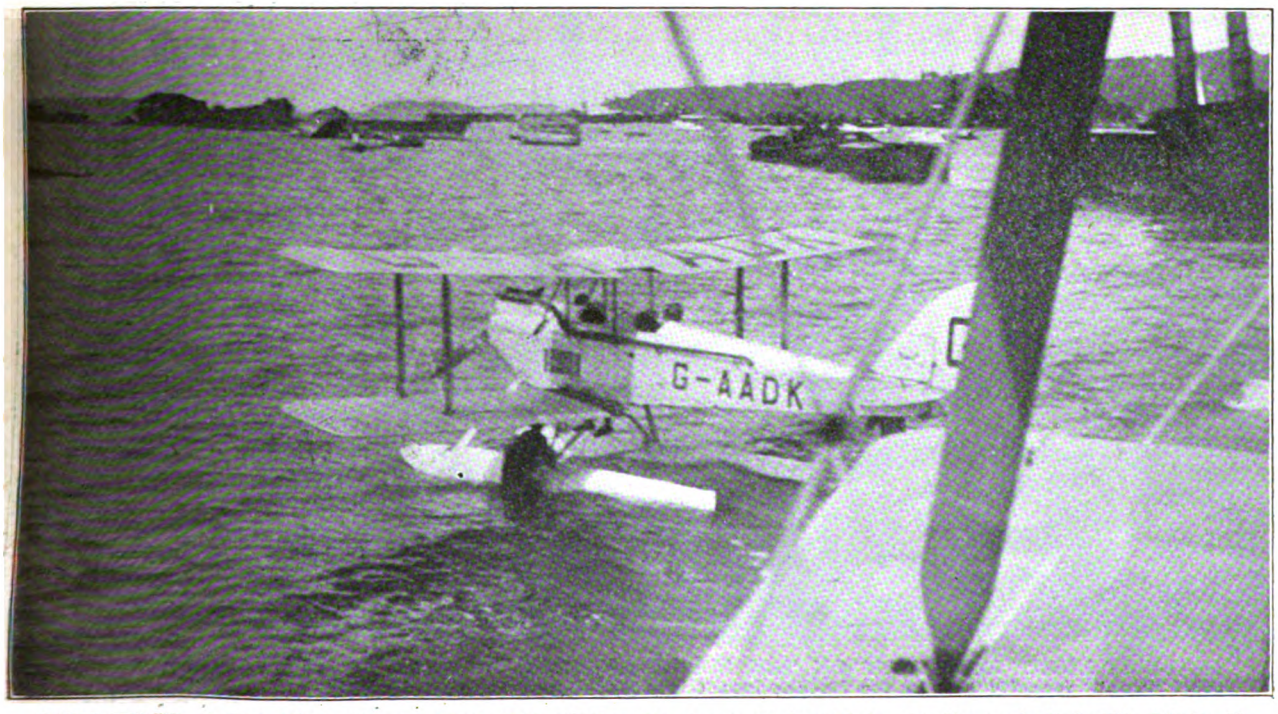
The month of July was marred by the tragic accident to the Club's Chief Instructor, Mr. A. E. Golds, and a member, Mr. C. H. Dowd. The actual cause of the accident cannot be definitely established because no one with any knowledge of flying saw it and the subsequent fire prevented any examination of the wreck. In Mr. Golds the Club has lost a brilliant and very popular instructor and in Mr. Dowd an enthusiastic member and a promising pilot. As a result of the accident the Directors have passed a bye-law which prohibits any aerobatics in the Club's machines except when authorised by them in writing or for the teaching of spins and stalled turns.

Capt. H. Spooner, the Assistant Instructor has taken over the duties of Chief Instructor and no other instructor will be appointed at the moment.

The flying time for July was approximately 125 hours made up of 65 hours dual, 35 hours solo, 5 hours passenger carrying and 20 hours test flights, air meetings, races, etc.

The amount of flying done by the large number of soloists is still disappointing. If they feel that, having learned to fly, they having nothing further to learn as pilots, the Instructor undertakes to remove the illusion in five minutes.

Four Club machines attended the Granby Flying Meeting on Dominion Day. Mr. Golds gave a display of aerobatics and was second in the open handicap race. Mr. Lytell won the open landing competition.



FAR EAST.—A D.H. Moth (Cirrus Mark III) of the Singapore Flying Club. In the cockpit is Flt. Lt. D. V. Carnegie, A.F.C., No. 205 (Flying Boat) Sqdn., R.A.F., who has acted as honorary instructor to the Club.

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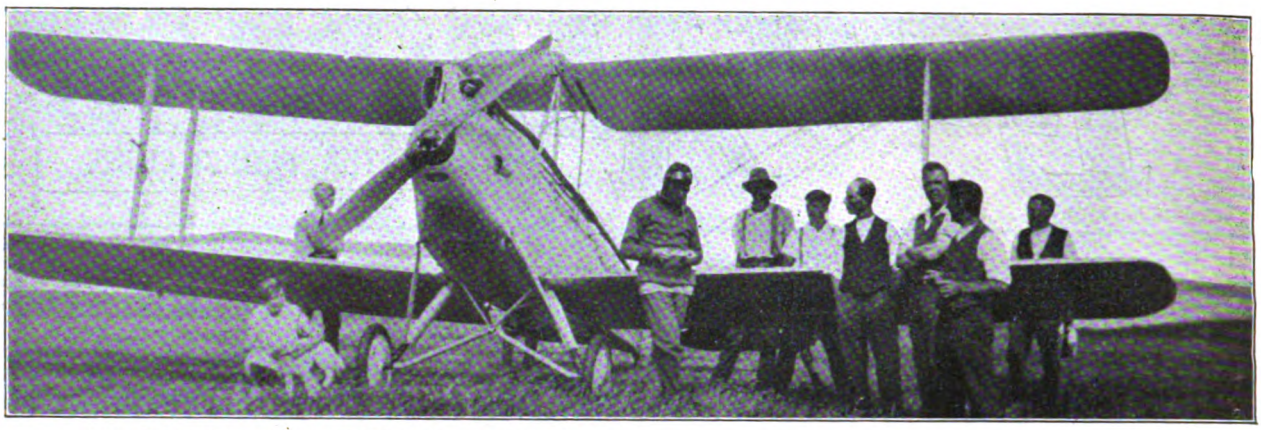


THE FIRST LIGHT AEROPLANE ON THE SCILLIES.—Colonel Sempill and some of the Indigenes.

Capt. Spooner flew to Moncton for the Moncton Meeting, stopping at Quebec and Rimouski on the way. He was second in the handicap race and in the bombing competition. He made the return journey *via* Woodstock, Caribou and Quebec with head winds in 8 hours' flying time.

The monthly lunches and the weekly cross-country flights started this month. All four Club machines went on the first cross-country, which was to Granby. The second cross-country was to Quebec but only enough members for two machines were able to go.

The Rumble Club is going strong,—as several members and the instructor have found out to their cost.

Visiting aeroplanes during July included two Lockheed Vegas, two three-engined Fokkers, a Cessna monoplane and the Transcontinental Record-Breaker flown by Capt. Hawks.

Two members have just returned from a sixteen-days seaplane holiday. This is believed to be the first trip of its kind undertaken in Canada. They covered 2,500 miles through the Maritimes and found no difficulty in locating good landing places. The pilot, Mr. Cushing, warns other pilots of the danger of flying low over rivers on account of the possibility of high-tension wires which are suspended without any warning signs. The itinerary was:—

Quebec—Lake St. Agnes (back of Murray Bay)—Over Riviere de Loup to Cabano—Temiscouata—Fredericton—St. John (Milledgeville)—Charlottetown—Scotsville (Lake Ainslie)—over River Margaree to Whyocomagh—Sydney—St. Peter's Passage—Guysborough—Country Harbour—Halifax—Bay of Fundy—St. John—St. Andrews—Bar Harbour (Mount Desert Island on Eagle Lake)—Rockland—Prout's Neck—Lake Winnepesaukee—over the mountains to Windsor (Vermont)—Champlain—St. John—Dorval Island—Montreal.

ANOTHER LIGHT AEROPLANE RECORD.

Herr Edzard, flying a Focke-Wulf biplane, has broken the world's record for distance covered over a closed circuit in the 1st Light Aeroplane Category (two-seater aircraft weighing under 400 kgs. (880 lbs.)), by covering a distance of 1,601.2 kms. (approximately 995 miles) in 13¾ hours.

The previous record was held by Comm. J. Hermansky and Lieut. Machacek (of the Czechoslovak Army), who on July 11, 1928, covered a distance of 1,500 kms. (approximately 900 miles) in an Avia BH9 (60 h.p. Walter).

A GOOD DAY'S WORK.

Mr. Lief Lier, the well-known Norwegian pilot, who is taking out a Gipsy-Moth in the Norwegian whaler *s.s. Kosmos*, which is shortly sailing for the Antarctic, did a good flight the other day. He took delivery of the machine at Stag Lane and, flying by way of Ostende, Amsterdam, Hamburg and Copenhagen, reached Oslo in Norway the same day,—about 975 miles in 8 hrs. 55 mins.' flying.

GLIDER TOW-RING.

A home-made glider, piloted by its designer and builder, Mr. Wallace Franklin, has been towed from Ypsilanti, Mich., to Akron, Ohio, a distance of 170 miles, by Mr. Hugh Robbins flying a Waco biplane.

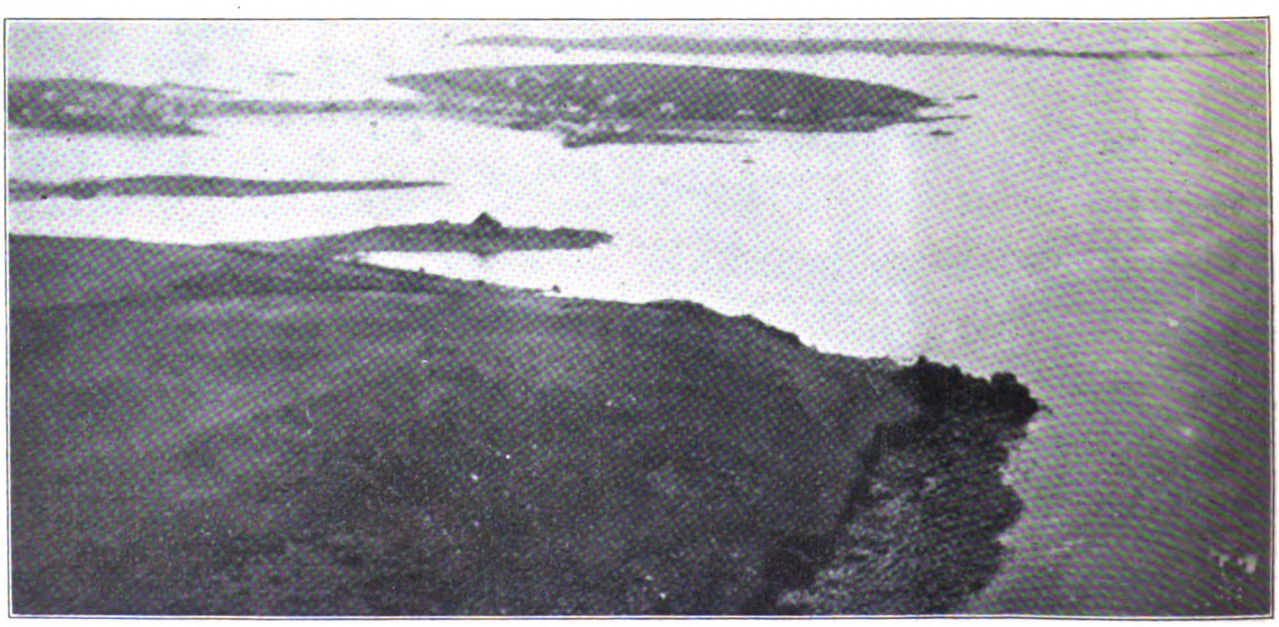
The two craft were interconnected by a cable 300 feet long which could be disconnected by a quick release ring by the pilot either of the glider or of the aeroplane.

When at a height of 500 feet over Akron the glider was released and it glided down and made a perfect landing.

The flight lasted for about 3 hours.

CIRRUS ENGINES IN THE U.S.A.

The New Standard Aircraft Corporation, of Paterson, N.J., has ordered 50 Cirrus III. engines from American Cirrus Engines, Inc., of Belleville, N.J., for use in a light training machine which is to be produced shortly.



THE FIRST LIGHT AEROPLANE ON THE SCILLIES.—Colonel the Master of Sempill and the Hon. Mrs. Forbes-Sempill recently flew to the Scillies in a Gipsy-Moth—a matter of 30 miles over-sea flying—which is not right, in a light aeroplane. However, they have the distinction of being the first to land on the Scillies,—since a D.H.6 landed there during the War 1914-18, in preference to going into the ditch. In this picture St. Mary's, with the capital, Hugh Town, is seen in the middle distance, with the Golf Course in the foreground.

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CHALLENGE INTERNATIONALE DE TOURISME

ROUND EUROPE AIR RACE

FRITZ MORZIK

flying a
B.F.W. Light Aeroplane with
a SIEMENS "70" Engine

FIRST

(Subject to Official Confirmation)

ON

SHELL OIL and PETROL

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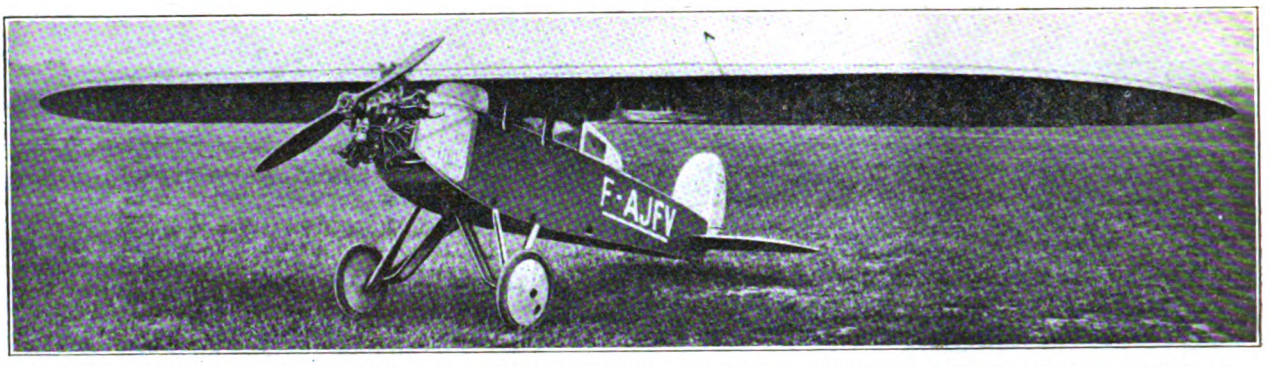

A FRENCH LIGHT AEROPLANE.—An Albert cantilever monoplane (Armstrong Siddeley Genet engine) of the type on which M. Albert recently beat the French Light Aeroplane Height Record.

THE ORLY FIASCO.

The official results of the *Challenge Internationale de Tourisme* have been issued by the *Aéro Club de France*.

Morzik, flying a B.F.W. with a Siemens engine, was placed first. Broad came second; Lord Carbery third; and Miss Spooner tenth. The intervening places were pretty well shared out; no one country doing outstandingly well.

The final placings seem to have been largely determined by speed and practical quality. All the competitors, with one exception in each case, received the same points for regularity and changing of parts.

Practical quality varied from 32.50 gained by a Klemm and an Antilopa down to 12 points obtained by the Raab-Katzenstein belonging to Lord Carbery.

In practical quality the Germans had the honours in the main; with the Romeos running them very closely. In speed Morzik, the winner, and Carbery led with 70 marks. Down at the tail was a Breda with only 3.5. From 70 km. there was a big drop to 60 for Broad and 57.50 for Dungern—two B.F.W.s in the first four; then 5 Italian planes and Miss Spooner all 50 mks. and over.

There is a tremendous range of speed shown in the competition as was only to be expected, and this has enormously influenced the placing of planes otherwise fairly equal. A comparative study of these results will give food for thought to experts in the construction and design.

Unfortunately we are all still in the dark as to how marks have been allocated for speed round the course.

This is a sketchy analysis of the results to date. How many of them will stand remains to be seen.

Orly Figures.

Herewith are the final markings as issued by the *Aéro Club de France*. The first letter gives the competition marking of the machine, then comes the make, the engine and the pilot. The first figure thereafter represents the marks for speed over the course, then the marks for regularity, then for non-changing of parts, then those allotted for "practical qualities" before the start, and the total.

A4, B.F.W. M.23B, Siemens 70, Morzik, 70 mks., 35 mks., 14, 19.50, 138.50.
H5, Moth, Gipsy 80, Broad, 60 mks. 35 mks., 14, 26.25, 135.25.
B3, Raab, Cirrus 90, Carbery, 70 mks., 35 mks., 14, 12.00, 131.00.
C2, Klemm, Salmson 95, Lusser, 48.75 mks., 35 mks., 14, 30.50, 128.25.
M3, Romeo, Fiat 80, Guazzetti, 50 mks., 35 mks., 14, 28.25, 127.25.
A3, B.F.W. M.23B, Siemens 70, V. Dungern, 57.50 mks., 35 mks., 14 20.25, 126.75.
TI, Antilopa, Walter 85, Kleps, 45 mks., 35 mks., 14, 32.50, 126.50.
M2, Romeo, Fiat 80, Castaldo, 50 mks., 35 mks., 14, 25.25, 124.25.
MI, Romeo, Fiat 80, Gelmetti, 55 mks., 35 mks., 14, 18.—, 122.—.
H6, Moth, Gipsy 85, M. Spooner, 50 mks., 35 mks., 14, 22.50, 121.50.
D5, Junkers, Genet 80, Roeder, 41.25 mks., 35 mks., 14, 30.25, 120.50.
K3, A.S.I., Fiat 85, Lombardi, 50 mks., 35 mks., 14, 18.50, 117.50.
K8, Romeo, Fiat 85, Benassatti, 48.75 mks., 35 mks., 14, 20, 117.50.
K6, A.S.I., Fiat 85, Botalla, 50 mks., 35 mks., 14, 18, 117.
C6, Klemm, Salmson 40, Poss, 35 mks., 35 mks., 14, 30.25, 114.25.
S2, Klemm, Salmson 40, Wirth, 32.75 mks., 35 mks., 14, 32.50, 114.25.
D4, Junkers, Genet 80, Kneer, 32.75 mks., 35 mks., 14, 29.50, 111.25.
A2, B.F.W., Siemens 70, Offerman, 40 mks., 35 mks., 14, 20.25, 109.25.
C4, Klemm, Cirrus 80, Kirsch, 28.75 mks., 35 mks., 14, 27.75, 105-50.
C5, Klemm, Salmson 40, Siebel, 24.75 mks., 35 mks., 14, 30.25, 104.
M5, Breda 15, Cirrus 80, Mazotti, 27.75 mks., 35 mks. 14, 26, 102.75.
F5, Potez 36, Salmson 80, M. Weiss, 25.75 mks., 35 mks., 14, 25.75, 98.50.
K4, A.S.I., Fiat 85, Donati, 28.75 mks., 35 mks., 14, 18, 95.75.
SI, Klemm, Salmson 40, Burkhard, 20.75 mks., 35 mks., 14, 24.75, 94.50.
FI, Guerchais, Salmson 95, Lemerre, 28.75 mks., 35 mks., 14, 15, 93.75.
F6, Potez 36, Salmson 95, Finat, 23.75 mks., 35 mks., 14, 18.75, 91.50.
B9, Albatros, Siemens 70, Junck, 15.75 mks., 35 mks., 14, 25.25, 90.
E7, Caudron, Salmson 95, Delmotte, 23.75 mks., 35 mks., 14, 12.75, 85.50.
A5, B.F.W., Genet 80, Croneiss, 15.25 mks., 35 mks., 13, 21.75, 85.
M6, Breda 15, Cirrus, Liberratti, 3.5 mks., 35 mks., 14, 24.75, 76.75.
H2, St. Hubert, Walter 85, Maus, 10.30 mks., 30 mks., 14, 18.125 72.625.
K5, Eliminated.

Here may be noted the fact that the Moth which Lady Bailey flew round the course—out of the competition—has a Cirrus III engine.

Reflections by an Outsider.

So the Grand Tour is finished; the results are out and a German has won. But England, or rather Englishmen, take second and third places; and Miss Spooner, the only woman in the tour, magnificently is tenth on the list. And to crown our justifiable triumphs we are disqualified.—Or rather in great danger of so being.

It looks very much as if these splendid efforts are to be annulled—and that is not pessimistic either. "An inquest is being held"—"inquest" is well the word—to decide whether these British results shall be accepted; the results of which inquest "may produce great changes in the classification." So says the *Aéro Club de France*.

Broad, Lord Carbery, and Miss Spooner have been convoqued for this inquiry, which will take place next week. And in the meantime we are left speculating as to where the final honour of being considered first will really fall.

There are certain regions of military significance scattered all over Europe above which flying is not permitted and to avoid such of these tabooed regions as were encountered on the course, a certain annoying détour was necessary. It now appears that Lord Carbery, Broad and Miss Spooner did not make the necessary détours; and for this they may be disqualified.

Now, either they knew about the forbidden areas or did not. If they did, and still disregarded the regulations they deserve all they get and one can only regret that England's flying reputation was temporarily in their keeping. I have neither seen them nor communicated with them so do not know the facts, but I cannot help thinking it rather strange that Germany, France, Italy, Jugo-Slavia could all avoid these places and only England trepass.

But let us assume they did not know—and this seems the more likely assumption. Then one asks one's self they did not know? And there is only one answer to They were not properly looked after.

They came alone, Miss Spooner with a mechanic Broad with his mechanic, to a strange country, possibly not knowing the language fluently; they had none to meet them, none to help them—officially they received no help at all. England was either too poor or too economical to enter them through the Royal Aero Club, but they were sufficient sports and sufficiently anxious to proclaim the merits of their machines to do it off their own bats.—And incidentally, weren't they justified?

England, the greatest light-'plane producing country the world, had two representatives in an international competition, both entering privately, and even then could not give them proper assistance or even look after them at the start. And this is the result: a mistake which could so easily have been avoided has created all this confusion. It is enough to discourage anyone. Such a state of apathy could only exist in England. We may indeed congratulate ourselves.—V. G. W.

[All of which is very true and very sad. What one can gather from private gossip is that all the faster and more powerful machines,—including all the Italians,—flew over the prohibited area quite deliberately, trusting to getting so high that nobody would recognise them. Anyhow all the fuss about these Alpine areas is sheer nonsense,—and is part and parcel of that new Italianism which imprisons touring schoolmasters without trial and fines one for putting clean shoes on the dirty seats of railway-carriages.—C. G. G.]

HEIGHT RECORDS.

An Albert monoplane (Armstrong Siddeley Genet engine), piloted by M. Albert, has broken the French height record for light aircraft weighing less than 400 kgs. (880 lbs.) by reaching a height of 6,540 m. (21,255 ft.), which was 1,005 m. (3,276 ft.) less than the previous French record and only 192 m. (624 ft.) lower than the World's record.

Since this a Beazley NB-3 monoplane (Armstrong Siddeley Genet engine) has broken the World's Height Record for aircraft in this class by reaching a height of 25,000 ft.

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Photograph by courtesy of "Flight."

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L'ESCADRILLE LAFAYETTE.

[*One Man's War*, by Bert Hall and J. J. Niles, with an introduction by Elliott White Springs. 352 pages, 9in. by 5½in., eight drawings (four in colour), 15 photographs. John Hamilton, Ltd. Supplied by The Aeroplane Book Dept., Cannon House, Pilgrim Street, E.C.4. 15s. net.]

This book is composed of extracts from the dairy of an American who served with the French Army during the War 1914-18. The diary is supplemented by the personal reminiscences of the diarist. What part of the book is the work of the co-author, J. J. Niles, the publishers do not disclose. The book is illustrated with eight drawings, four of them in colour, by Mr. Leonard Bridgman, and a number of photographs. The drawings describe air combats and the photographs are of people discussed in the text.

Lieutenant Bert Hall taught himself to fly in 1910 on a Maurice Farman biplane at Buc, near Versailles. His description of aviation in those days will amuse those who have personal recollections of it, and will be an education to those who are nursed into the air in these days. Certain similarities still exist. He wrote:—

> Cockiness is not a good characteristic in a pilot's make-up. Pilots often die of it, only the newspapers report it under different names.

In 1913, during the Balkan War, he hired himself, his mechanic, and his new 60 h.p. Gnôme Bleriot monoplane to the Sultan of Turkey for an Air Service for 100 American dollars a day, but being dissatisfied with the unreliability of the Turkish exchequer, he flew over into Bulgaria and worked for them at the same rate of pay. He tried to return to the Turks, but was arrested and condemned to death. However, his mechanic raised enough money to buy him out. For some months after that he made a good living by giving exhibition flights in Bulgaria. Of those days he wrote:—

> My little sixty-horse-power Gnome motor never missed a lick all that summer. Those early rotary motors were suberb pieces of mechanism.

On the outbreak of War he joined the American Volunteer Corps formed in Paris. Although 150 trained for a fortnight, only half that number took the oath of allegiance at the end of their training. The faithful few, and other Americans who joined them later, were used to make good the gaps in the ranks of the Foreign Legion caused by the German, Austrian and Turkish members of the Legion who were left in Morocco when the Regiment went to France. The author's description of life in the trenches near Reims with the Legion during the last months of 1914 gives an impression of sincerity and truth.

In January, 1915, the author and two other Americans who had served in the Legion with him were transferred to the French Flying Corps and posted to the training centre at Buc. Here they discovered the wisdom of good fundamental flying training before going to the front. Eventually they joined a squadron near Chalons and flew Morane-Saulniers.

Here they met Garros, Brocard and Guynemer, and first saw the original interrupter gear invented by Garros for firing through the propellor by deflecting the bullets, known as the Système Alçon. Shortly afterwards Garros was captured, invention and all.

The book describes the early reconnaissances when steel darts were the only weapon against ground forces. Of those days he writes:—

> When I think of the wonderful pilots who went out, day after day, and never came back—some of the most marvellous pilots in all the world and men from the very first families—I realise that a lot of the civilian flying nowadays that gets into the daily news sheets is all forced draught, to say nothing of being ancient history.

There are brief romantic interludes, but most of the book describes fighting in the air, the excitement over new types of aircraft, the capture of the first enemy aeroplane by the Squadron, and the effect of war news on the members of the Squadron. One philosophical statement runs:—

> Talking-up one's exploits had its advantage even in a big-calibre war.

A great deal of the work of this Squadron consisted of Special Missions, or dropping spies over the lines.

The Lafayette Escadrille, a Squadron of Americans in the French Army, was formed in the spring of 1916. A mass of fiction has grown up about this Squadron, but the true story of its origin and early days is given in this book. Practically all the Americans serving with the French Air Service joined the Lafayette Squadron, but at first there were only seven pilots, of whom Lieut. Hall was one.

Most of the book deals with the work of this amazing unit during the six months that the author served with it. In September, 1916, he went back to his old Squadron of the French Flying Corps, but he did not lose touch with the Escadrille Lafayette.

The description of the period in which the Squadron shared the aerodrome at Luxeuil-les-Bains with the R.N.A.S. and took part with them in the bombing raid on the Mauser Works at Obendorf, is particularly vivid and interesting, but one wonders how much reliance can be placed on the story of the R.N.A.S. formation which set out to bomb Mulhouse and very nearly bombed Basle.

In January, 1917, the author was sent, by the French War Office, on a special mission to Russia. This part of the book reads more like fiction than fact, although it may well be that he found it harder to describe the outbreak of the Revolution, of which he was an eye-witness, than the simple incidents of his daily life.

Nevertheless, he was awarded the Cross of St. George and the Medal of St. Vladimir by the Tsar and the St. Stanislus Medal and the Vertu Militaire by the King of Roumania. His impressions of the state of the armies and populations of these countries are forcibly expressed.

He escaped with difficulty, and adventured from Russia through Valdivostock and Harbin to Shanghai and Yokohama, where he got a boat to San Francisco.

The rest of the book bears the stamp of disillusion and exhaustion. Disgusted with his countrymen's attitude towards the War, which they had just entered, he returns to his Squadron in France, to find many friends gone and tremendous changes. He is given counter-espionage work to do, and sees a younger generation on new machines fighting in the air. Quite at the end he is heartened by the way the American forces distinguished themselves.

Lieutenant Hall's book will be compared with *War Birds, the Diary of an Unknown Aviator*, and to a certain extent there is a likeness. But this book has not Grider's unstudied lightness of touch. It is heavier, more middle-aged, and more cosmopolitan.—C. M. MCA.

AN EDUCATIVE INFLUENCE.

One of the handsomest publications yet produced in connection with aviation is the "Book of the Moth" which the De Havilland Company had on sale at the Aero Show. Primarily it is, quite naturally, an advertisement for the Moth. But it is in fact very much more than that. It is a beautifully produced publication which if placed in the hands of anybody who is not at the moment interested in flying should go a very long way towards making them so.

Apart from telling people why they should fly, it is bound to give them confidence in flying. And the two pages of views of well-known places under the heading "A Moth's Eye View" are enough to make anybody want to fly.

Not content with technical arguments and ocular temptation, the book gives sound financial reasons for flying as a sport. Also it tells all about how the Moth and its engine are made, and how people learn to fly. The printing is beautiful. The price is 1s. 6d. and it is well worth it.

The Importance of Air Navigators

Those who wish to study Air Navigation are recommended to buy the following books:—

PRINCIPLES AND PRACTICE OF AIR NAVIGATION. Lieut. J. E. Dumbleton.	12/6
PRIMER OF AIR NAVIGATION. H. E. Wimperis, M.A.	8/6
AIR NAVIGATION (CONSOLIDATION) ORDER, 1923.	1/-
MANUAL OF AIR PILOTAGE.	2/-
ELEMENTARY METEOROLOGY. W. H. Pick.	1/6
AIR NAVIGATION, Notes and Examples. S. F. Carol.	10/6
DIRECTION AND POSITION FINDING BY WIRELESS. R. Keen.	9/-
AIR NAVIGATION AND METEOROLOGY. R. Duncan.	15/-
PARTICULARS OF METEOROLOGICAL REPORTS issued by Wireless Telegraphy in Great Britain, etc., 1929.	5/-
THE AIR PILOT'S MAP OF GREAT BRITAIN, 64in. by 40in.	10/6
INTERNATIONAL GENERAL AERONAUTICAL MAP (Britain).	4/-

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A SOURCE OF ACCURACY.

On the bank of the River at Teddington, just below the weir, there used to be a cement store. One winter day there was a flood which, when it receded, left a layer of solidified cement bags right over the floor. More cement was spread over these bags to level off the floor, with the result that now there is a concrete base three feet thick.

On this solid foundation and far from any traffic-shaken roadway are built the works of the Accurate Recording Instrument Co. Ltd., where all the delicate instruments necessary to the functioning of an aeroplane are constructed, such as air-speed indicators, altimeters, pressure gauges, thermometers, cross-levels, and more besides, such as revolution indicators.

This firm is now being placed on the approved list of the Air Ministry, but Mr. Norman Reid, the firm's managing director, rather regrets the passing of the old régime, whereby all instruments went to Kidbrooke for Air Ministry testing. He was glad to have an independent check on the accuracy of his instruments.

Careful analyses made from the inspection reports show that the total rejection figure for all instruments submitted is under 10 per cent. This phenomenally low figure includes both new and re-conditioned instruments.

An interesting sidelight on the value of the Aero-Show is the number of inquiries which have been received by the company from firms on the Continent, and especially in Central Europe, who are anxious to secure the agency for these instruments. Visitors to the Aero Show noticed the Accurate Recording Instrument Co.'s products on various stands and are now sending in their inquiries.

The most enlightened ideas on works' management prevail at the A.R.I.C. works. The employees are all paid in excess of Trade Union rates and by the week. Like all salaried staffs they are paid during holidays and when on sick leave.

In addition there is a simple bonus scheme. Ten per cent. of the net profits certified by the firm's accountants are set aside for division among the staff. Each member receives the same percentage of the bonus as they do of the total wages bill. "*Unto him that hath, shall be given!*"

All of which makes for a happy ship. In spite of the lack of such inducements as a piecework scheme to boost production, a big output is kept up, together with the extremely fine record for accurate workmanship, exemplified by the low percentage of Air Ministry rejections.

Up in the offices are a representative collection of the firm's products, which range from common or bathroom thermometers, commercial pressure-gauges, recording pyrometers, instruments for recording water-levels in distant reservoirs, and instruments for dairy purposes, to the aircraft instruments previously mentioned.

A tour through the works illustrated the value of the solid concrete floor. When one was in the machine-shop, although the machinery was running, no vibration was noticeable In this shop is the usual range of equipment, though of the light type, specially suited for instrument work. One watched a man busily engraving dials for air-speed indicators and cutting the figures exactly twelve "thous." deep. The firm do all their own enamelling and one was shown the up-to-date plant where this is done.

The *sanctum sanctorum* is a small enclosed space where the vapour-tension thermometers are filled. This process is secret, and only three persons in the A.R.I.C. works know it. One other firm only in this country knows the process.

One saw the smallest hole drilled in brass that one has ever seen, which was only two-thousandths of an inch in diameter, and so nearly imperceptible that only the evidence of a specially ground piece of wire pushed through it convinced one of the hole's "holiness." The man who drilled the hole and made the drill to do it has been at the trade thirty-five years and is an expert on altimeters. He delights in repairing the fine chain used in these instruments, the pins and links are so tiny that an ordinary person fails to distinguish them.

Revolution indicators are marked-off by means of a Stroboscope, a devilish instrument guaranteed to produce D.T.'s after a dry ginger.

The ingredients of the apparatus are a tuning-fork, a neon light and a revolving disc with funny patterns. On the word "Go!" the disc is started up and the neon light is switched on. The tuning-fork, which is electrically vibrated, acts as a make-and-break for the neon light. Thus one obtains a flickering light of known frequency. The effect of this occulting (or flickering) light on the rotating disc is to produce various patterns which appear stationary.

Each pattern appears stationary at some special rate of revolution and, as the revolution indicator is directly coupled to the motor running the disc, it is possible to mark off the dial from the setting of its pointer when the disc indicates some known speed.

One was shown various instruments on test and incidentally the effect of temperature-variation on calibration tests. An air-speed indicator was put under pressure and at once the needle registered the correct speed. By placing the hand on the back of the instrument where its warmth expanded the air inside it was possible to make the needle to register another 4 m.p.h.

Among other testing equipment is a refrigerator which will produce 52° F. of frost. It is used for testing thermometers at low temperatures. One compared the happy situation of people in this factory by the riverside with its own ice-plant, with those in Olympia during the heat-wave.

In connection with vapour-tension thermometers, which are a speciality of the firm, a device is being developed for controlling the temperature of the lubricant in internal combustion engines, whether applied to cars or aircraft. The device is simple and can be adapted to any class of engine,—which probably accounts for the interest shown in the scheme by manufacturers.

Another cunning gadget now in development at the A.R.I.C. works is one for controlling the temperature of the water in water-cooled engines. Again use is made of the vapour-tension thermometer in connection with a mechanical device which controls the water-flow through the system.—T. J.

SOMETHING ABOUT PICKLING.

[*Metal Pickling: A short treatise.* By E. E. Wynn. Published by Charles Sener Ltd., and obtainable from The Aeroplane Book Dept., Cannon House, Pilgrim Street, E.C.4, at 2s. 6d.]

Pickling, which is the expression usually applied to the method of cleaning metal surfaces by immersion in some acid solution, has been rather ignored. One does not see much published about this subject, and for this reason one is glad to have read an excellent little treatise by Mr. E. E. Wynn.

This small book is written clearly and in a simple non-technical fashion so that anybody interested may easily understand the writer. It is well worth the attention of all who are connected with the problem of pickling material in aircraft works, especially as pickling offers an alternative to sand-blasting.

In the introduction the book states quite definitely that although ferrous and non-ferrous metals are treated by various processes of pickling, the book will confine itself to the treatment of Iron and Steels.

When iron or steel is heated and allowed to cool in the atmosphere or in the presence of oxygen, a scale of oxide is formed. Such a scale must be removed before the metal can be cold-rolled, cold-drawn or put through other manufacturing processes.

The object of pickling is to remove this scale. The scale is really forced away from the metal by the evolution of hydrogen gas, which results from the attack on the metal by the acid. The scale being porous allows the acid to reach the metal beneath.

Apart from pickling sand-castings or stainless steels which call for special acids and special treatment, sulphuric or hydrochloric acids are generally used. The former is popularly known as vitriol and the latter as muriatic acid. Vitriol is used hot and muriatic acid cold.

In the portion headed *Wires and Tubes*, the author emphasises the importance of a good drying oven, this not only dries the work but helps to drive out the hydrogen from the pores of the metal. The presence of this gas causes *acid brittleness* which results in overheating and the cutting of dies. When tubes are being pickled they should frequently be moved so that the used acid inside them may be replaced by fresh.

Sections devoted to *sheet pickling* for tinplate and galvanising discuss the troubles generally met with in these processes and discusses means for overcoming them.

If sand castings are going to be cleaned by pickling, hydrofluoric acid must be used, as silica, which is the chief constituent of sand, is indissoluble in either sulphuric or hydrochloric acids.

Stainless steels call for individual treatment. Generally speaking two baths must be used, one containing hot sulphuric acid and the other a 15 to 20 per cent. solution of cold nitric acid. In extreme cases a treatment of caustic soda after the usual pickling may prove advantageous.

Substances known as *Inhibitors* are now on the market and have the advantage of limiting the action of the acid to the removal of scale alone. They also have the advantage of restricting the formation of the unpleasant fumes which arise from the use of hydrochloric acid.

The book closes with a summary of equipment and deals with the question of tanks. The writer only mentions tanks built of stone slabs or of wood. The latter are internally lined with a special pitch or lead. No reference is made to tanks of non-corrosive metal. One feels that gentlemen prefer pitch-lined wood tanks.—T. J.

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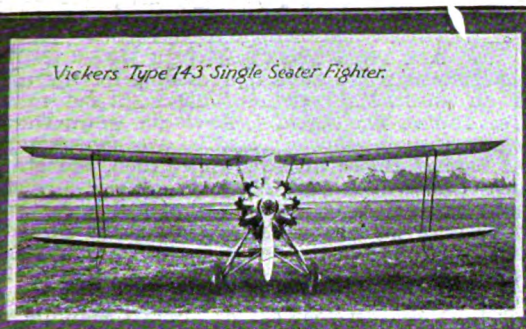
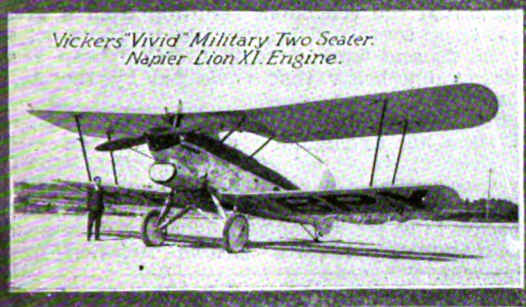
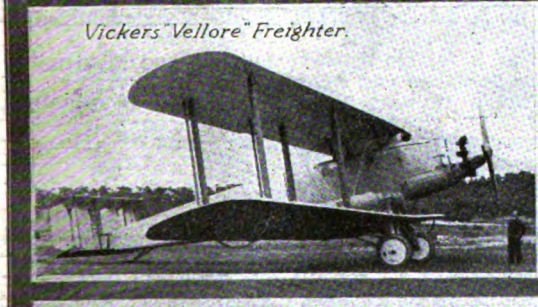

Vickers "Type 143" Single Seater Fighter.

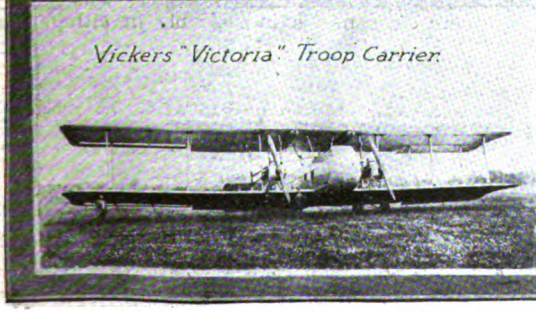
Vickers "Vespa" Two Seater for Military Reconnaissance.


Vickers "Vivid" Military Two Seater. Napier Lion XI. Engine.

Vickers "Vivid" Seaplane.

Vickers "Vixen" (Condor) Military Two Seater.


Vickers "Vellore" Freighter.


Vickers "Victoria" Troop Carrier.

Vickers "Virginia X" Bomber.

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COMMERCIAL AERONAUTICS.

HIGH-SPEED MAIL-CARRYING.

On Monday, Aug. 25, an experimental flight was made between Galway, London and Berlin with mails from the North German Lloyd *Karlsruhe*. The ship *en route* from New York to Cherbourg landed mails for London and Berlin at Galway. These were taken to Oranmore Aerodrome where a Vickers Vixen (Rolls-Royce F) was waiting.

The pilots, Col. Charles Russell (late of the Irish Free State Air Force) and Mr. J. Summers of Vickers Ltd., started for Croydon in thick weather at 07.30 hrs. After stops at Baldonnel and Sealand they reached Croydon at 11.38 hrs.

Mr. Summers said that the speed of the machine according to the air-speed indicator was 165 m.p.h.

The mails for Berlin were transferred to a Luft Hansa machine which reached Berlin at 18.30 hrs.

Thus our Post Office was enabled to deliver mails for London 36 hours earlier than would otherwise have been possible. Whether they were so delivered is another matter. Probably they were not.

The Berlin mails were delivered 60 hours earlier than they would have been otherwise.

The Vixen after taking on mails from Berlin and London returned to Galway to meet an outward bound ship.

The flight was made on behalf of Irish Airways Ltd. and the machine was loaned by Vickers (Aviation) Ltd. Irish Airways Ltd. has been formed to study the question of running such a service from Galway to London.

The outstanding incident of the experiment is the use of a machine with a speed in excess of 150 m.p.h. for mail work. This is an indication of what air mail speeds should be.

[That such a demonstration should be given to us at the instigation of an Irishman is typical of our history. Ireland does these things and then forgets them while it lapses into barbarism. Ireland had the first electric railway (Portrush) and the first electrically-lighted town (Carlow) in the British Empire, and probably in Europe, and was about the last country in the World to use electric power, light or telephones as a habit. Probably we shall be flying a 150 m.p.h. air mail to Australia before Ireland has a regular commercial air service.—C. G. G.]

THE I.A.T.A. AT THE HAGUE.

The 22nd session of the International Air Traffic Association opened at The Hague on Aug. 26. The occasion was the 10th anniversary of the Association's formation.

All the European Air Lines were represented. The British Director of Civil Aviation, Sir Sefton Brancker, was with the contingent from this country.

AIR TRANSPORT IN THE WEST INDIES.

Negotiations are at last proceeding for the establishment of an all-British system of air transport in the British West Indies. The question of aviation in the Caribbean area was very thoroughly explored by a committee appointed by Sir Samuel Hoare in 1926. Since then, though its findings have commended themselves in general principle to the West Indies Conference, no practical progress had been made until quite recently, as neither the Imperial nor the Colonial Governments were prepared to contribute the heavy subsidies which their adoption would have involved.

Now, however, the situation has changed, for so great has been the development of aircraft manufacture and so substantial the economies resulting from a greater output that those concerned believe that air transport services can be set up and maintained in the Caribbean area at a cost considerably below that envisaged by the Air Transport Committee.

Moreover, the attitude of the Government towards Civil Aviation has undergone a welcome change. Hitherto the Department concerned with it has suffered from the appropriation available being altogether inadequate for the encouragement of aviation in outlying parts of the Empire. This now appears to be recognised and signs of a more generous policy being adopted towards British Aviation are becoming apparent.

The Government at last realise that Great Britain, handicapped by the War, is at least three or four years behind the United States in the development of air transport,—at any rate in the New World, and especially in Central and South America, where at least three American companies are blazing the trail.

Consequently the moment is opportune for grasping the problem of air transport in the British West Indies and indeed, the statement may be made that if it is not grasped immediately, it may be too late. Therefore there is satisfaction in learning that a British Company entitled Atlantic Airways Ltd. has recently been formed to serve Western Atlantic Colonies.

The Aeroplane understands that this firm has secured the confidence and sympathy of the Air Ministry and has what is equally important the promise of substantial backing by business firms of high standing in Canada and in this country. Its ultimate aim is to provide an all-British service of seaplanes to carry passengers, freight, and mails between Canada and South America, calling at the principal West Indian islands and British Guiana on the way.

The sooner this scheme materialises the better it will be for British prestige, which must suffer in the New World unless something is done, and done soon.

The proposals of Atlantic Airways Limited fall under three headings namely:—

(a) A service based on Trinidad and operating between Port of Spain, British Guiana, Barbados and Venezuela and including internal services in British Guiana.

(b) A service between Trinidad and Jamaica by way of the Islands.

(c) A service between Jamaica and Montreal by way of the Bahamas and Bermuda.

These proposals have been referred by Lord Thomson to

A HIGH-SPEED MAIL TRIP.—Mr. Summers of Vickers Ltd. and Col. Russell (Irish Free State) arriving at Croydon from Galway with German mails, having done the journey in four hours in the Vickers Vixen (Rolls-Royce F.). The distance is only 430 miles, but there were two hospitable stopping places.

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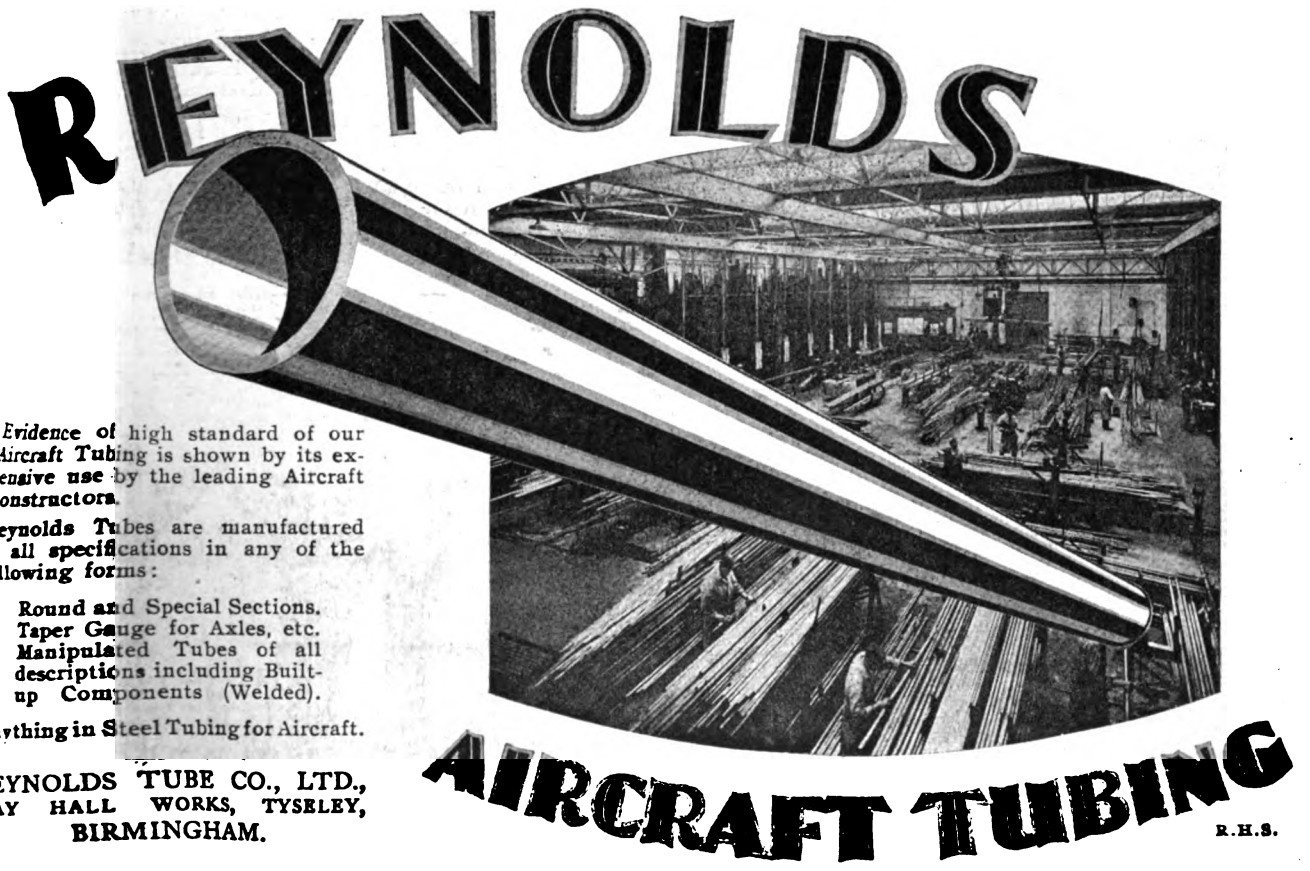

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the Civil Aviation Consultative Committee which he has set up under the Chairmanship of Mr. S. Montague, Under-Secretary of State for Air, and all will hope that the result of their examination by that body may prove satisfactory.

When the State makes known how far it is prepared to support the enterprise no doubt arrangements will be made to despatch a mission to the West Indies without delay to discuss the proposals with the local Governments concerned.

AIR TRANSPORT IN THE EAST INDIES.

A Singapore report states that the results of the Royal Netherlands-Indian Air Lines have surpassed the most optimistic expectations during the first six months of this year. Passengers of every nationality and of all ages, and cargo ranging from Sarongs to radio lamps, have been carried on the regular routes. During this period (January to July, 1929), 1,093 flights were made, making 1,307 flying hours. Of these 869 were flights on the regular line and the rest were extra and demonstration flights. The total number of passengers carried was 6,577 or just over 1,000 per month.

The Company expect to open the Batavia—Sourabaya line in the near future and work in the Darmo flying field is well in hand. The Batavia—Singapore—Medan line is now in its preliminary stage, and permission has been obtained to use the Seletar flying ground in Singapore.

Intermediate emergency landing grounds on Dutch East Indian territory are now in course of construction and the Company expect to open a service between Batavia and Palembang shortly.

LINKING UP WITH PERSIA.

An inconsiderable *Reuter* paragraph stowed away in a corner in *The Times* of August 24 discloses quite a notable fact concerning air transport. The Junkers air line operating in Persia now comes through to Baghdad and is timed to connect with the England—India service of Imperial Airways. The result is that mails can now be sent to Teheran by that route with a great saving of time.

As a matter of fact the Junkers line has been coming through to Baghdad for quite a considerable time, and the Junkers personnel work most amicably with our people at Baghdad.

One slight hitch in the service, from the users' point of view, is that it cannot be used for one of the purposes for which it should be most useful, namely the carriage of commercial samples. The Junkers line is not allowed to carry as freight any parcel under 6 lbs. in weight, and is not allowed to carry as a letter anything over the letter limit of a few ounces. All packages between such limits, which would include nearly all samples, have to go by the regular Persian parcel post which is carried by car to Teheran, and takes two or three weeks over the journey which is covered by the Junkers air line in a couple of days.

A NOTE ON SEAPLANES.

A reader in the Far East who has had much to do with operating seaplanes writes as follows:—

Close acquaintance with seaplanes has convinced me that seaplanes call for special material in their construction. It is all very well for aircraft manufacturers to merely stick a pair of floats on what would otherwise be a perfectly good landplane, and to say—"Well, here you are, here is a really serviceable seaplane." But put to the acid test one soon discovers where the ordinary land plane fails in its masquerade as a good sea-worthy craft.

The salinity of sea-water, especially in this part of the globe, soon shows its effect upon the various fittings and washers, etc., which are, in many cases, made of dural or aluminium. Paint only stays the arch-enemy, Corrosion, for a time,—especially with aluminium. Like old soldiers, it never dies, simply fades away. Particularly would one advise manufacturers to refrain from putting aluminium or dural packing blocks in interplane strut ends.

One would like to add that the anodically-treated dural floats resist corrosion admirably, provided, always, of course, that they are carefully washed with fresh water after each sea-water immersion.

Given fair conditions, the life of a land-plane can be very long, but replace the undercarriage with floats, make no other modifications, send your poor little landplane to sea, and he (or she) deteriorates much quicker than under his (or her) natural conditions.

THE WAR IN THE AIR.

On Aug. 24, two mail-carrying seaplanes alighted in New York. One had been catapulted from the French liner *Ile de France* and one from the German liner *Bremen*.

The French aeroplane took off at the Ambrose lightship, when the liner was 30 miles out. The German, a Heinkel monoplane, was launched 200 miles from shore. The result was that the mail from each machine had been distributed long before the liner had docked.

The *Bremen* is a new-comer in this game, as the *Ile de France* made successful—and unsuccessful—trials in catapulting mail-carriers in August, 1928.

The *Ile de France* on the return voyage launched by a catapult a mail-carrying seaplane on Aug. 26 when the liner was off the Scilly Isles. The machine alighted safely at Le Havre. The mail was distributed in Paris the following day, that is to say, 24 hours earlier than it would have been by the normal delivery. The machine used was a C.A.M.S. flying-boat with a Lorraine-Dietrich motor.

THE CANADIAN TRANS-CONTINENTAL MAIL.

Great Western Airways, Ltd., of Calgary, Commercial Airways, Ltd., of Edmonton, and Commercial Airways, Ltd., of Regina, have united to make a bid for the Trans-Canada air mail contract.

The new organisation will be known as Great Western Airways, but the companies forming the organisation will not lose their identity as far as private commercial works are concerned. The facilities of each would be available for carrying mails, but they would continue their own individual businesses.

The organisation will be under the management of Sq. Ldr. Tudhope, R.C.A.F., who is at present Supervisor of Airports and Airways for the Dominion Government.

Mr. H. A. Oaks, who was original organiser and managing director of Western Canada Airways, and is at present managing director of Northern Aerial Minerals Exploration, Ltd., a $5,000,000 aeroplane exploration company operating in Northern Canada, is on the provisional Board of Directors, which includes representatives of the three companies concerned. Arrangements have been made to finance the Dominion mail contract to the extent of $1,000,000 if it is awarded to the company.

A COMMERCIAL LIGHT AEROPLANE.—The Avian (Gipsy engine) used by Mr. J. C. Cantrill of Pinchin, Johnson and Co. Ltd. for business tours.

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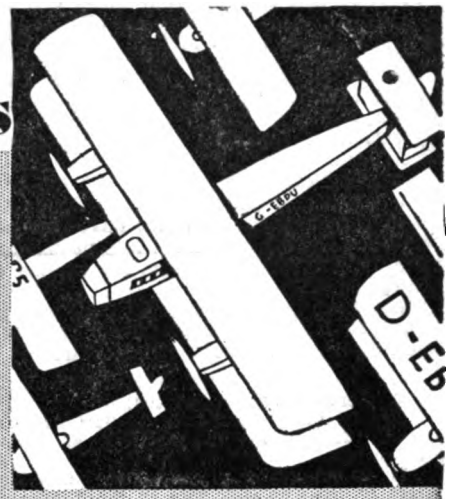

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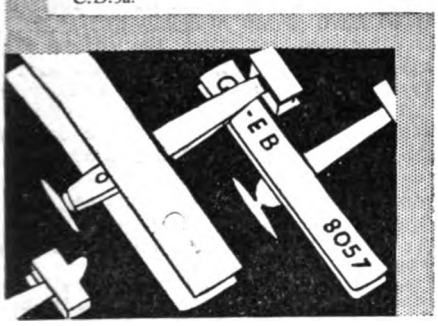

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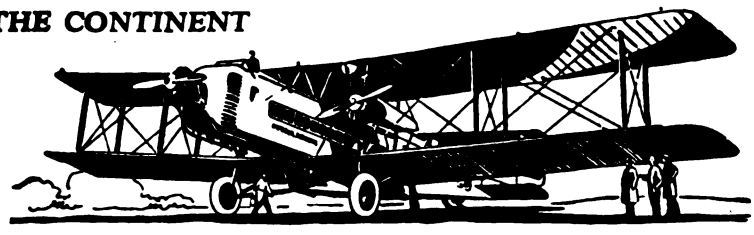

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AN AIR UNION NOTE.

On and from Sept. 1 the afternoon "Golden Ray" service at 17.30 hrs. to and from Paris will be cancelled.

AN AMERICAN VISITOR.

Mr. John A. Love, Chairman of Allied Aviation Industries, Inc., of St. Louis, Mo., is due in London at the end of this week with a view to investigating the British Aircraft industry. Mr. Love is a director of the Fokker Aircraft Corporation of America and the Universal Aviation Corporation, and he is president of Love, Bryan and Co., Investment Bankers, of St. Louis. In his group of companies in the States is included the Mono Aircraft Corporation, which makes the well-known Monocoupe light aeroplane, and the Lambert Aircraft Engine Corporation, which makes the Lambert engine, formerly known as the Velie Motors Corporation.

Mr. Love has been touring Europe to see what Continental aircraft factories can produce, and will in due course be getting in touch with British aircraft firms.

LET OTHERS SAY IT.

A Service reader writes:—

Sir,—In the current issue of The Aeroplane, page 454, you remark "The result is that practically all these units are now ordinary subscribers."

Is it not rather modest? As an ex-R.A.F. officer I would be very surprised to walk into an R.A.F. Officers' Mess and not find a copy of The Aeroplane there, unless some member had thought it worth while to incur the appropriate fine (removing papers from the Mess) so that he might read it in bed.

In Messes abroad where the papers arrive in a bunch with the weekly mail, there is always a scramble to get hold of The Aeroplane first,—only the more sedate married officers preferring to wait, and console themselves with glancing at *La Vie* ——.

In my experience (I speak as an ex-Mess Secretary who used to keep in close touch with neighbouring Mess Secretaries) the free issue of The Aeroplane rarely got beyond the vicious circle of the C.O.'s, the Adjutant's and Headquarters Offices, and though I have known on more than one occasion the question of what papers should be purchased by the Mess to come up for revision at a Mess Meeting, it was always taken for granted that The Aeroplane would be on the list.

Personally, I have read every copy (with the exception of that dated July 10, 1929, which Messrs. W. H. Smith and Sons, Folkestone, assured me was out of print) through from cover to cover ever since I first became interested in aviation.

STAG LANE NOTES.

The Gipsy Moth Amphibian was seen at Stag Lane for the first time during the week. It was flown from Rochester by Mr. Lankester Parker and aroused much interest. Mr. Broad and later Mr. Pike flew the machine and made several landings on the Welsh Harp.

This particular machine is the property of Mr. J. Scott-Taggart and was described and illustrated in The Aeroplane when it was first tested. From the enthusiasm it has aroused many more of the type are likely to be seen before long.

The Gipsy-Moth with the sealed Gipsy engine which completed five-hundred hours trouble-free running, and was one of the exhibits on the D.H. stand at the Aero Show, is now back on service again. Another fifty hours have been added to the total and there is no indication of the end of the test coming just yet.

A week or two ago one of our daily papers published a letter from a correspondent who desired to know a British engine that could bear comparison with the American that put up an endurance record of four hundred and twenty hours. The Gipsy would seem to be a good answer as one of the many.

Another D.H.66 Hercules (three Jupiters) is nearing completion for delivery to Imperial Airways. It has a new type of coupé top for the pilot's cockpit but is otherwise similar to those already in use.

Among the many Moths delivered during the week were a number for National Flying Services Ltd. and one for Mr. Gordon Selfridge, Jnr., who has recently learned to fly at the School.

Major Sir Henry Segrave visited the aerodrome on Friday and flew a Gipsy Moth.

Stag Lane presented a rather unusual sight on Saturday. Except for the activities of the London Club it was more or less deserted. This was the occasion of the Annual Works Outing when the whole of the staff went down to the sea, for the day. Thirty motor coaches were required for the job.—C. A. S.

CROYDON NOTES.

The size of the Indian mail seems to grow, steadily, week by week. On Saturday a mail consisting of over thirty thousand letters was despatched. In addition there were five passengers for various destinations along the route.

The previous week's mail was joined at Naples by a lady passenger who made the journey from London to Cairo in three days. She left Croydon on Sunday in a D.H.50, piloted by Mr. Olley, and arrived at Naples in time to catch the Calcutta on Monday evening.

Another new Argosy was flying on test on Monday afternoon. This is the fourth of the new series and makes up the number of the type to seven. Probably for the first time on record four Argosies were standing together in front of the control tower on Monday afternoon.

A very interesting light aeroplane was seen in the air during the early part of the week. This was the side-by-side two-seat biplane, a product of Surrey Flying Services. It was tested by Col. Henderson and appeared to perform very satisfactorily.

In addition to the Vickers Vixen carrying the American mails, Monday also saw the arrival of Mr. Bentley from South Africa by way of Berlin. His Moth has now done the journey between London and South Africa four times and would appear to have plenty of hours left still.

A newcomer to commercial aviation, British Air Lines, whose headquarters are at Croydon, have begun operation by taking delivery of their first machine, a Fokker FIIB (Siddeley Puma engine). The company are specialising taxi and special charter work and will shortly have a fleet of modern aircraft available for hire at any time, day and night.—C. A. S.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 19; Monday, 56; Tuesday, 44; Wednesday 46; Thursday, 45; Friday, 41; Saturday, 48.

Imperial Airways Ltd.:
London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich London—Ostend—Brussels—Cologne and return: Machines 103, passengers 962, freight 41¼ tons. India Route: Inward, passengers 3 mail 740 lbs.; outwards: passengers 1, mail 624 lbs.

Air Union:
Paris—London and return: Machines 97, passengers 470, freigh 34¾ tons.

K.L.M.:
Amsterdam—Rotterdam—London and return: Machines 45, passengers 344, freight 17¼ tons.

Sabena:
Brussels—London and return: Machines 12, passengers 79, freigh 3¼ tons.

Deutsche Luft Hansa A.G.:
Amsterdam—London and return: Machines 26, passengers 62, freigh 7¼ tons.

Miscellaneous:
British machines 15, passengers 14.
Foreign machines 1, passengers 0.
Total number of trips by British machines 118, carrying 976 passengers. Foreign machines, 181, carrying 955 passengers.

COMPARATIVE FIGURES.

Week ending Aug. 24:
Machines, 299; Passengers, 1,931; Crews, 661; Total personnel, 2,59
Corresponding week, 1928:
Machines, 265; Passengers, 1,809; Crews, 511; Total personnel, 2,32
Corresponding week, 1927:
Machines, 203; Passengers, 1,089; Crews, 373; Total personnel, 1,46
Corresponding week, 1926:
Machines, 175; Passengers, 960; Crews, 214; Total personnel, 1,17
Corresponding week, 1925:
Machines, 160; Passengers, 968; Crews, 243; Total personnel, 1,21
Corresponding week, 1924:
Machines, 137; Passengers, 669; Crews, 165; Total personnel, 834.
Corresponding week, 1923:
Machines, 121; Passengers, 578; Crews, 194; Total personnel, 772.
Corresponding week, 1922:
Machines, 159; Passengers, 506; Crews, 272; Total personnel, 778.
Corresponding week, 1921:
Machines, 103; Passengers, 427; Crews, 129; Total personnel, 556.
Corresponding week, 1920:
Machines, 104; Passengers, 219; Crews, 129; Total personnel, 348.
Corresponding week, 1919:
Machines, 16; Passengers, 54; Crews, 18; Total personnel, 172.

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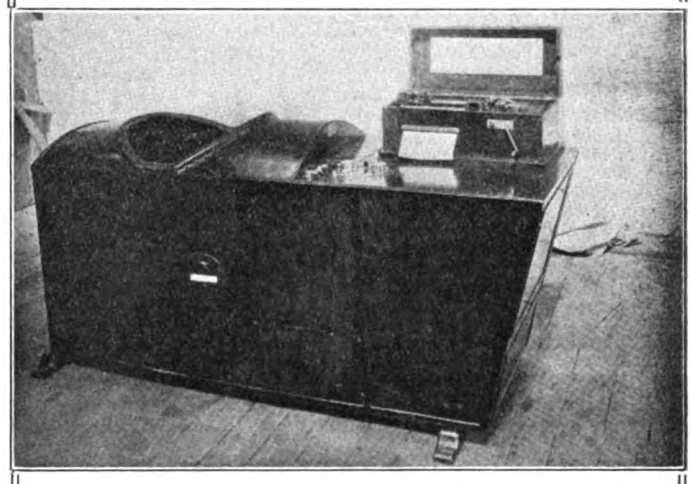

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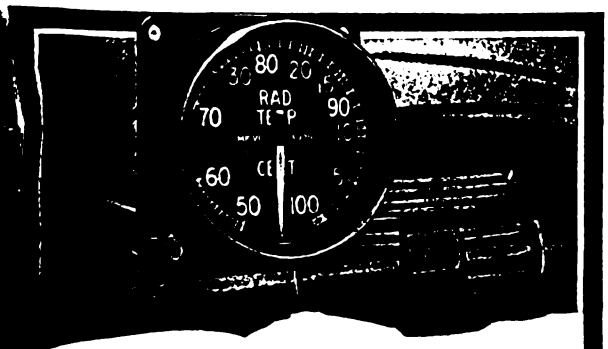

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ONCE AGAIN.

At 13.30 hrs. on Aug. 26 Mr. R. R. Bentley landed at Croydon Airport in his Moth, from South Africa, this being the fourth time that he has covered the distance, twice in each direction, in his Moth.

He left Johannesburg on July 10, with Mr. E. B. Filsinger, an American business man, as passenger. Mr. Filsinger had chartered the machine to fly him to Berlin.

They flew by way of Bulawayo, Victoria Falls, Salisbury, Beira, Broken Hill, Tabora, Nairobi, Mongalla, Khartum, Atbara, Luxor, Cairo, Athens, Constantinople, Venice, Vienna, Nuremburg, Dresden, and Berlin, arriving at the last-mentioned place on Aug. 22. The distance from Johannesburg to Berlin was covered in 27 stages in 106 flying hours.

AIR MAILS IN SOUTH AFRICA.

The inauguration of *The Union Air Mail* Service took place on Aug. 26. *The Times* report states that Major Miller, who is well known as an apostle of airmindedness, left Cape Town on that date with five bags of mails, from the *s.s. Saxon.*

When Capt. Miller arrived at Port Elizabeth the mails for East London and Durban were transferred to two waiting machines, which then started for their respective destinations. Other machines carried mails to Bloemfontein and Johannesburg. The former was 65 mins. late owing to head winds.

ONE VIEW OF "THE AEROPLANE."

An unwilling subscriber to THE AEROPLANE writes:—

It is a sort of moral mosquito. I don't want to read it, and, as you know, I nearly always disagree with your opinions, but I find that if I don't a sense of growing irritation comes over me, as I am, in the absence of your journal, unable to reply to others who may have read it. As you know, it is seldom that I find myself unable to reply to anything.

VICKERS LTD. AND THE R.100.

In view of the practical completion of the Airship R.100, commonly known as the Burney Airship, at Howden there is interest in noting that this ship has been constructed by the Airship Guarantee Company, of which Vickers Ltd. own the whole of the cash capital. Referring to this matter at the Annual General Meeting of the Vickers Company in March last, the Chairman, General the Hon. Sir Herbert A. Lawrence, G.C.B., said:—

It may not be inopportune if I mention that the Vickers group of companies accept contracts for work of national importance of an experimental nature on which losses are incurred, as, for example, the giant airship R.100, now being constructed by the Airship Guarantee Company—one of our subsidiary companies. This contract was accepted in 1924, and it has been necessary to provide a considerable sum to cover the estimated loss on completion, owing to the fact that the airship has taken much longer to erect than was originally anticipated. A similar airship is being constructed by the Air Ministry at Cardington, the whole cost of which falls on the taxpayer, but Vickers, as private contractors, have to shoulder the loss themselves.

The Vickers Company also own the capital of Vickers (Aviation) Limited who in turn are the sole owners of the Supermarine Company at Southampton, who have been responsible for the construction of the Supermarine-Rolls-Royce S.6 for the forthcoming Schneider Trophy Contest.

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PERSONAL NOTICES.

DEATHS.

CREED.—On Aug. 25, at the R.A.F. Station Sick Quarters, Heliopolis, as the result of a flying accident on Aug. 25, L-AC. Mervyn Henry Creed, R.A.F.

LANGAN.—On Aug. 24, at Heliopolis, as the result of a flying accident, L./A.C. Charles Ernest Langan, R.A.F.

MELVILLE.—On Aug. 24, at Heliopolis, as the result of a flying accident, Sjt. John Melville, R.A.F.

STAFFORD.—On Aug. 16, at Camp Borden, Ontario, as the result of a flying accident, Flg. Off. Stafford, Royal Canadian Air Force.

WILSON.—On Aug. 24, at Heliopolis, as the result of a flying accident, John Wilson, Plt. Off., R.A.F.

Mr. Wilson joined the R.A.F. with a short-service commission in May, 1928, and after a course of flying training at No. 4 Flying Training School, Abu Sueil, Egypt, was posted to No. 216 (Bomber) Squadron, Heliopolis.

MARRIAGE.

HILBORNE—WHEATLAND.—On Aug. 19, at Harrow, Frederick Wilfred Hilborne, Chaplain, R.A.F., youngest son of Mr. and Mrs. Hilborne, Bexhill, to Irene May, elder daughter of Mr. and Mrs. Russell Wheatland, of Harrow.

FORTHCOMING MARRIAGE.

DAVID—MACKENZIE.—The engagement is announced between Flt. Lt. Hugh Markham David, R.A.F., second son of Lieut.-Col. M. David, D.S.O., and Mrs. David, of Warwick Mansions, Cromwell Crescent, S.W.7, and Geraldine Fassefern, youngest daughter of the late Rev. Angus Cameron Mackenzie, of Dundee, and Mrs. Cameron Mackenzie, of St. Petersburgh Place, W.2.

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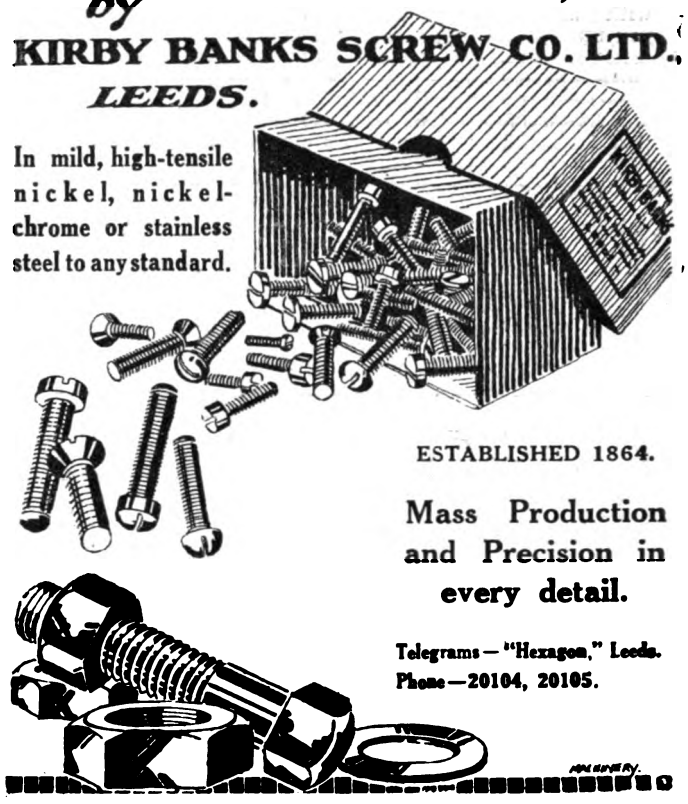

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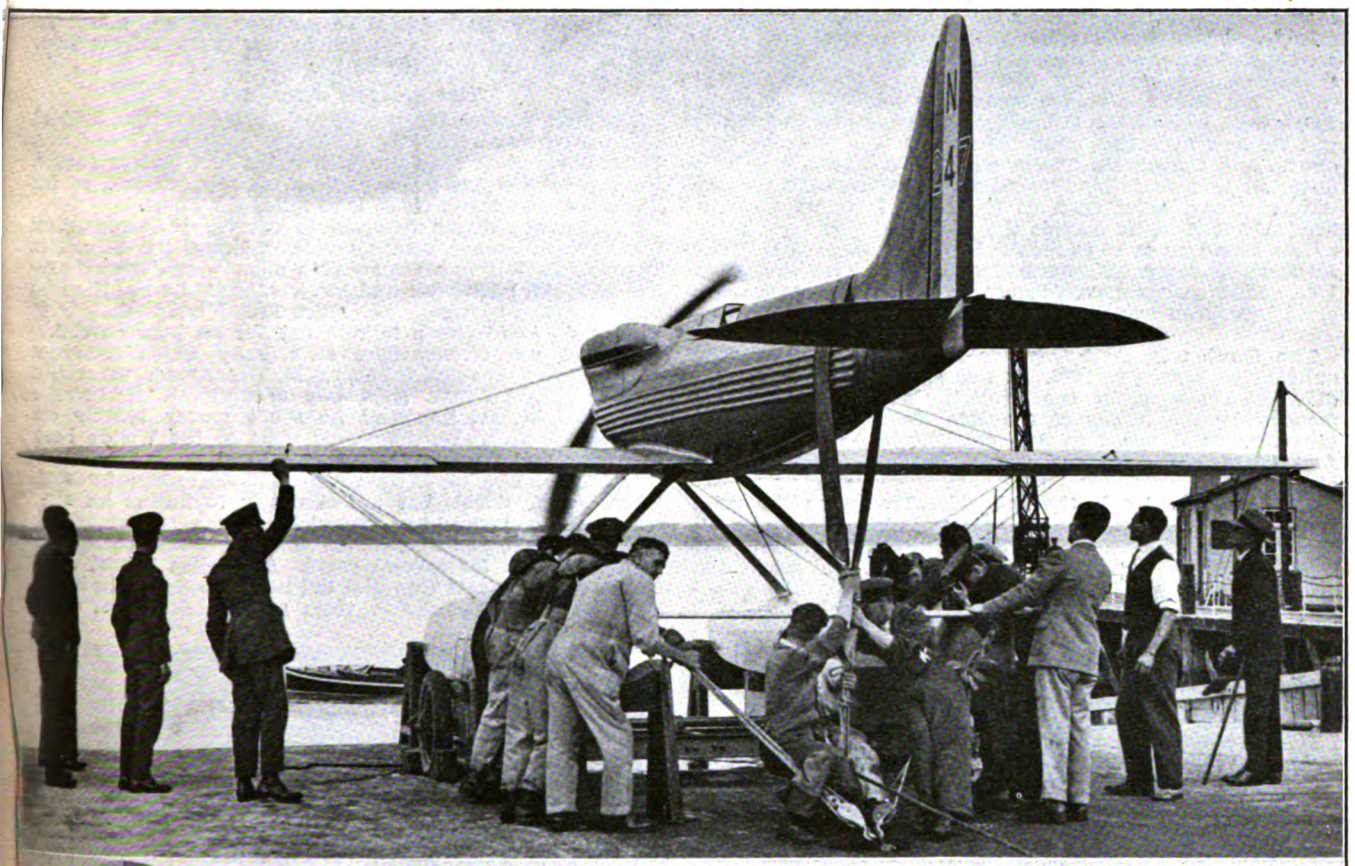
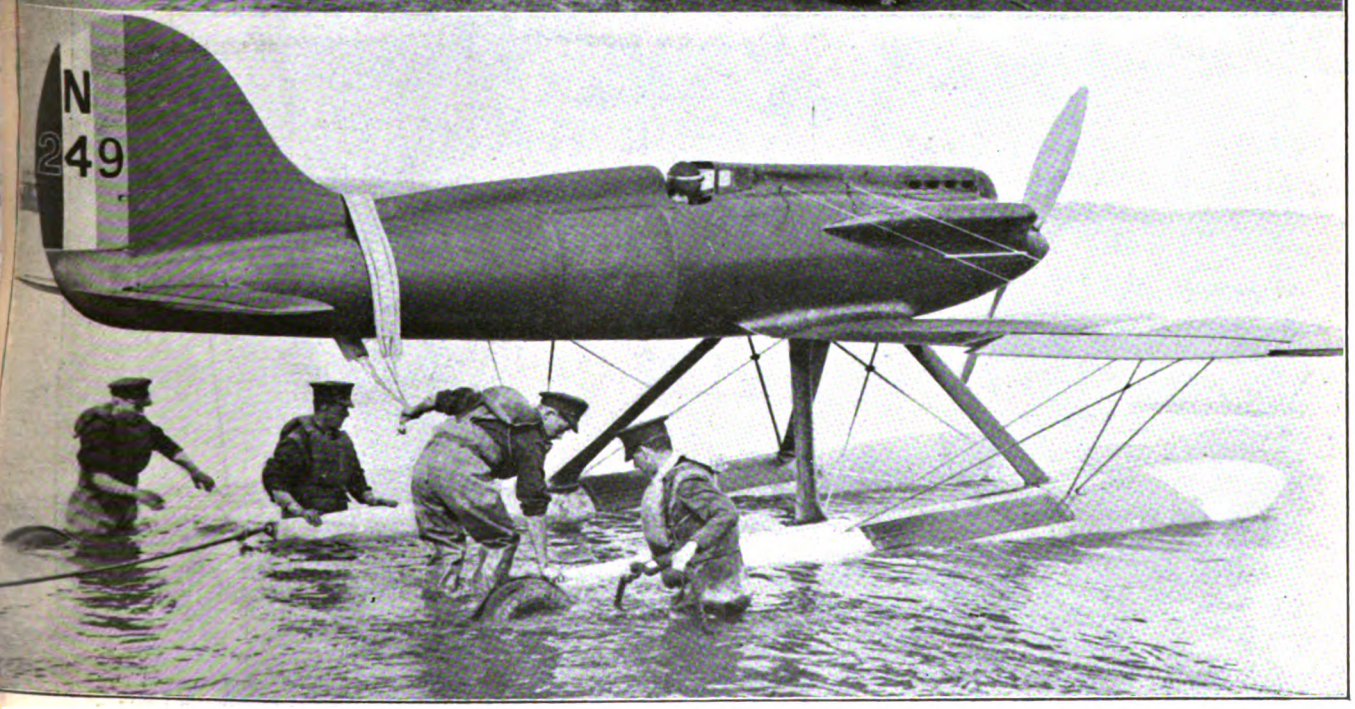
(Genesis, xxiv. 12.)





TWO OF OUR DEFENDERS.—Above, the Supermarine-Rolls-Royce 6, and, below, the Gloster-Napier VI.

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ON THE HISTORY OF THE SCHNEIDER CONTEST.

The Schneider Trophy Contest is generally called the Schneider Cup Race because it is not a race, in that the competing machines do not race against one another but fly against Time, and the prize is not a Cup but a group of statuary which would certainly not hold any liquid.

The Trophy was presented to the *Fédération Aéronautique Internationale,* the body which governs international air sport, by M. Jacques Schneider, at the Gordon Bennett Banquet held by the Aero Club de France on December 5, 1912. The Trophy itself was at that time valued at £1,000, and with it M. Schneider presented prize-money amounting to £1,000 for each of the three first contests.

M. Jacques Schneider was the son of the head of the great Schneider Gun Works at Creusot. He died in poverty in France last year, at a time when England, France, Italy and America between them must have been spending well over a million pounds in the hope of winning his Trophy.

In presenting the Trophy M. Schneider dedicated it to a competition for seaplanes, his idea being to encourage the development of sea-going aircraft. Part of the original rules were that the course was to be laid over open sea. Those who look at the Schneider speed machines of to-day will see how little they resemble any possible sea-going aircraft. And the phrase "*plein mer,*" or open sea, has been distorted to include land-locked water such as Chesapeake Bay, sheltered areas such as the Bay of Naples and the head of the Adriatic outside the Lido, and water protected by an island as is the Solent. So the original title "The Jacques Schneider Maritime Trophy" is something of a joke. Nevertheless, poor Jacques Schneider has conferred a great benefit on aviation.

OUR ONLY CLASSIC CONTEST.

The Gordon Bennett Cup for land machines was won outright by France in 1920. It was succeeded, in somewhat diminished esteem, by the Deutsch Cup presented in his memory by the family of the late Henry Deutsch de la Meurthe. That was also won outright by France in 1922. And there were no more classic contests for land-going aircraft.

There remained only the Schneider Trophy as the prize for a Classic Contest, and on it seems to have descended all the glamour which once surrounded Gordon Bennett Car Races and Gordon Bennett air competitions and everything else of that nature, in that the people of the countries concerned are as interested in a contest they are never likely to see as if they were competing themselves. At kinema theatres the audiences rise and cheer pictures of our Schneider team, as they would a picture of Mr. Snowden—the only outspoken English politician—or the winning crew after the Boat Race. The fact is a curious example of psychological momentum.

For the first time in History, instead of individual sportsmen competing against individual sportsmen for honour and glory, or instead of rich manufacturers competing against rich manufacturers for the consequent advertisement,—which is what always happens in the big motor car races, and what happened in the flying contests for the Gordon Bennett Cup and the Deutsch Cup, the Schneider Trophy has attained the dignity of International Competition between Governments.

In the early competitions aircraft constructors paid the bill. But now the National Exchequers pay, and charge up the cost to Scientific Research or Technical Development. Though this will probably be the last time.

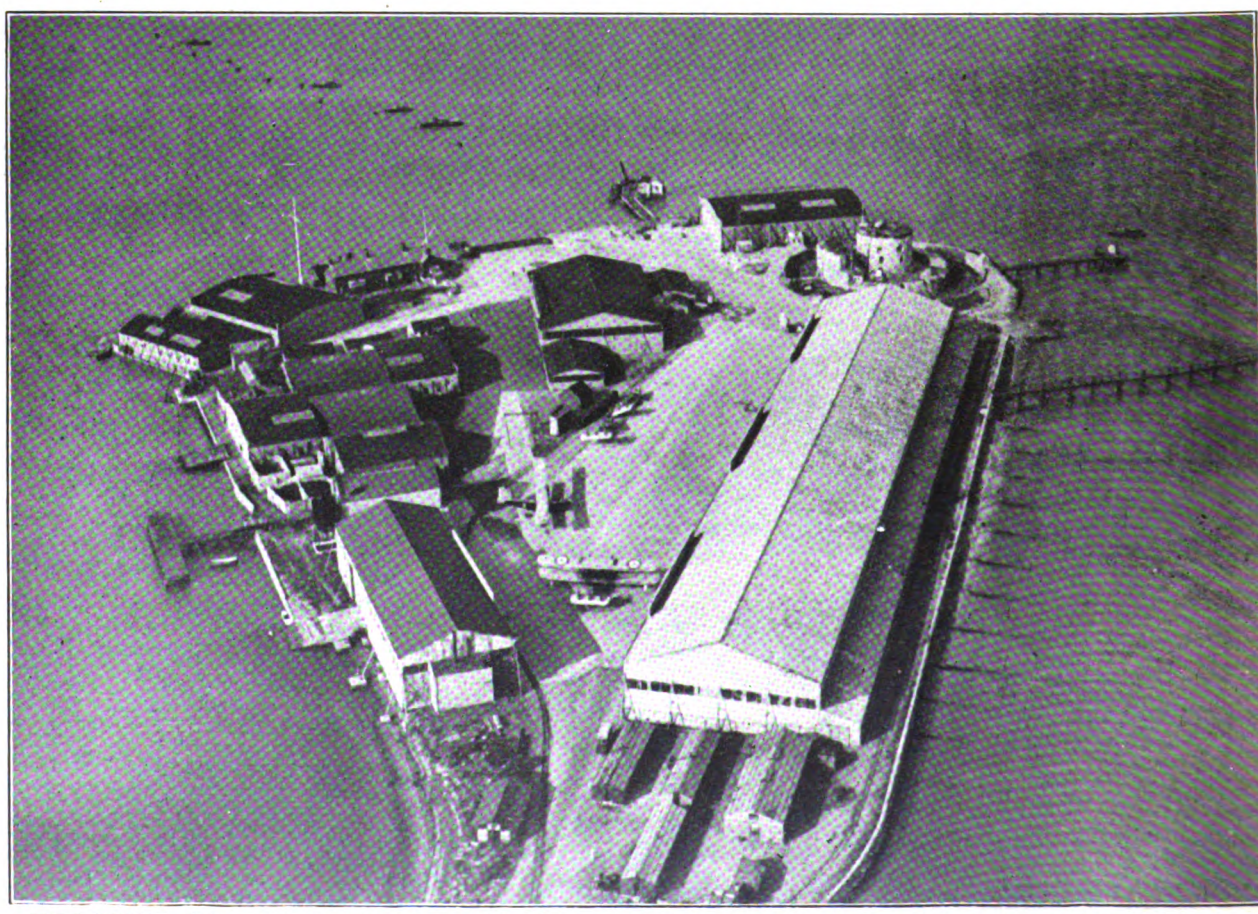
THE FIRST CONTEST—1913.

The first contest for the Schneider Trophy was held at Monaco on April 16, 1913. It was won by M. Prévost in a Deperdussin float seaplane with a 160 h.p. Gnôme engine. He covered 150 sea miles in 3 hr. 48 min. 22 sec., so his speed was 39.4 knots (45.25 land miles per hour).

M. Prévost's name deserves to survive in aeronautical history for another reason besides winning the Schneider Trophy. In 1912 in a Deperdussin monoplane designed conjointly by M. Bêchéreau and Mr. Koolhoven he was the first human being to travel 120 miles in an hour,—that is to say, to do two miles a minute flat for an hour on end.

In this connection there is a story which combines curiously romance and humour. M. Deperdussin was a silk dealer in Lyons in a good way of business. He became fascinated by aviation and he spent money lavishly on building aircraft. He discovered some of the World's best designers and he gave them a free hand.

He had hopes of French Government orders, for war machines no doubt, but unfortunately to finance his aircraft developments, he worked a clever and elaborate swindle on the silk trade with the result that he landed himself in jail for several years. And when Prévost won the Gordon Bennett Cup and did his 120 miles in the hour at Reims, the Deperdussin team sent a telegram of con-



THE SCENE OF ACTION.—The Royal Air Force Station at Calshot on the Solent, where the Schneider Teams are quartered and trials are being held. The long shed on the right houses the competing aircraft, which are launched from the slipway on the right into the Solent, or from that in the background into Southampton Water.—(*R.A.F. Official Photograph, Crown Copyright reserved.*)

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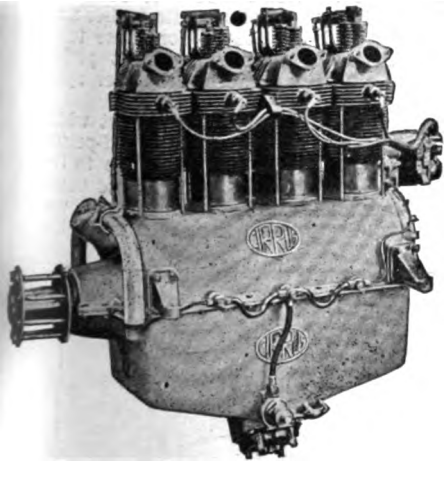

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OUR FIRST WINNER.—Mr. Howard Pixton sitting on the wing of his Sopwith Biplane (Mono-Gnôme).

gratulation to M. Deperdussin "To our good patron in prison."

Later the remains of the Deperdussin company was bought by M. Blériot and was called "*Le Société Pour les Appareils Deperdussin,*" whence comes the name Spad of warlike memory.

THE SECOND CONTEST—1914.

The second competition for the Schneider Trophy was held at Monaco on April 20, 1914, over the same course as the 1913 contest. It was won by Mr. Howard Pixton in a Sopwith float seaplane with a 100 h.p. Monosoupape Gnôme engine. He covered 150 sea miles in 2 hr. 0 min. 16 sec., and his speed was 74.7 knots (86 m.p.h.).

The Sopwith aeroplanes at that time were being built at the expense of Mr. T. O. M. Sopwith, then a well-to-do young sportsman of the kind who so often wastes his substance on slow horses and fast women. But Thomas Octavius Murdoch Sopwith preferred automobile sport. He had fast cars and fast motor-boats, and his engineer in charge of them all was one Fred Sigrist, a Heaven-sent mechanic and humorist.

Naturally flying appealed to them both. Mr. Sopwith bought a Howard Wright monoplane. Then he bought a Howard Wright biplane. Then he bought a Blériot. Then he went to America and put up excellent exhibitions against the crack American pilots of Wrights and Curtisses.

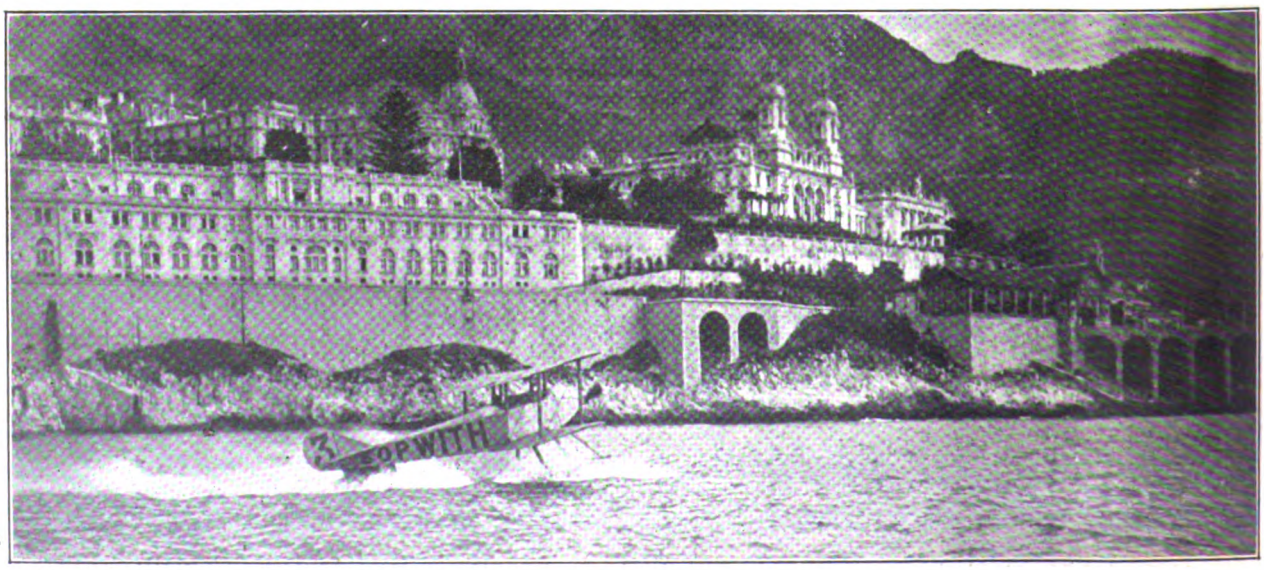
He came back to England somewhere about the end of 1911 and was taken with the idea of becoming a manufacturer. He built one of the first tractor biplanes in this country,—with wings more or less on the principle of the Wright biplanes. And he brought back from America with him a Wright biplane, which he fitted with civilised controls and a decent engine, and on it the famous Harry Hawker learned to fly. They were joined after a while by one Howard Pixton, who had learned to fly on an Avro at Brooklands.

Mr. Sopwith took a skating rink, which still exists, close to Kingston Station, and there he and Sigrist and Hawker proceeded to design aeroplanes by the simple process of drawing the plan view in chalk on the floor of the rink and drawing the elevation on the wall, full size. In 1912 they produced the Sopwith Tabloid, which was the first really small high-speed single-seater. It did somewhere over 80 miles an hour with a 50 h.p. Gnôme,—which really gave about 33 h.p.

From it descended directly the Schneider Sopwith which was the first machine to win the Schneider Trophy for us. And from that descended all the Sopwith Schneiders which were used by the Naval Air Service during the War and the Sopwith Pups used by the R.F.C., and all that long line of Sopwith war machines which did so much to win for us the supremacy of the air.

There was one very remarkable thing about Mr. Pixton's win. The 100 h.p. Monosoupape Gnôme of that day gave a very doubtful 100 h.p., and after he had travelled about one-third of the distance one cylinder cut right out, owing to an oily sparking plug or something, with the result that he flew the rest of the way with only eight cylinders firing. And yet his speed, 86 miles an hour, would be considered quite good for any modern light aeroplane with rather more horse power, and unhampered by floats,—for those tubby little pontoons on the Sopwith were not almost perfect streamlines as are those on the modern Schneider speed machines.

There is also a story about that particular contest which is worth telling as an example of true English self-possession. After he had won, Mr. Pixton was taken up to the sacred enclosure in the Grand Tribune, up in Monte Carlo, where a *champagne d'honneur* was being held, and was asked what he would have, there being the choice of all the



OUR FIRST VICTORY.—The Sopwith Biplane putting out to sea below the terrace at Monte Carlo.

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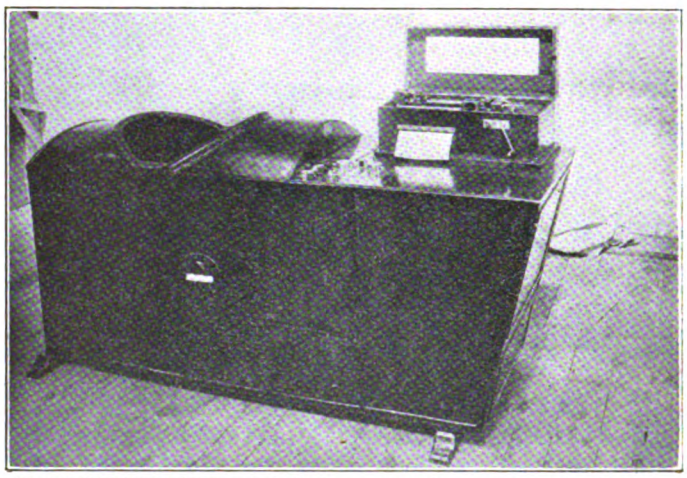

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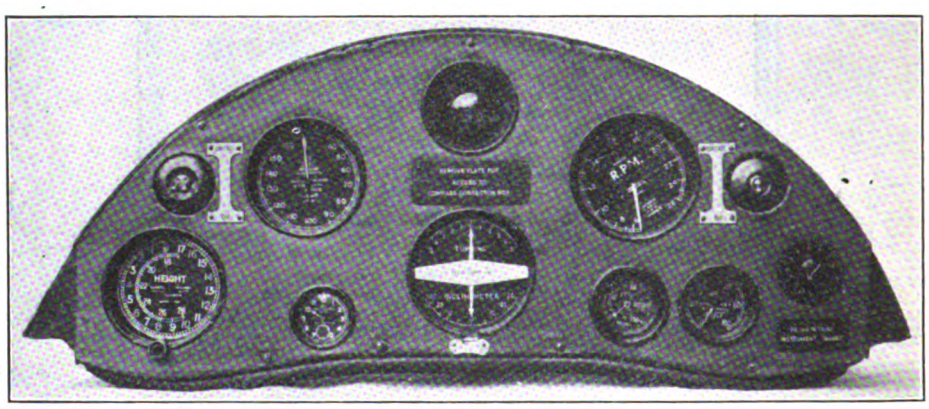

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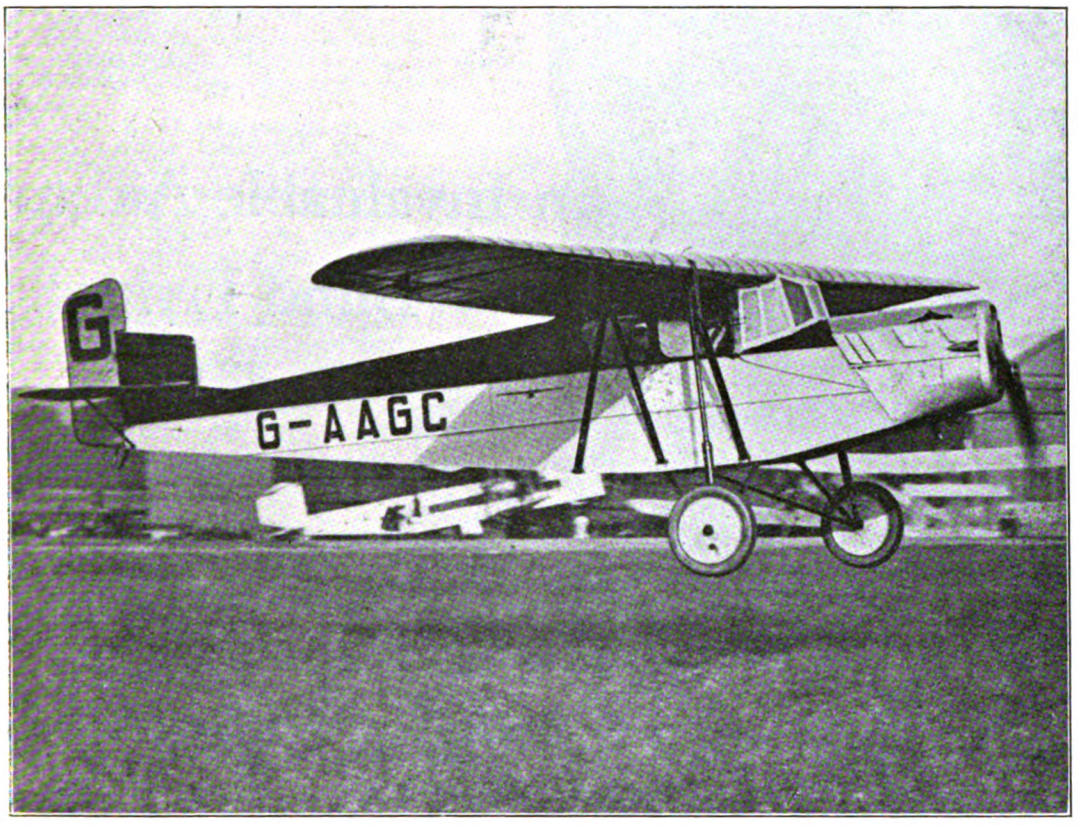

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most noble brands of champagne in France. And Mr. Pixton, true to all our insular prejudices, replied, "Thank you, mine's a Bass."—And that was fifteen years before every hoarding informed us that this Bass is great stuff. Howard Pixton knew what he wanted and meant to have it, and he deserved it.

After the War the Sopwith Aviation Co. was wound up, and paid everybody 20s. in the £. Harry Hawker died in the air while testing a speed machine. But the Hawker Engineering Co., which was founded by Mr. Sopwith, Mr. Sigrist and Mr. Hawker conjointly, survives, and to-day produces, as the old Sopwith Co. did, some of our finest war machines. And Fred Sigrist is still one of the finest practical engineers we have ever produced.

THE THIRD COMPETITION—1919.

According to the competition rules, the country whose representative wins the Schneider Trophy is charged with the organisation of the next contest. And so the duty next time fell upon England.

In 1915, 1916, 1917 and 1918 the competition was suspended owing to an unfortunate inter-tribal dispute in Europe which did a great deal to delay the development of aircraft by giving us entirely false values for money, material, manpower, and engine power alike.

Therefore the third competition was organised at Bournemouth in 1919. This time, as we propose to do this year, the Royal Aero Club Committee and friends did themselves well by chartering a ship,—a yacht belonging to Mr. Montagu Grahame-White,—as their headquarters.

The weather was beautiful, in the early part of the day, and we had a delightful trip from Cowes to Bournemouth, and everything seemed as it should be, till unfortunately a Channel fog rolled up and blotted out most of the course. Consequently no competitor managed to find the turning points properly.

Nevertheless, because the Italian pilot, Signor Janello, in a Savoia flying-boat, came nearest to covering the proper course, the possession of the Trophy was held in suspense, but the *Fédération Aéronautique Internationale* decreed that the contest in the following year should be held in Italy.

Here may be added the fact that everybody thought that Signor Janello had covered the proper course till somebody on the official boat discovered that he had covered one lap in several minutes faster time than any of the others, and that his official lap time would have meant that his machine was doing a speed of which it was obviously incapable. And then inquiry from the turning points proved that he had not passed one particular point, and that another machine wandering in the fog must have been mistaken for him.

The competitors in that contest were France, Italy and Great Britain. The British machines were a Fairey float-biplane, a Supermarine flying-boat, and a Sopwith float-biplane.

THE FOURTH CONTEST—1920.

Anyhow, the result was that the fourth competition was flown at Venice on September 21, 1920. No English machine competed. The French machines were wrecked during the Sea-worthiness Test, and the winner was Signor Luigi Bologna in a Savoia S.19 flying-boat with a 550 h.p. Ansaldo engine.

This time the distance was 202 sea miles, covered in 2 hr. 10 min. 35 sec. The speed was 92.9 knots (106.7 m.p.h.)

THE FIFTH CONTEST—1921.

The fifth competition was flown on Aug. 7, 1921, at Venice. Again there were no foreign competitors. The winner was Signor Giovanni de Briganti in a Macchi VII flying-boat with a 250 h.p. Isotta-Fraschini engine. The distance was 200 sea miles and the time was 2 hr. 4 min. 29 sec. The speed was 96.5 knots (110.9 m.p.h.).

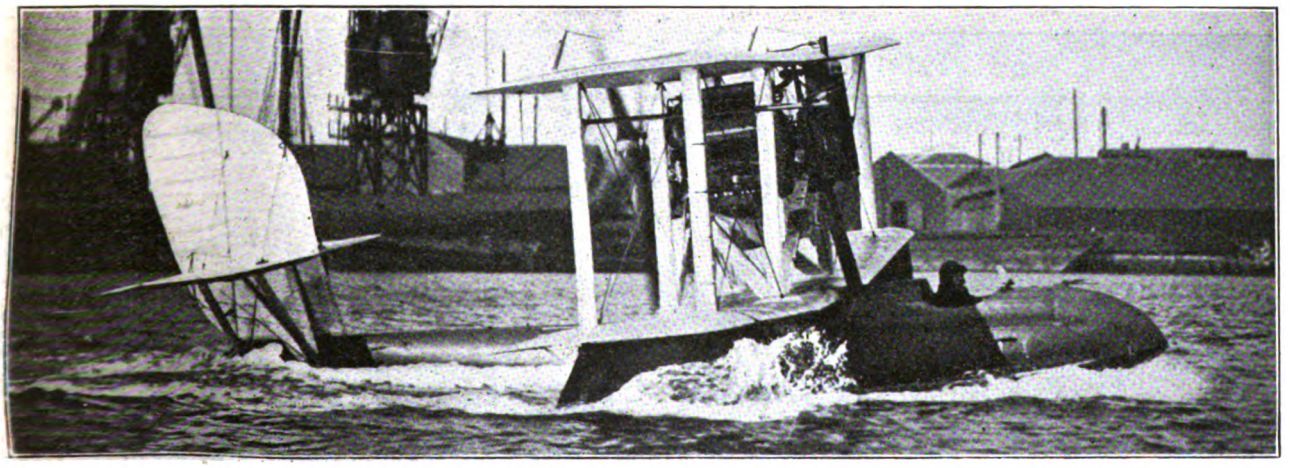
THE ROAD TO VICTORY.—Mr. Pixton passing the Casino at Monte Carlo.

THE SIXTH CONTEST—1922.

The sixth competition was held on August 12, 1922, at Naples. This time England was represented, thanks to a thoroughly sporting effort on the part of the Supermarine Aviation Works for which Squadron Commander James Bird, late R.N., and Mr. Hubert Scott-Paine were responsible.

The Supermarine Company has always been a thoroughly sporting affair. It was started in the very early days before the War by that erratic genius, Mr. Pemberton Billing, and in his day produced a number of startling ideas in aircraft design some of which might well be developed to-day with advantage to British Aviation, and others of which will definitely be developed in the future and will do much to make commercial flying possible.

When, during the War, he sold the business to devote himself to politics, Mr. Scott-Paine, who began his commercial life sea-faring with Mr. Pemberton Billing, took control of



OUR SECOND WINNER.—Mr. Henri Biard in the Supermarine Sea-Lion (Napier Lion).

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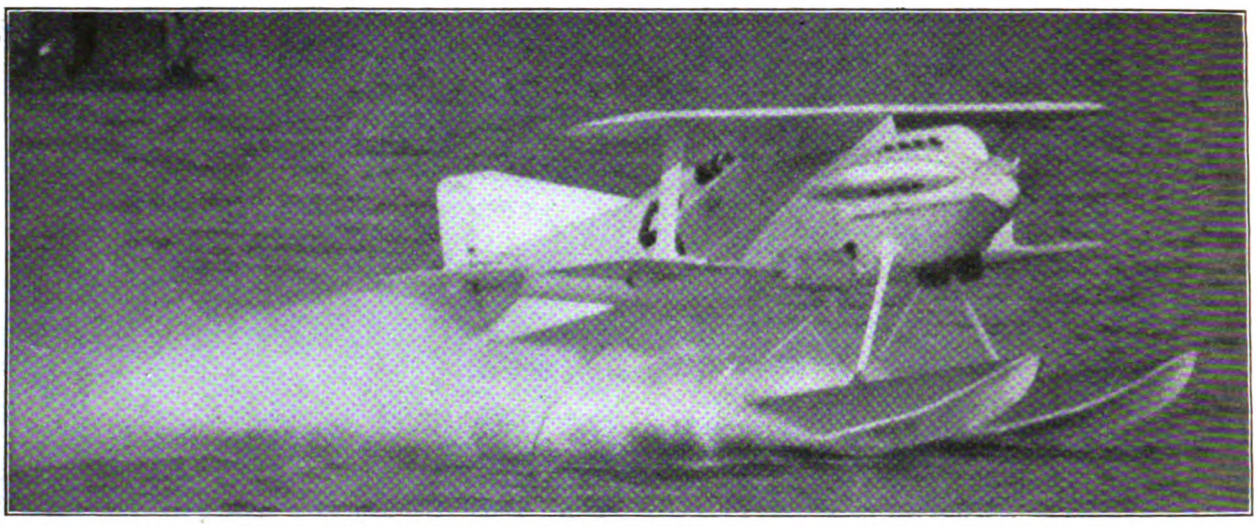


AT BALTIMORE.—Mr. Broad getting off in the Gloster-Napier III of 1925.

the business, and was later joined by Squadron Commander Bird, R.N., who resigned from the R.N.A.S. to join the Supermarine Works,—hence the fact that he is one of the very few men who bears what is now an obsolete rank-title of the Royal Navy.

These two good sportsmen in 1922 built a flying-boat and took it all the way to Naples at their own expense without any co-operation with the united aircraft firms of the great British Empire, and without any Government backing. The Napier engine firm were their only collaborators,—the more more honour to both firms.

Mr. Henri Biard won the contest in a Supermarine Sea-Lion II flying-boat with a 450 h.p. Napier Lion engine. The distance was 202.2 sea miles and the time was 1 hr. 34 min. 51 sec. The speed was 126.8 knots (145.7 m.p.h.).

This jump of 35 m.p.h. began to make people think that after all a sea-going aircraft might be made nearly as fast as a land machine,—for during the War some of our single-seat fighters and two seaters were doing as much as 150 m.p.h. a speed which is still unequalled by many of the machines still in use by the Royal Air Force for the same Service purposes.

THE SEVENTH CONTEST—1923.

England having won the sixth contest, the next was held at Cowes on September 28, 1923. This year, for the first time, Government competition came into the game.

The United States Navy resolved to make an attack on our Schneider Trophy for the honour of American Aviation. The winner was Lieutenant David Rittenhouse, U.S. Navy, in a Curtiss float seaplane, C.R.3 type, with a 465 h.p. Curtiss D.12a engine.

The distance was 186 sea miles, covered in 1 hr. 12 min. 26 sec. The speed was 154 knots (177.38 m.p.h.). Here was another jump of over 30 miles per hour, and for the first time seaplane speed was put over land machine speed, and people began to think that because of the danger of getting machines with wheels onto the ground at the high landing speeds forced upon them by these high flying speeds, seaplanes might ultimately pass the speeds of land machines.

The U.S. Government, having made up their minds to take a hand in the competition, went about the job properly. They sent the cruiser *Pittsburgh* to Cowes to act as a tender to the little aircraft. And incidentally the *Pittsburgh* brought to Cowes the very best saxophone band and the very best cocktails that one has ever met. Nobody ever having seen a warship lending a hand at a sporting contest there were people at Cowes who said that the *Pittsburgh* had the intention of blowing Cowes out of the water if an American machine did not win.

This contest was the first in which the new ideas of streamlining and of fuselage contours introduced by the Curtiss Company were seen. And it marked the beginning of a new phase in aeronautical history.

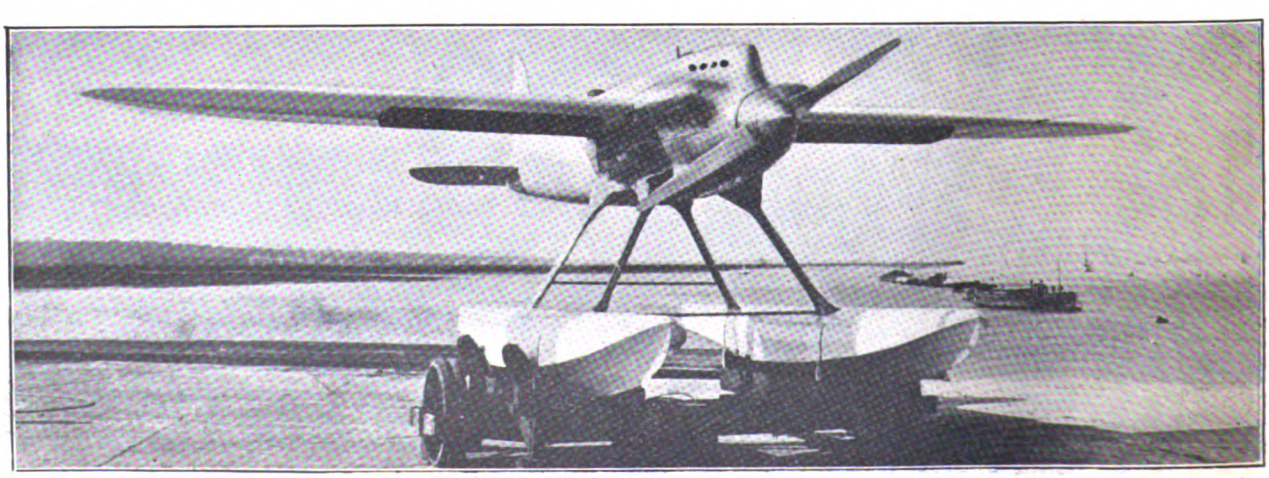
The fame of the Curtiss Company really began with the winning of the first Gordon Bennett Race at Reims in 1909 by Mr. Glenn H. Curtiss, as a gallant lone-hand raid on European Aviation. Glenn Curtiss was the great and victorious rival of the Wright Brothers in the very earliest days of flying in America.

The Wright biplane was the first to fly undoubtedly, but the succession of Curtiss biplanes were the first aeroplanes to fly successfully. The Wright aircraft faded away into oblivion before the War, but the Curtiss Company supplied us with a very large proportion of our best training machines and our best big flying-boats, and to-day the Curtiss Company is the biggest aeronautical concern in the World.

After the War, like so many other aircraft firms, the Curtiss Co. got into low water financially, and somewhere about 1921 a quiet little Canadian, named Clement M. Keys, who had already made a name in Wall Street, took hold of the Curtiss Co. and made up his mind to reform it.

A good many years ago C. M. Keys told one that he had no interest in financing successful concerns. The only sport that appealed to him was taking hold of a good firm that was on the verge of bankruptcy and forcing it up to success, or starting out on a new line of development in which few people believed. Hence his taking hold of National Air Transport and Transcontinental Air Transport (N.A.T. and T.A.T., as they are known in the States),—the two greatest air-mail and air-passenger concerns in the World.

A few days ago in London C. M. Keys showed one a list



A STEP FORWARD.—The Supermarine-Napier S.4 of 1925.

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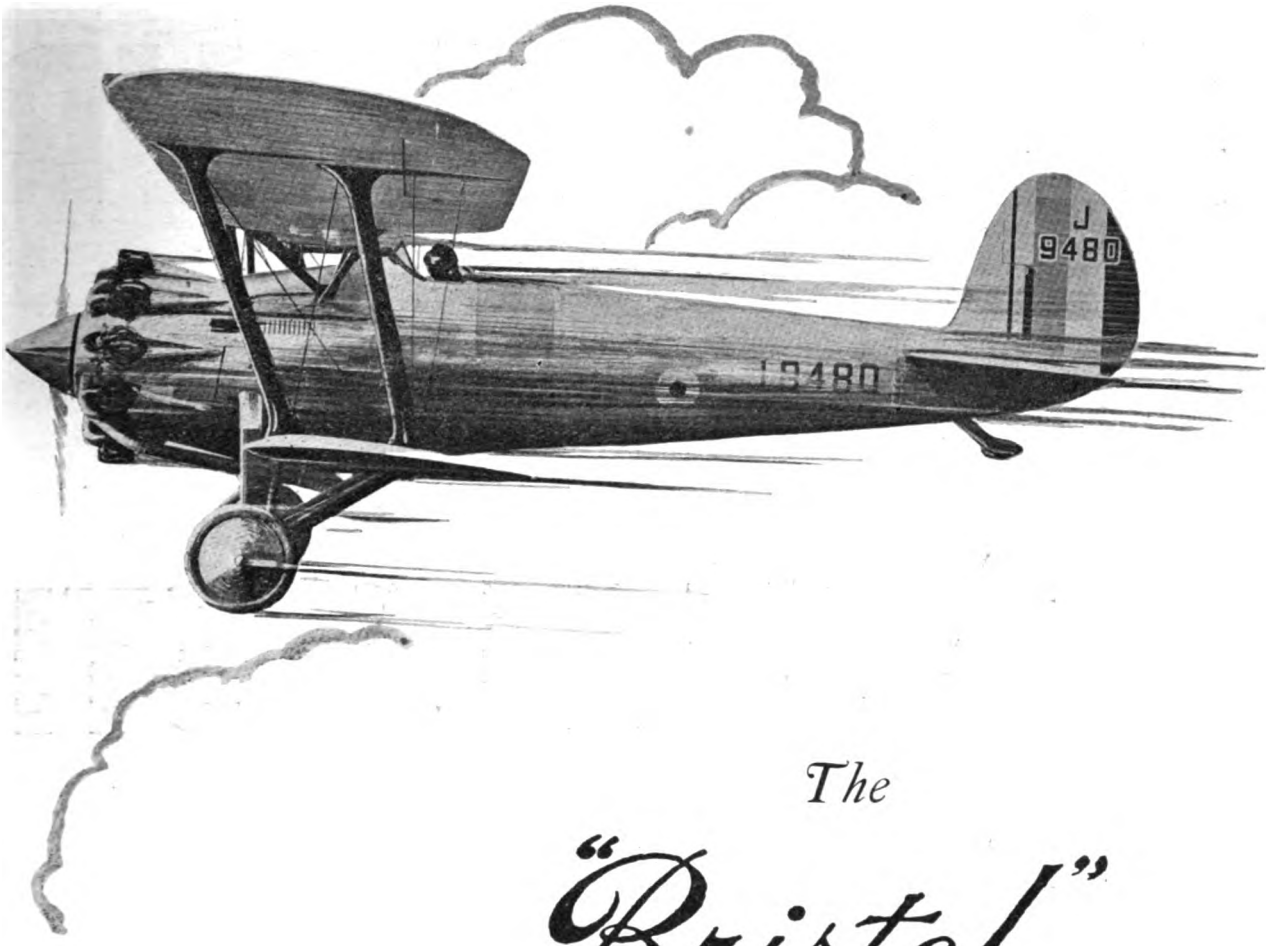

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THIS remarkable tour has no parallel in the history of aviation. Since December 29th, 1928, when the test was started this standard Gipsy engine, selected at random from the flow of production, has flown 46,750 miles, treated with complete neglect. Attention has been confined to the routine cleaning of filters and sparking plugs, the checking of valve clearances and the correction of a minor defect in one magneto.

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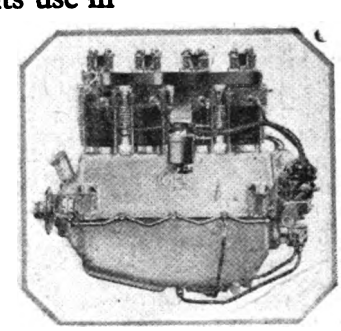
The 100 h.p. Gipsy Engine side elevation



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of the various subsidiary, ancillary and allied concerns which now come inside the great group of aircraft manufacturing and operating concerns which are known as the Curtiss-Wright Group, of which he is the controlling head. And their capital value on the New York market to-day is a trifle over £35,000,000 (not dollars).

The performance of those Curtiss machines at Cowes so impressed Mr. C. R. Fairey, one of the most brilliant aeronautical engineers and financiers in the World, that before the end of the year he had gone to America and had bought the Curtiss patents and designs for this country. The first result was the Fairey Fox, which one still holds is the most beautiful biplane in the World to-day, and certainly has about the best biplane performance of its type and power. And to-day practically every aeroplane in the World which has a first-class speed performance conforms to the lines of those Curtiss Schneider machines of 1923.

THE CONTEST WHICH WAS NOT—1924.

America having won the Trophy, the next competition was due to be held at Baltimore on October 25, 1924. British and Italian machines had been entered. But the Italian machines made no attempt to appear, and the sole and only British entry was wrecked a day or two before it was due to leave for the States.

Competition being thus removed, the U.S. Navy, who had spent a lot of money on building new craft to defend the Trophy, might have flown their machines over the course and have claimed another win on the Trophy, thus putting them a point nearer making it their own property. If they had done so that would only have had to win it once more to make it their own. But the U.S. Navy. happen to be sportsmen and gentlemen, so they refused to fly over the course for the Trophy, and contented themselves with sending their speed machines for records,—and getting them.

Under the regulations, the Schneider Trophy has to be won three times in five consecutive competitions to become the property of the nation which wins it. And if the Americans had claimed a win in 1924 they would now be the owners of the Trophy by virtue of having won it in 1925.

THE EIGHTH CONTEST—1925.

The eighth contest was flown at Baltimore on October 26, 1925. It was postponed from October 24 because of strong easterly winds and heavy rain. The Trophy was won by Lieut. James Doolittle, U.S. Army Air Service, in a Curtiss R3C2, with a Curtiss V1400 engine. The distance was 350 kilometres. His speed was 232.57 m.p.h., and the time was 56 min. 6 sec.

Mr. Hubert Broad in a Gloster-Napier III, was second, but his speed was only about 199 m.p.h., although the machine had done over 230 m.p.h. in practice.

There is interest here in noting that before going to the States for the Contest the Supermarine S.4 had put up a World's Record of 227 m.p.h. over the official kilometre course. This machine was unfortunately wrecked at Baltimore in the bad weather before the contest. And another Gloster-Napier III with Mr. Bert Hinkler as pilot was also damaged while being tested.

Two U.S. Naval Officers, Lieut. Cuddihy and Lieut. Ofstie, also in Curtisses, started in the contest but did not finish. The third competitor to finish was Signor de Briganti in a Macchi 33 flying-boat, with a Curtiss D.12 engine. This machine was a queer little monoplane flying-boat with the engine perched up on stilts above the hull in the manner introduced by Herr Dornier and Doctor Rohrbach. Its speed was only about 170 m.p.h.

This contest was notable because it was the first competition in which a Gloucester Racer had competed on floats.

Like almost all aircraft firms, the Gloucester Co. has had an interesting, even romantic, beginning. During the War 1914-18, when everybody who possessed suitable metal-working and wood-working machinery and had the call on hands skilled in working those materials, was roped in to build war machines, the great firm of H. H. Martyn and Co. of Cheltenham came into the business.

Their chief trade was, and still is, the furnishing of ocean liners. Their men were accustomed to doing all that amazing wood-fitting and panelling and carving which makes the liners of to-day look even more luxurious than the most luxurious hotels. The result of the skill of their trained men was that the various aircraft which were built by the Martyn firm of sub-contractors won at once a high reputation for workmanship. The Aircraft Department was formed into a separate firm as The Gloucestershire Aircraft Co. Ltd.

After the War, instead of pocketing their profits and cutting out of the aircraft game, as mere war-profiteers did, the Gloucester Co. made up their minds to back their faith in aircraft. And all credit is due to Mr. David Longden and Mr. A. W. Martyn for their pluck in doing so.

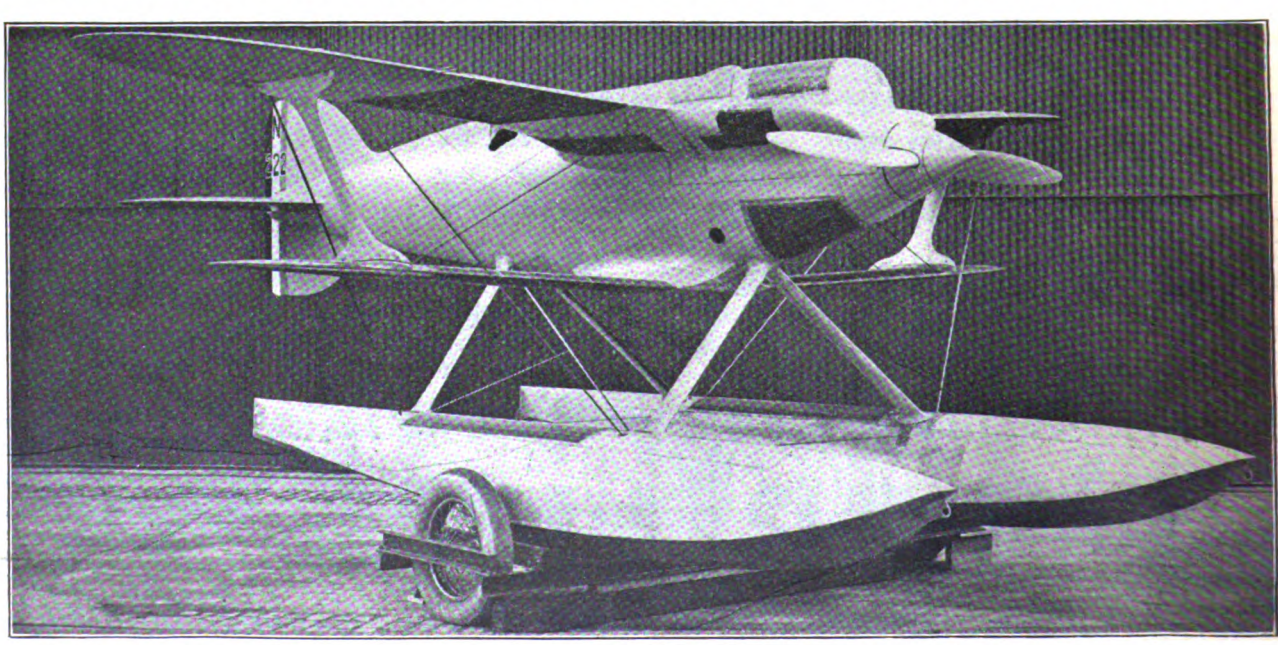
Having resolved to stick to aircraft they engaged Mr. H. P. Folland, who, having been one of the bright particular stars of the Royal Aircraft Factory had gone to the British Nieuport Co. Ltd., as designer, and looked like being more or less left on the beach when the proprietor of that firm, Lord Waring, resolved to close down.

Encouraged by Mr. Longden's faith, the Gloucester Co. started to make speed machines. Mr. Folland's first design in this direction was a really fast aeroplane with a Napier Lion engine which was nicknamed the Bamel. This machine won a number of speed competitions, including the Aerial Derby, and it put up British speed records which for about the first time in our history brought us very near World's record speeds.

The Bamel was modified year after year, and when the Gloucester Co. decided to put in a machine for the Schneider Trophy contest in 1924 the old Bamel was put on floats and used as a practice machine.

Year after year the Gloucester Co. built speed machines and entered machines for the various Air Ministry competitions for fighting machines, but without getting any contracts worth while,—chiefly because during those lean years the Air Ministry had no money to spend on new types of fighting machines.

Still, Mr. Longden pluckily stuck to his policy, and in the end the Gloster Grebes and the Gloster Gamecocks became in turn standard equipment for R.A.F. fighting squadrons. But the money that the firm spent in building speed machines, and in sending them about to competitions



A GOOD VINTAGE.—The Gloster-Napier IV (one of the winning team in 1927) which put up a speed of 277 m.p.h. piloted by the late Flt. Lt. Kinkead.

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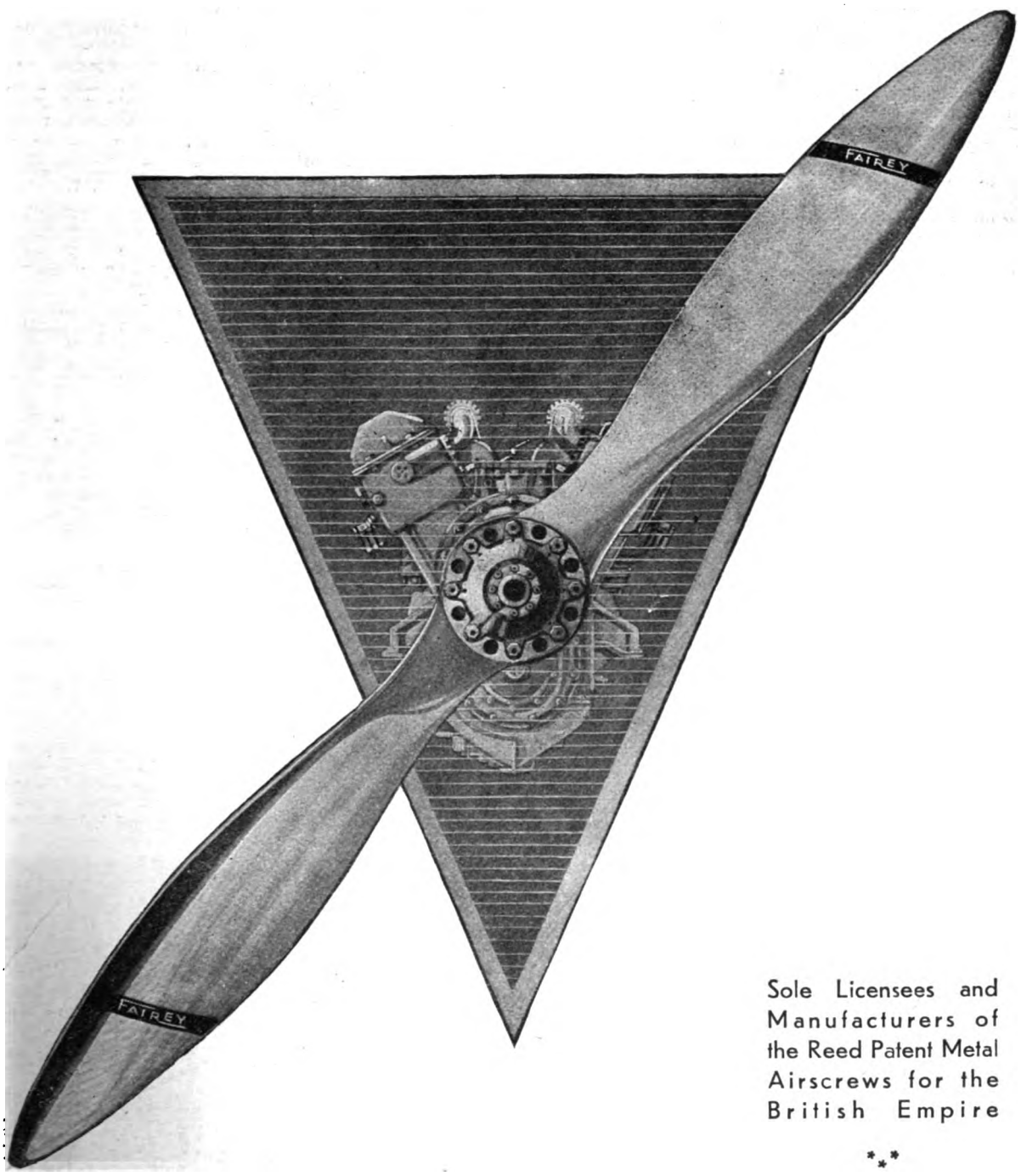

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all over the place, including Deutsch Cup races in France and the Schneider Trophy contests in America, must have taken a good deal of the shine off the profits when the contracts at last came along.

The more credit is therefore due to the firm for the way in which it upheld British prestige in International contests at a time when money was scarce, and when our millionaire sportsmen were again spending their tens of thousands on extravagant horses and still more extravagant yachts without any consideration of the immense importance of maintaining British prestige in the air.

Here one may justifiably pay a tribute to the sportsmanship of the Directors of the Napier Company. Mr. Montagu Napier and Mr. H. T. Vane, like Mr. Scott Paine and Squadron-Commander Bird, and Mr. Longden and Mr. Martyn, believed firmly in the future of aviation and in the importance of maintaining British prestige.

The Napier Lion had only been brought to a state of reliability just at the outbreak of Peace. It was never used, at any rate in any quantities, in actual war.

Having made a thoroughly reliable engine of it and having got large Air Force orders, the Napier company might well have been content to go on turning out a thoroughly reliable working engine. But Mr. Vane is not built that way. He preferred to spend a reasonable portion of his profits in boosting the power of the engine so as to boost it by way of publicity.

One believes that one is accurate, and one believes that nobody will be offended, when one says that all the Napier engines which beat British speed records and competed in Schneider Trophy contests and brought the Schneider Trophy to England, were built and boosted at the expense of the Napier firm until the British Government stepped in, spurred to action by the U.S. Government, and paid for the building and experimenting of special engines on a scale which no industrial firm could possibly afford as a matter of sportsmanship or even for the sake of publicity. And to Mr. Vane and Mr. Napier therefore must go a large share of the credit for the reputation which British aircraft material holds.

THE NINTH CONTEST—1926.

The U.S. Army having beaten the U.S. Navy in an alleged seaplane contest in 1925, the next year's competition also had to be held in America.

This time the contest was flown on November 13 and the winner was Major Mario de Bernardi in a Macchi 39 monoplane (800 h.p. Fiat A.S.2). The distance was 350 kilometres (214 miles). The winner's speed was 246.5 m.p.h.

The Italian team consisted of three Macchi 39s, and the American team of three R3C Curtiss biplanes, belonging to the U.S. Navy, one with a 600 h.p. Curtiss, known as the V.1400, which was the identical machine used by Lieut. Doolittle, the winner in the previous year; one with a 750 h.p. Curtiss, known as the V1550, and one with a 700 h.p. geared Packard engine. There were no competitors from other nations.

A peculiarly interesting point about the contest in this year was that the winning Macchi was to all intents and purposes a Curtiss with the upper wing cut off.

The little Macchi boats of the previous year had been a complete failure, but the Italians, as readers may remember, had bought Curtiss D.12 engines for their machines. The Fiat A.S.2 engine had a very strong likeness to the D.12, and the fuselage and floats of the Macchi were almost identical with those of the Curtiss. But the Macchi designer having decided to make his machine a monoplane had put the wing under the fuselage just in the way that the lower wing of the Curtiss biplane was fitted, instead of putting his wing half way up the fuselage as it was in the Supermarine S.4 of the previous year.

THE TENTH COMPETITION—1927.

The competition in 1927 was flown at Venice, because of Major de Bernardi's win in America. After being postponed for a day owing to bad weather, the contest was flown on Monday, Sept. 26. The only entrants were three Italian Macchis with Fiat engines, and three English machines. These three were a Supermarine S.5 with a geared Napier, a Supermarine S.5 with a direct-drive Napier, and a Gloster IV. with a geared Napier.

The first machine, which was flown by Flt. Lt. S. N. Webster, won. It covered the 350 kilometres in 46min. 20.3sec. The speed was 281.49 m.p.h.

This beat handsomely the World's Speed Record made over a straight 3-kilometre course on a land machine. On the straight stretches of the course Flt. Lt. Webster must have been travelling at well over 300 miles an hour.

Flt.-Lt. O. E. Worsley, on the direct-drive Napier, covered the course at 272.9 m.p.h., and was the only other competitor to finish. Flt.-Lt. S. M. Kinkead, who was flying the Gloster, had to retire owing to a cracked airscrew shaft, which set his airscrew vibrating till his wing radiators began to jump off the wings. All the Italian engines collapsed.

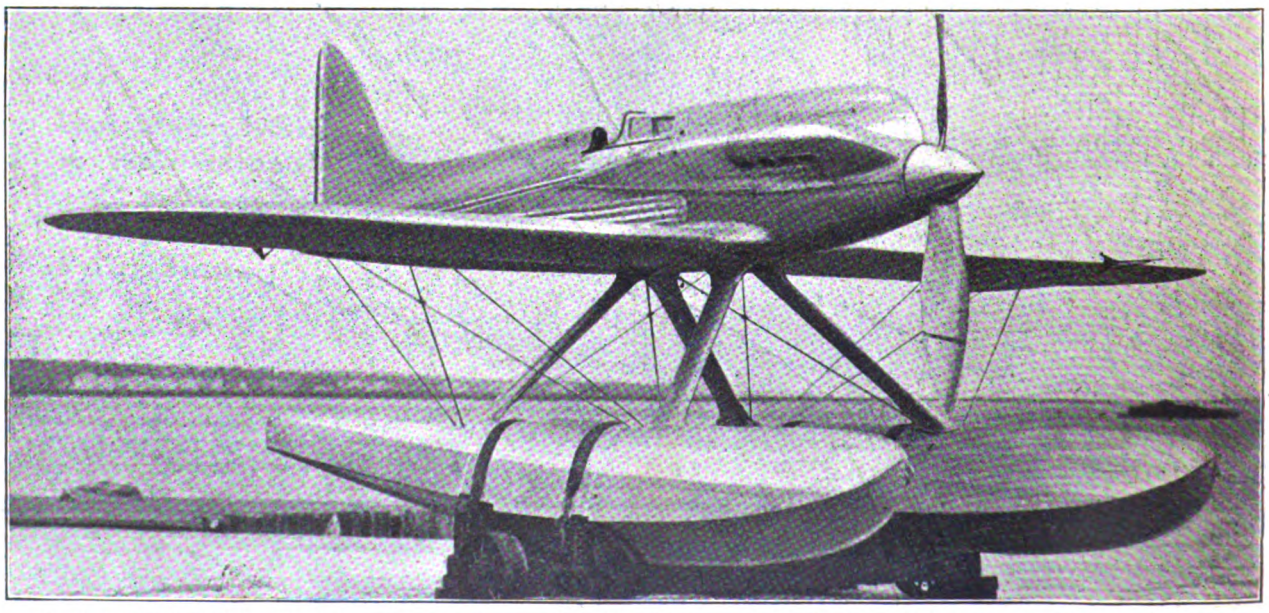
This contest was notable because it was the first time that any human being in any form of vehicle had travelled at 300 miles an hour. Somehow or another, 5 miles a minute or 300 miles an hour, is one of the outstanding round figures which the human mind seems to grasp and remember easily.

Another interesting point about the contest was that up till the last moment we were all hoping against hope that the one promised, and promising, American competitor would arrive. This competitor was that same Lieut. Alford Williams, U.S.N., who has kept everybody guessing this year. And the engine which kept him guessing was a 4-bank X type Packard engine, very like that which seems to have been worrying him so much this year.

Also his machine, a float biplane, was very like his monoplane which has been so copiously illustrated in all British papers during the past few weeks, except that he had not then copied the Macchi tail.

Apparently he has this year, 1929, made the mistake of not copying our floats quite correctly, and has failed to get off the water. So the U.S. Navy has, very properly, refused to let him bring his machine over here.

We all very much regret this year that there will be no American competitor. Whenever the U.S. Army or the U.S. Navy have competed in the Schneider Trophy Contest they have not only put up a first-class show, but they have acted as first-class sportsmen, and the individual members of their teams have been of the very best. Every time we have competed against Americans we have always learned something useful from their aeroplanes and from their engines



OUR THIRD WINNER.—The Supermarine-Napier S.5 which won at Venice, piloted by Flt. Lt. Webster, at 281 m.p.h.

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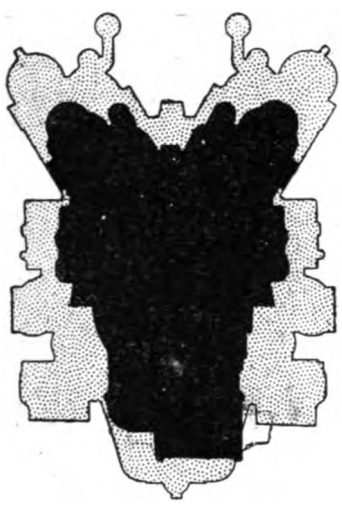
ROLLS-ROYCE

AERO ENGINES



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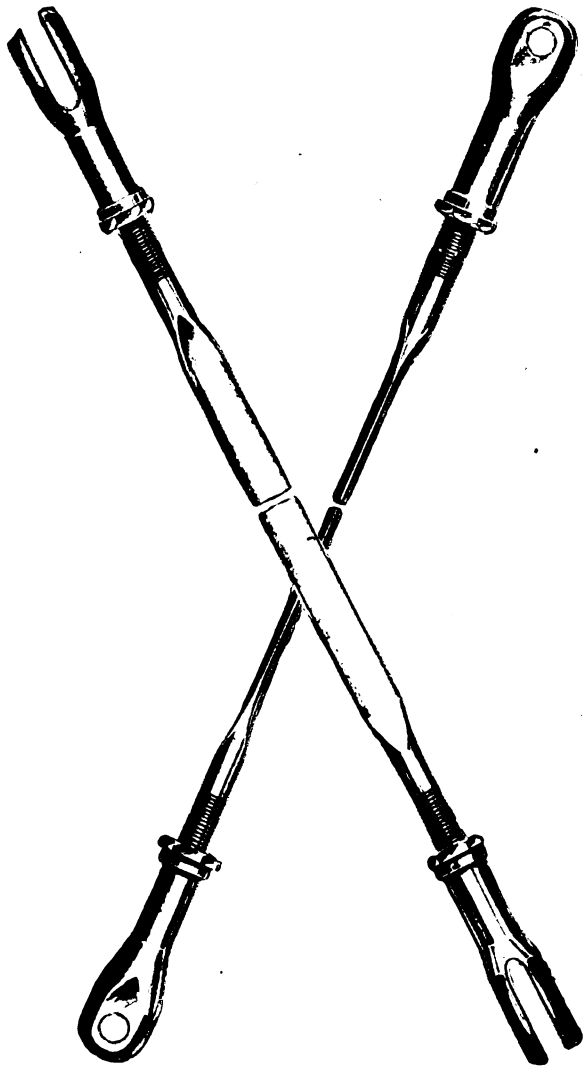

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SUPERMARINE SCHNEIDER TROPHY

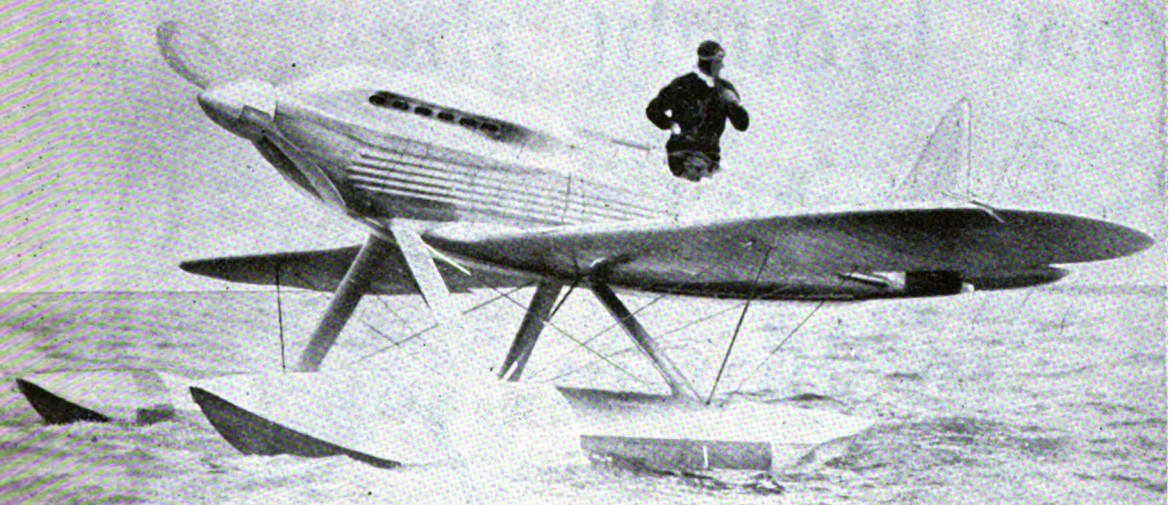
HISTORY AND SPEED RECORDS.

SCHNEIDER TROPHY.

1922. Winner — *Supermarine Napier "Sea Lion."*
1927. Winner and Second Place — *Supermarine Napier "S.5."*

SPEED RECORDS.

1922. World's Record
129·753 m.p.h. (100 kilometres) ..... *Supermarine Napier "Sea Lion."*
1925. World's Record
226·752 m.p.h. (3 kilometres) ..... *Supermarine Napier "S.4."*
1927. World's Record
283·669 m.p.h. (100 kilometres) ..... *Supermarine Napier "S.5."*
1928. British Record
319·57 m.p.h. (3 kilometres) ..... *Supermarine Napier "S.5."*



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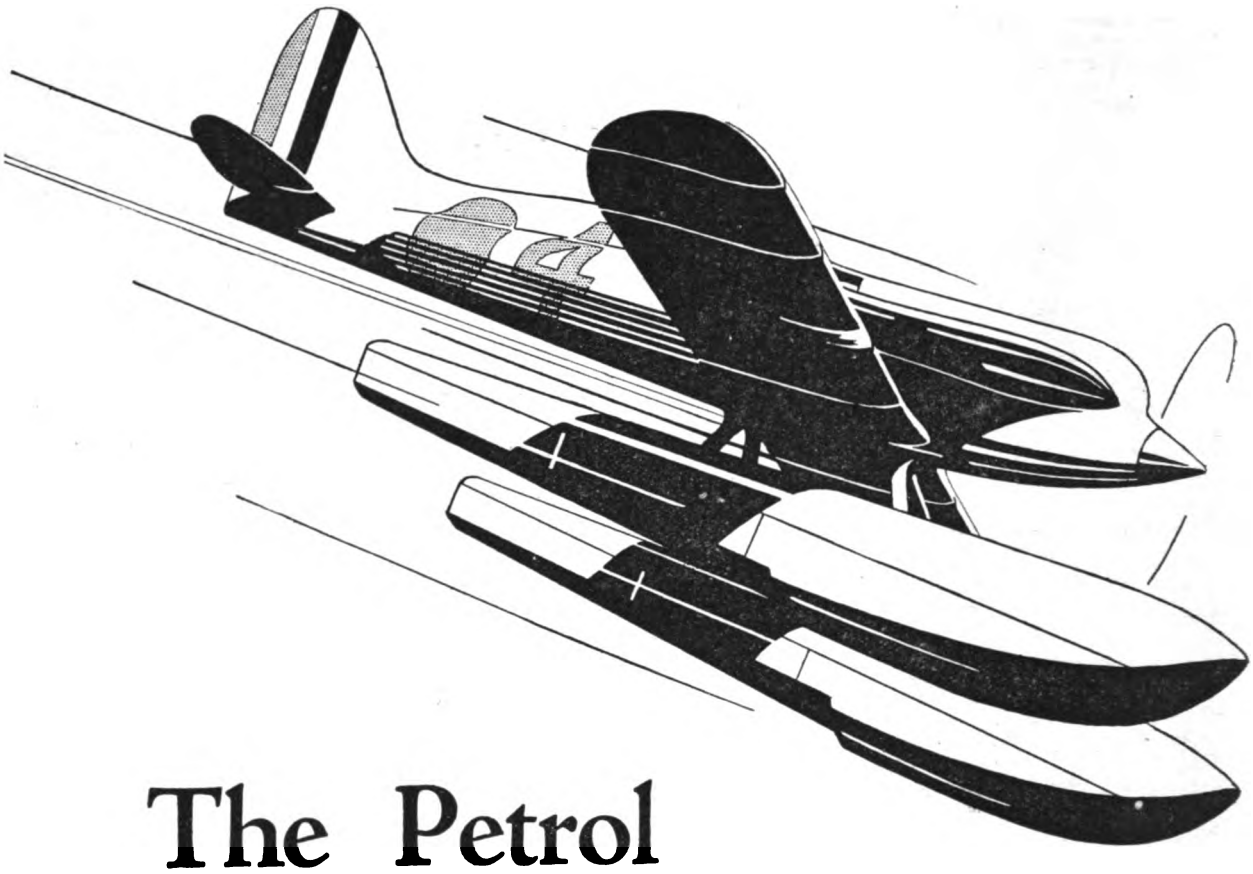

The Petrol that brought the Schneider Trophy to Britain

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and we have always made lasting friendships with some or other of their team. And they have always supplied us with good stories and phrases which have sooner or later entered into the English language.

So will our friends in America please take this paragraph of this article as an expression of the sincere regret that we all in British Aviation feel at their absence? Our only consolation is that so many of our best friends from the States have come over here to see the Schneider show. And we hope most sincerely that it will provide them with adequate entertainment.

If the weather should be fine next Friday and Saturday, we should see a fine contest, for—be the fact remembered—we and our Italian competitors start level in lack of experience of the new machines.

Although our four new speed machines have been ready for two or three weeks, the wind or fog on the Solent has prevented our team from getting any practice in their new mounts, and from correcting any last-minute errors.

Our team and the Italian team have had about an equal amount of practice in two-year-old craft; but there is nothing between them in their inexperience of the 1929 types. So, if our team's machines stand up to the contest and the Italians fail—or the other way round—that will be purely a matter of all-round engineering ability—including material, design, and workmanship.

In such events as these the result always depends on something quite unexpected, so let us all hope that, whatever happens, the best man and the best machine may win.

C. G. G.

THE BRITISH SCHNEIDER TEAM.

Squadron-Leader A. H. Orlebar, A.F.C.

Squadron-Leader A. H. Orlebar, A.F.C., *p.s.a.*, who is in command of the High Speed Flight, was born at Higham Ferrers, Northamptonshire, in 1896, and was educated at Rugby.

He was appointed 2nd Lieutenant in the 5th Battalion, the Bedfordshire Regiment (T.F.), in January, 1915, and promoted to Lieutenant in September, 1915. He served with his Regiment in Gallipoli, and was wounded in action.

In September, 1916, he was seconded to the Royal Flying Corps with the rank of Flying Officer. He served with the R.F.C. in France until July, 1917. In December, 1917, he was appointed Flight Commander with the temporary rank of Captain, and in January, 1918, he returned to France. In March, 1918, he was again wounded in action while serving with No. 73 Squadron. On his return to France, he joined No. 43 Squadron.

In August, 1919, he was apointed to a permanent commission in the Royal Air Force with the rank of Flight-Lieutenant. At the same time he relinquished his commission in the Territorial Force.

In March, 1920, he was posted to the Aeroplane Experimental Establishment, Martlesham Heath.

In December, 1921, he was awarded the Air Force Cross for valuable flying services.

In July, 1923, he was appointed to No. 22 (Bombing) Squadron, which is included in the establishment of the Aeroplane and Armament Establishment. In 1925-26 he completed a course at the R.A.F. Staff College, Andover.

In April, 1926, he was posted to No. 22 Group Headquarters for Air Staff Duties, and in September, 1926, he was posted to Headquarters, 'Iraq Command, for Air Staff Duties.

In June, 1927, he was restored to the Home Establishment and placed on the non-effective (sick) list. In September, 1927, he was posted to the Directorate of Organisation and Staff Duties, Air Ministry.

He was promoted to Squadron Leader in January, 1928. In January, 1929, he was posted to the Marine Aircraft Experimental Establishment to command the High Speed Flight.

Flight-Lieutenant D. D'A. A. Greig, D.F.C., A.F.C.

Flight-Lieutenant D. D'A. A. Greig, D.F.C., A.F.C., was born at Elgin, Scotland, in 1900, and was educated by a tutor.

A few days after his eighteenth birthday he joined the Royal Air Force as a Cadet, and was appointed to a commission in June, 1918, and posted to No. 190 Training Squadron. In August, 1918, he was posted to No. 83 Squadron in France. During a patrol he was shot down by an enemy aeroplane. He landed safely twelve miles behind the enemy lines, and he and his observer made a successful escape after walking thirteen miles.

After the Armistice he was posted to No. 1 Stores Depot, and then to No. 3 Training Centre (Boys). In September, 1919, he was appointed to a permanent commission in the R.A.F. with the rank of Flying Officer.

In March, 1920, he was posted to No. 6 (Army Co-operation) Squadron, 'Iraq. In October, 1921, he was awarded the Distinguished Flying Cross for distinguished service in the Field in 'Iraq.

In May, 1923, he was restored to the Home Establishment, and after a course of Air Pilotage at Calshot he was posted to No. 24 (Communication) Squadron. In 1924, he passed a Flying Instructors' course, and was posted to the Central Flying School as Flying Instructor.

Squadron Leader A. H. Orlebar, A.F.C.

Flight Lieutenant D. D'A. A. Greig, D.F.C., A.F.C.

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In January, 1927, he was promoted to Flight-Lieutenant.

In April, 1927, he was posted to Headquarters Fighting Area for duty as flying examining officer.

In the R.A.F. Display of 1927 he led the aerobatic formation of Genet Moths. In this formation were Flt.-Lt. Stainforth, Flg.-Off. Atcherley, and Flg.-Off. Waghorn.

In April, 1927, he escaped by parachute when an aeroplane he was testing got into an uncontrollable spin.

In May, 1928, he was appointed to the Marine Aircraft Experimental Establishment, Felixstowe, for duty with the High Speed Flight. In June, 1928, he was awarded the Air Force Cross for distinguished flying.

On Nov. 4, 1928, he flew the Supermarine-Napier S.5 at 319.57 m.p.h., thus exceeding the World's Record for speed. The Air Council recorded their high appreciation of the zeal and efficiency displayed by this officer.

Flight-Lieutenant G. H. Stainforth.

Flight-Lieutenant G. H. Stainforth was born at Beckenham in 1899, and was educated at Dulwich and at Weymouth. He went to Sandhurst, and was appointed to a commission in the East Kent Regiment in August, 1918. He served with his Regiment in France in 1918, in India in 1920, in Mesopotamia in 1921, and in Aden in 1922. He retired from the Army in 1922.

In March, 1923, he was appointed to a short-service commission in the Royal Air Force with the rank of Flying Officer, and seniority of March 15 of that year. After a course of flying training at No. 5 Flying Training School, Sealand, he was posted to No. 2 Flying Training School. In April, 1924, he was posted to No. 19 (Fighter) Squadron, and in June, 1924, he was posted to the Central Flying School for a Flying Instructors' Course.

In September, 1925, he was posted to No. 4 Flying Training School, Abu Sueir, Egypt, for duty as a Flying Instructor. During aerobatics practice at Abu Sueir early in 1927 he flew upside-down for 11 min. 42 sec. in an Avro 504K with a 100 h.p. Mono engine.

In March, 1927, he was restored to the Home Establishment, and posted, after a refresher course, to the Central Flying School as a Flying Instructor. In January, 1928, he was promoted Flight-Lieutenant.

In September, 1928, he was posted to the Marine Aircraft Experimental Establishment, Felixstowe, for duty with the High Speed Flight.

Flight-Lieutenant Stainforth is a distinguished marksman. He was a member of the Inter-Services Rifle Match teams in 1923 and 1925, and won the R.A.F. Individual Rifle Championship in 1928, and was second in the R.A.F. Individual Rifle Championship in 1929.

On p. 635 of this issue he appears as having been selected for a permanent commission, "subject to physical fitness."

He was Flg.-Off. Atcherley's passenger in the two-seat Gloster Grebe which won the King's Cup Air Race in July, 1929.

Flying-Officer T. H. Moon.

Flying Officer T. H. Moon, the Technical Officer of the High Speed Flight, was a Chief Petty Officer in the Royal Naval Air Service in 1914—having been previously an Engine-Room Artificer, R.N. He was promoted to Warrant Officer in 1917.

On the formation of the Royal Air Force, in April, 1918, he was appointed 2nd Lieutenant, R.A.F., for Technical Duties. In August, 1919, he was appointed to a permanent commission in the R.A.F. with the rank of Flying Officer.

In May, 1920, he was posted to No. 2, Flying Training School, Royston. In April, 1922, he was posted to Egypt for technical duties at the Aircraft Depot, Abukir. In September, 1923, he was appointed to No. 84 (Bombing) Squadron, Shaibah, 'Iraq, and in January, 1925, he was put in charge of the Inland Water Transport Section at Basrah. In November, 1925, he was again posted to the Aircraft Depot at Abukir.

In June, 1927, he was appointed to the Marine Aircraft Experimental Establishment, Felixstowe, for duty with the High Speed Flight. Flg.-Off. Moon was in charge of the technical side of the organisation of the successful British Schneider Team in 1927.

Flying-Officer R. L. R. Atcherley.

Flying-Officer R. L. R. Atcherley was born at Micklegate, Yorkshire, in 1904, and was educated at Oundle. He entered the Royal Air Force College in 1922. At Cranwell he was appointed Flight-Cadet-Sergeant, and was the winner of the R. M. Groves Memorial Prize for the best all-round pilot in the Senior Term. He was also President of the College Debating Society.

On graduating from Cranwell, he was posted to No. 29 (Fighter) Squadron. In May, 1925, he was posted to the Central Flying School for a Flying Instructors' Course at the end of which he returned to No. 29 (Fighter) Squadron for duty as Flying Instructor.

In October, 1925, he was posted to No. 23 (Fighter) Squadron as Flying Instructor, and in August, 1928, he was appointed Flying Instructor at the Central Flying School.

In October, 1928, he was posted to the Marine Aircraft Experimental Establishment, Felixstowe, for duty with the High Speed Flight.

In July, 1929, he won the King's Cup Air Race in a Gloster Grebe.

Flight Lieutenant G. H. Stainforth.

Flying Officer T. H. Moon.

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Flying Officer R. L. R. Atcherley.

Flying Officer H. R. D. Waghorn.

Flying-Officer H. R. D. Waghorn.

Flying-Officer H. R. D. Waghorn was born in Kensington in 1904, and was educated at Wellington. He entered the Royal Air Force College, Cranwell, in 1922. At Cranwell, he was appointed Flight-Cadet Under-Officer, and was awarded the Sword of Honour. He was *Victor Ludorum*, and represented the College at athletics and at Rugby football.

On graduating from the College, he was posted to No. 17 (Fighter) Squadron. In May, 1926, he was posted to the Central Flying School for a Flying Instructors' Course, at the end of which he was appointed Flying Instructor at the C.F.S.

In February, 1929, he was posted to the Marine Aircraft Experimental Establishment, Felixstowe, for duty with the High Speed Flight.—C. M. MCA.

A PRACTICE MACHINE.—The Avro Avocet seaplane at Calshot, where it has been used for practice by the High Speed Flight. This was the machine which, on the occasion of a visit by a very senior officer of the R.A.F., was decorated, by an enterprising airman, with a daily newspaper poster bearing the words, "British Seaplane's 360 Miles An Hour."—(*"Aeroplane" photograph.*)

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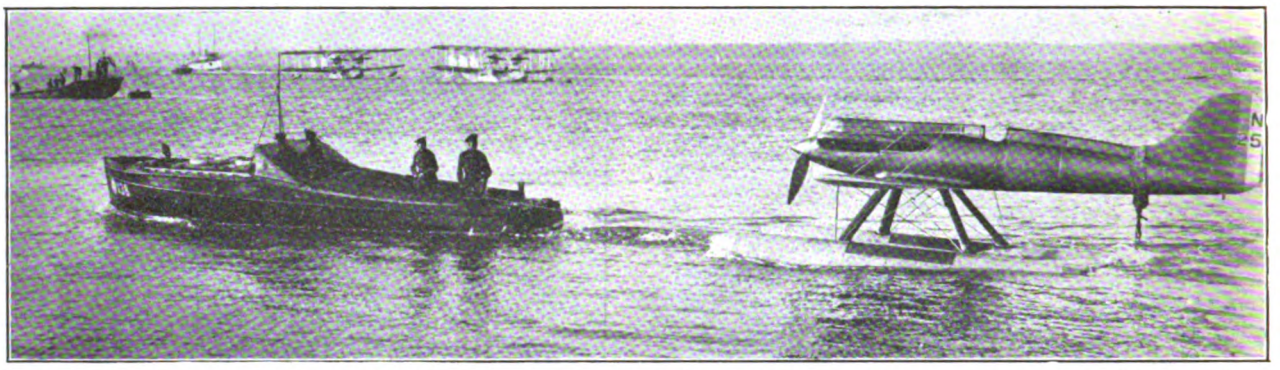
THE WEEK AT CALSHOT.



IN TOW.—The second Gloster-Napier VI being towed out to her lighter, which is seen on the extreme left. (*"Aeroplane" photograph.*)

The weather at Calshot has not been kind. Consequently there has been very little flying during the past week, and when the great day comes, the Italian pilots will have had just about as much practice on their speed machines as our team have had.

TUESDAY.

On Aug. 27 the Schneider Committee of the Royal Aero Club definitely decided that whether foreign competitors arrived or not, the British pilots would race over the course.

The curious fact came out that the request for the postponement did not come from the Royal Aero Club of Italy, which was the official entrant for the team, but from the Italian Government itself.

On this day Lord Thomson, the Under-Secretary of State for Air, visited Calshot. He arrived in a Southampton Flying-boat, in which he had flown over the course. He was received by Group Captain E. R. C. Nanson, O.B.E., D.S.C., A.F.C.—O.C. Calshot—and after lunch, inspected all the machines and conversed with the team and Lieutenant Monti, the Italian Assistant Air Attaché.

WEDNESDAY.

On Aug. 28 the announcement was made that the Italian team was coming to England. General Balbo issued to the Press a statement saying (according to *The Times* correspondent in Rome):—

The Italian team is going to England merely to perform a gesture of chivalrous sportsmanship and in order to avoid the appearance that an announcement of withdrawal would have of being a counter-reply to the refusal to postpone the race.

The probability of victory by our team, already hard pressed by the very great delay of the building firms in delivering the machines and the engines, is almost annulled by the death of Captain Motta. His death not only deprives us of our best pilot, but has cost us the engine and the machine which had been perfected for the best speed, and has also meant a week's interruption in our programme.

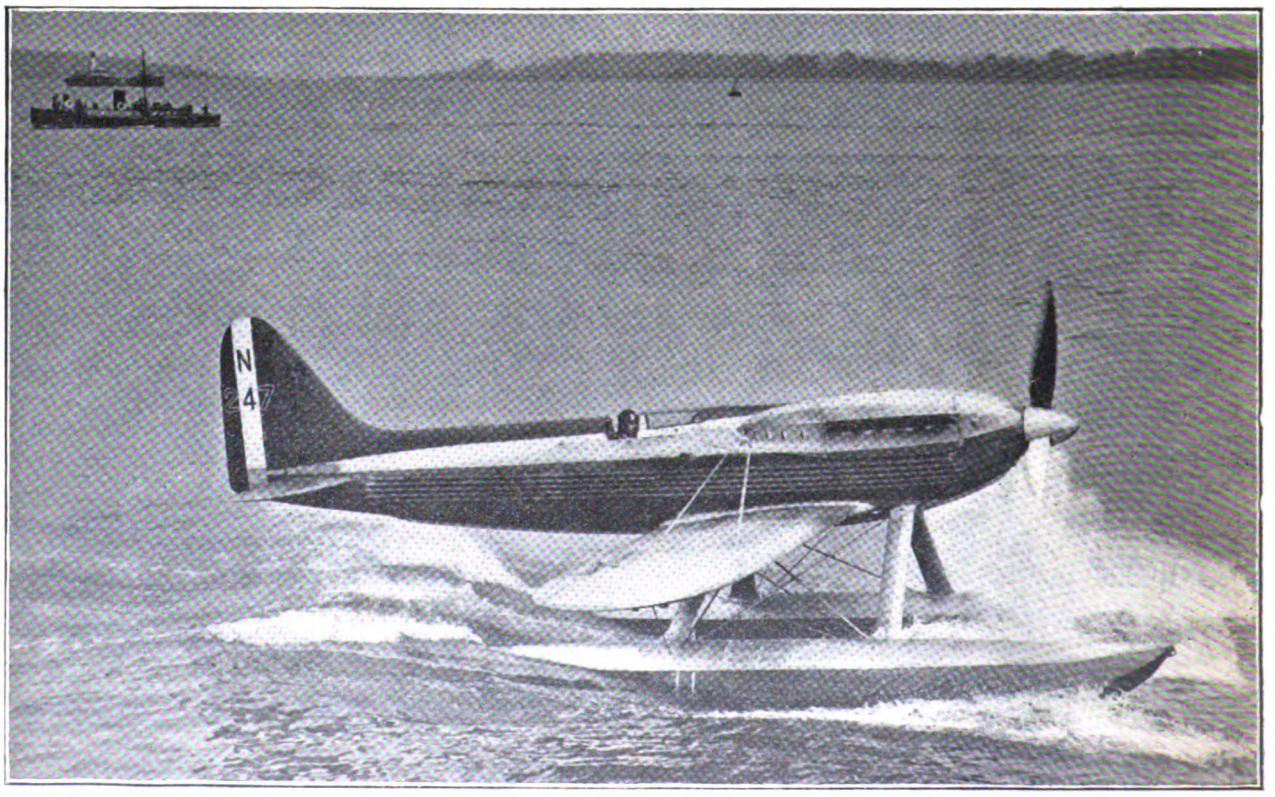
We thus present ourselves in London with two seaplanes, one of them absolutely new, which has never touched water, and with two perfectly new engines which have so far never been tested in flight. We have to comfort us only the fact that we leave at the hangar at Desenzano two new machines conceived on the boldest plans, on which we place many hopes for the record for speed which we intend to keep in the hands of our country.

Calshot was enlivened by the news, and also by the appearance of an elegant steam-yacht flying the Royal Air Force Ensign. This ship proved to be the *Karen*, lent by Sir Colin Cooper to Air Vice-Marshal C. L. Lambe, C.B., C.M.G., D.S.O., Air Officer Commanding the Coastal Area, to be his flagship during the Schneider period.

THURSDAY.

On Aug. 29 the first instalment of the Italian team arrived, under the command of Lieutenant-Colonel Mario Bernasconi. The other members of the team to arrive were Capt. A. Canaveri, Lieut. Remo Cadringher, Warrant-Officer Tommaso Dal Molin, and Sergt.-Major Francesco Agello.

The smartness of their uniforms and their excellent cut make our R.A.F. people look quite shabby. Another interesting thing about the Italian team is the thoroughly practical type of the waders supplied to the men who handle the machines. They really are proper waterproof suits, whereas our men merely wear waders, and if they are a little over-energetic, the water gets over the top of the



PREPAREDNESS.—The first Supermarine-Rolls-Royce S.6, with Flg. Off. Atcherley in the cockpit, about to take off on a trial flight.—(*"Aeroplane" photograph.*)

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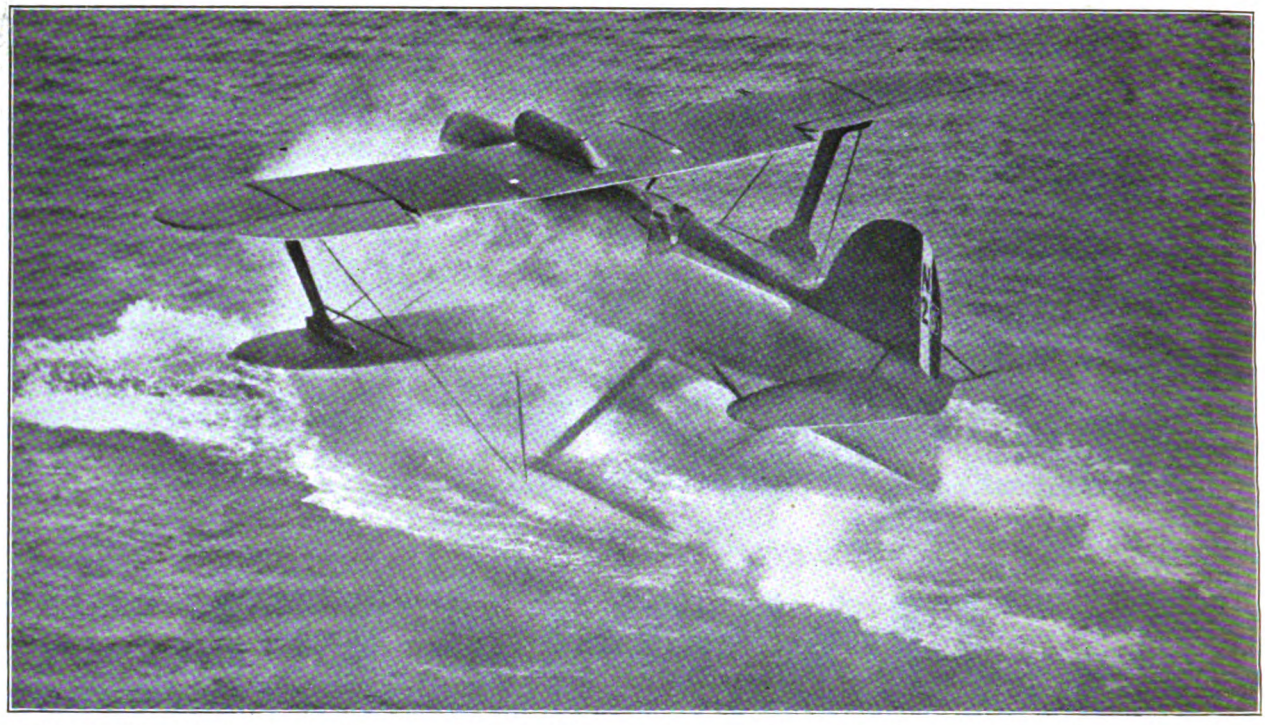

SPRAY.—The Gloster-Napier IV, one of the training seaplanes of the High Speed Flight, taking off and almost taking it green during a practice flight in the Solent. —(*"Aeroplane" photograph.*)

waders and makes them even wetter than if they operated in bathing-suits.

We still have to discover a better costume than that which the late ever-to-be-lamented Charles Risk invented when he was a Major of Marines commanding the Felixstowe Naval Air Station. The costume consisted simply of a white jumper and thick blue serge shorts.

FRIDAY.

On Aug. 30 our late excellent Under-Secretary of State for Air, Sir Philip Sassoon, now Chairman of the Royal Aero Club, visited Calshot, as did Air Commodore F. W. Bowhill, C.M.G., D.S.O., Director of Organisation and Staff Duties at the Air Ministry, and Air Vice-Marshal Sir Sefton Brancker.

On this day there was a certain amount of flying. The first of the Supermarine-Rolls-Royce S.6's, N-247, which had come back from the works with a new engine and extra radiators fixed on the floats, was taken up by Mr. Atcherley. These additional radiators are like metal plates stuck along each side of the floats.

This question of cooling seems to have been giving a little trouble, in spite of the ingenious arrangement of the wing radiators. At first the idea was that the outer surfaces of the wings alone would give cooling enough. Then air was forced to the inside of the wing by fitting three little scoops, each of which looks like half a cup, along the lower surface of each wing-tip.

Somebody asked Mr. Mitchell, the designer of the Supermarine, what these cups were for. He explained carefully that they were there so that when the pilot did a good landing he got his money back. They do, in fact, look exactly like those little cups on automatic machines from which one extracts the money for the cigarettes which are not there.

Late in the day the first of the Gloster-Napier VI's was taken for an airing. The engine had been tuned up on the station and seemed to have got over its fits of choking, caused by something unknown, which in this country we call peculiarities of installation, but in America they call plainly plumbing troubles.

It was taken out on an R.A.F. pontoon, but after hanging about for an hour the light went down and the wind did not, so it returned home.

The Italian team were taken round the course in a Southampton Flying-boat during the day. Lieut.-Col. Bernasconi, the commanding officer, announced that his pilots approved the course, and particularly liked the pylons at the turning points. These pylons are, in fact, noticeable edifices, built on top of destroyers, which have been lent by the Admiralty for the purpose.

WASH.—A Fairey Flycatcher of the High Speed Flight taxying in from a practice flight off Calshot.
(*"Aeroplane" photograph.*)

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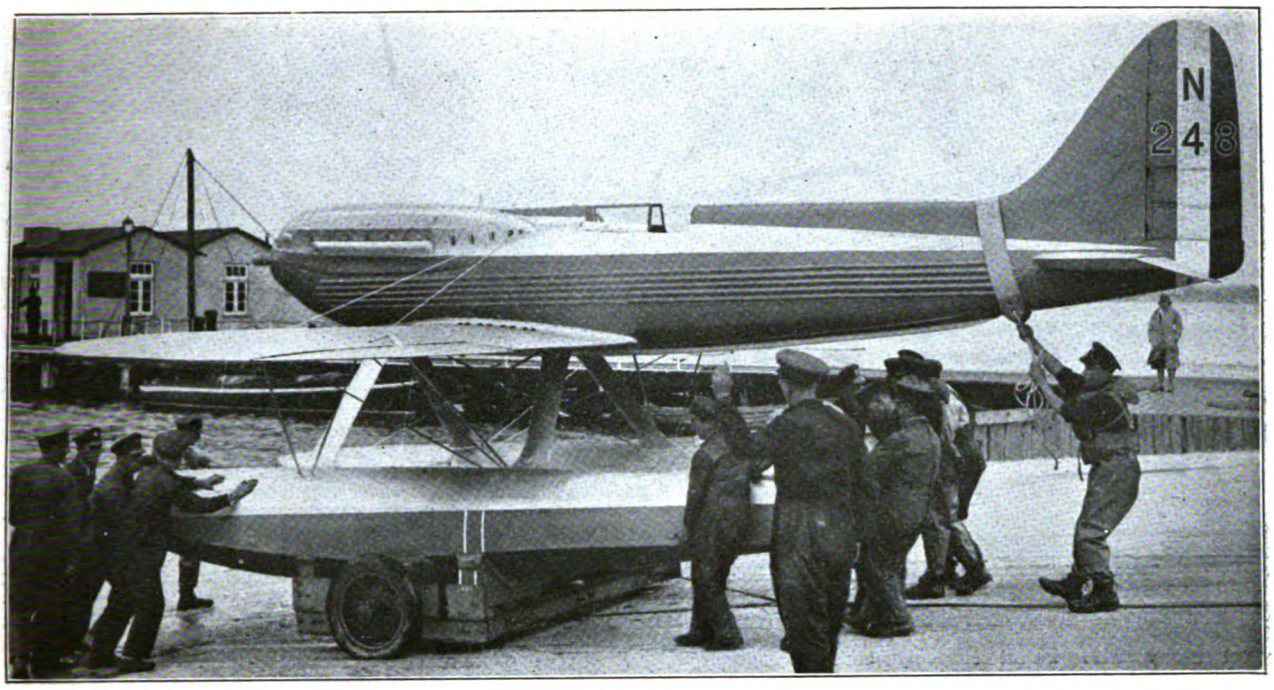


MAN-HANDLED.—The second Supermarine-Rolls-Royce S.6 being pulled up the slip-way at Calshot after being towed from the Supermarine Works by a motor-boat.

But, apparently, the Italians seemed worried by the amount of casual shipping strolling about the Solent, which they very rightly said would make practice difficult. As a matter of fact, our pilots find the same trouble, only we live in a limited monarchy, whereas our Italian friends live in an unlimited dictatorship. No doubt if any wretched boat got in the way of an Italian practice machine on Lake Garda it was either sunk by gun-fire, or the skipper was sent to one of Signor Mussolini's homes for misguided patriots in the Lipari Isles.

Signor Balbo, the Italian Air Minister, or, more correctly, Under-Secretary of State for Air to Signor Mussolini, who himself is Minister for the Army, Navy, and Air Force, arrived at Folkestone on the evening of Aug. 30, where with his staff he was met by the Italian Air Attaché in London and by Group Captain C. E. H. Rathborne, D.S.O., R.A.F., on behalf of the Air Ministry.

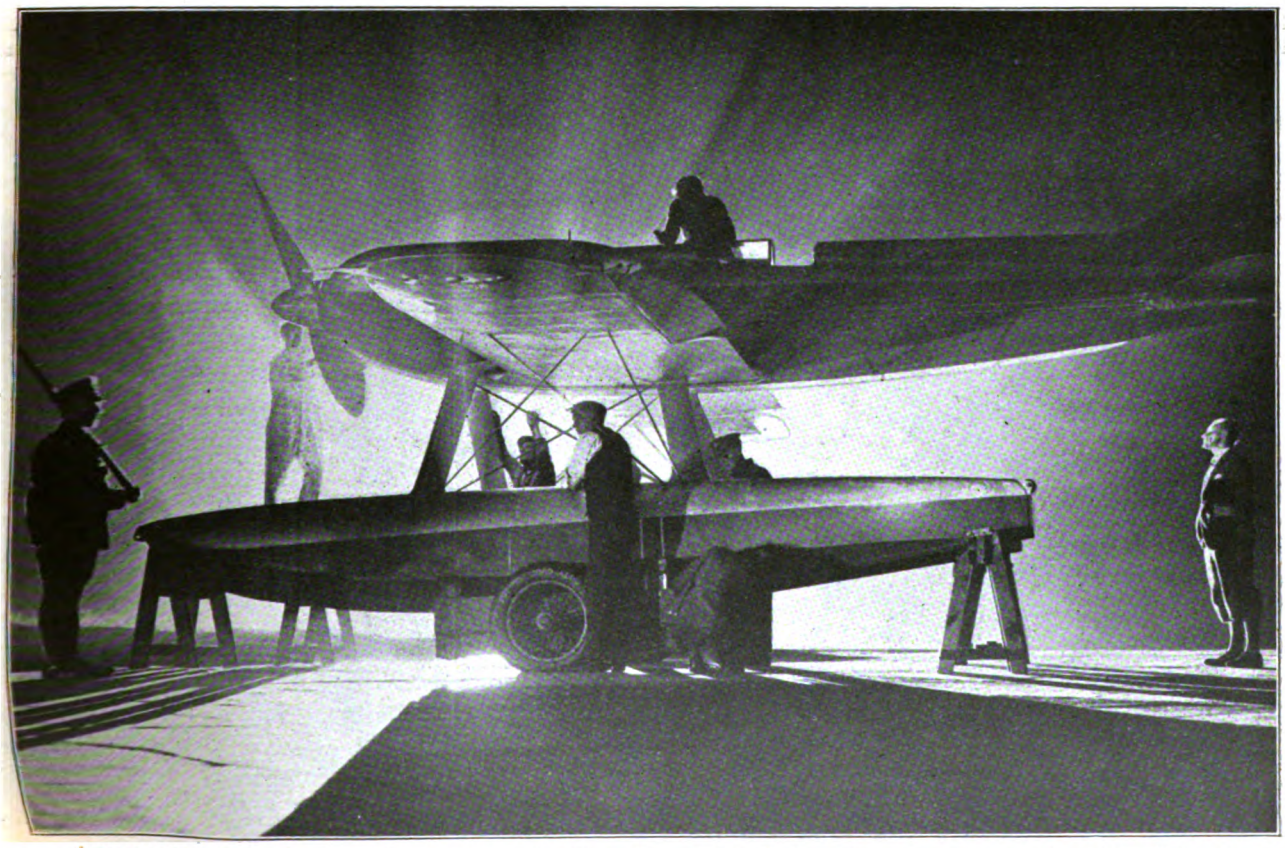
Late at night the special train conveying the equipment of the Italian team arrived at Harwich. The whole train had been brought over by the train-ferry from Zeebrugge. It consisted of 14 large covered wagons.

A working party of about sixty engineers of the Italian Air Force and of the constructing firms also arrived at Harwich.

SATURDAY.

On Aug. 31 the second of the Gloster seaplanes, N-250, made the first real flight done by the Glosters. As usual, it was tested by Sq.-Ldr. Orlebar before letting any of the junior pilots have anything to say to it.

This principle of testing all the machines himself for the first time is one in which Sq.-Ldr. Orlebar has very sensibly followed the custom of Sq.-Ldr. Slatter, who commanded the 1927 team. One scarcely expects a war-time officer with the rank of Squadron-Leader to be a high-class pilot



OVERTIME.—Night work on the Supermarine-Rolls-Royce S.6 during the weeks preceding the Schneider Trophy Contest. On the right is Mr. R. J. Mitchell, the designer of the machine.

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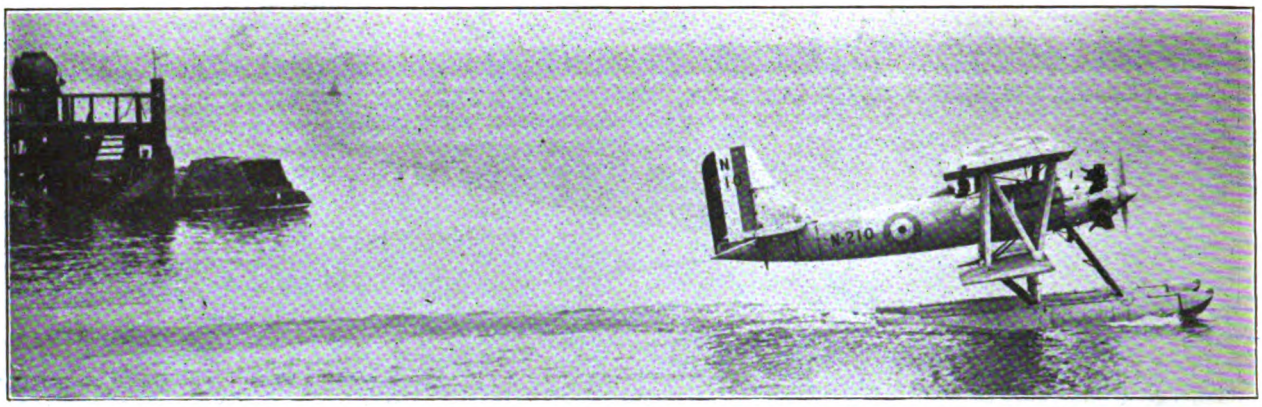


PRACTICE.—The Avro Avocet being taxied out for a practice flight.—(*"Aeroplane" photograph.*)

of racing machines, but in principle a commanding officer ought to be able to fly anything which his subordinates have to fly.

A Squadron-Leader ranks with, but after, a Major in the Army, and one scarcely expects a Cavalry Major to be a first-class broncho-buster, or even to be the best rough-rider in his regiment. Squadron-Leaders in the Air Force are as a rule younger men than Majors in the Army or Lieutenant-Commanders, R.N., but, even so, there are a good many who would scarcely care to tackle flying Schneider speed machines.

To Sq.-Ldr. Orlebar the game is mere child's play, for he was a test pilot at Martlesham away back in 1922, and a Schneider machine, built with all the knowledge which is behind it, is probably a safer mount in its first flight than many of the comic products of brain-storm designers which Sq.-Ldr. Orlebar has tested in the past.

The Gloster-Napier was in the air about 8½ minutes. It certainly seemed to be very fast.

Later, Mr. Waghorn took out the Supermarine, but failed to get it off the water. After several attempts the machine was seen to have a heavy list to one side, and looked like sinking, so it was brought back to the Station, where about 30 gallons of water were emptied out of one of the floats. Investigation showed that a leak had been formed because certain rubber washers which ought to have gone underneath the fittings which carry the wires and struts through to the interior structure of the floats had been forgotten. Thus do mistakes happen even in the best-regulated families. However, nothing serious happened, and the machine was all tee-ed up ready for a trial next day.

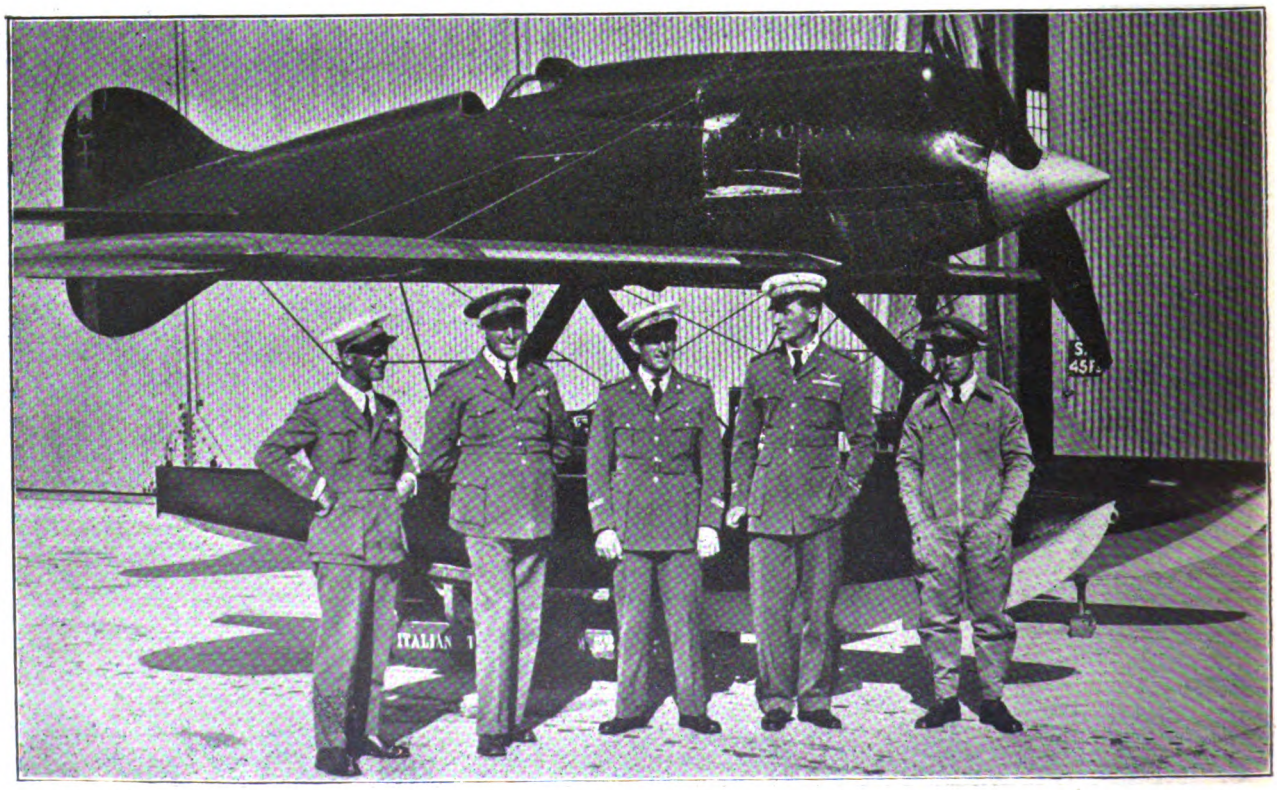
SUNDAY.

Sunday, Sept. 1, seemed to be a regular visiting day at the Station. Among those present, as it were, one noticed Lieut.-Col. Moore-Brabazon, late M.P., but ever a pioneer aviator; Sir Henry Segrave, who admitted that he had come to see what real speed was like; Mr. T. O. M. Sopwith, also a pioneer aviator, and now the owner of one of the finest steam-yachts afloat, and of a crack sailing-yacht; and quite a number of the more or less senior R.A.F. officers, many of whom one had not seen for years. Most of the senior R.A.F. officers within reach seemed to be giving themselves a holiday at Calshot on Sunday.

One particularly interested, and interesting, visitor was Lieut.-Col. Spenser D. A. Grey, D.S.O., who built the original Calshot Air Station, and was its first Commanding Officer. Until that day he had not been on the Station which he founded from the day when he relinquished his first command there. He broke his back in a crash not very long before the War, but the doctors failed to discover the breakage. He flew right through the War, and for a year or so afterwards, his back getting steadily worse and worse, and he was compelled to resign from the R.A.F. Since then he has been very much of a cripple, but, his many friends will be glad to hear, he has improved considerably during the last twelve months.

The only Italian machine which looked like taking the water during the day was the old original machine which was flown at Venice. One of the Sunday papers said that this machine had been described by the Italian Air Attaché as "the Nigger of Venice," because it had got so dirty through much flying. As a matter of fact, the Italian Attaché was really making quite a neat little joke on the late lamented Othello, and intended to call the machine "The Moor of Venice."

Although the visitors naturally and duly admired the beauties of the two Gloster-Napiers, and of the Supermarine-Rolls-Royce S.6 N-247 (which was the first machine



THE ITALIAN TEAM.—From left to right: Capt. Canaveri, Lieut.-Col. Bernasconi, Lieut. Cadringher, Lieut. Monti and Sergt. Agello.—(*"Aeroplane" photograph.*)

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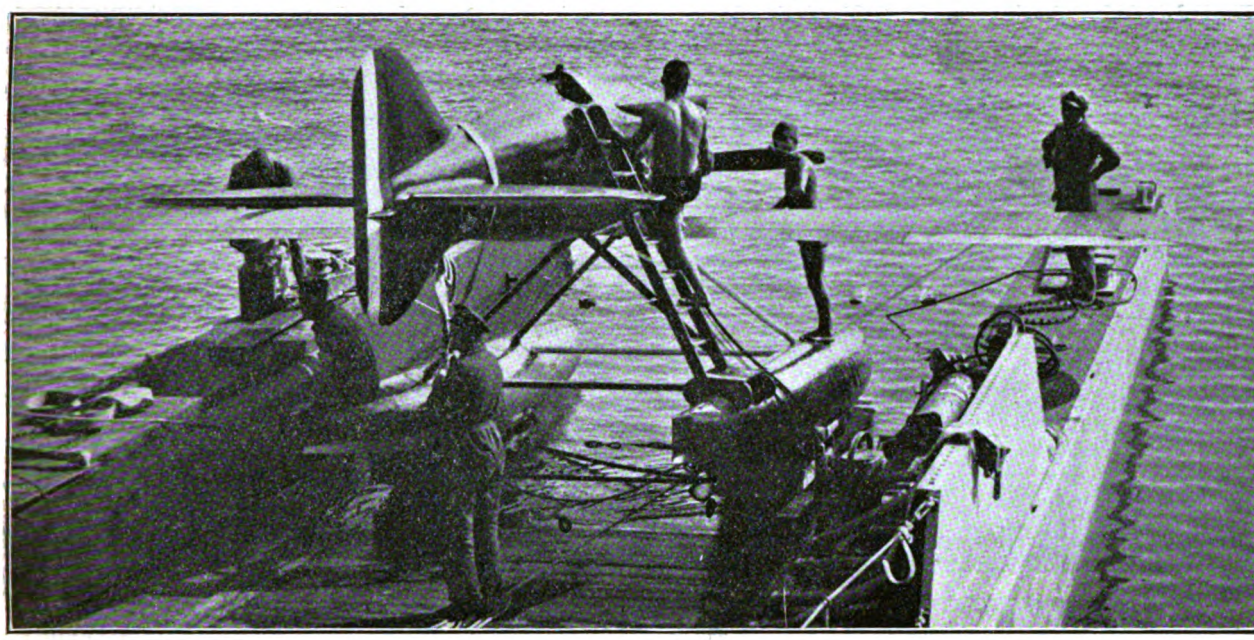

THE UNOFFICIAL LAUNCHING COSTUME.—A practice Macchi M-52 being got ready.—(*"Aeroplane" photograph.*)

of the four to be delivered, and is now almost regarded as a veteran because it has been flown so much), interest, or at any rate, curiosity, centred very largely on the Italian machines. The practice machine, of the 1927 type, as already said, was out on the slipway. The two new Macchi 67's were kept shut up in their shed. But in the next-door shed the little Fiat and the tandem-engined Savoia-Marchetta, were being put together.

THE SMALL FIAT.

The Fiat strikes one at first as a perfect death-trap. When the pilot gets in, a kind of little helmet is shut down on his head, and there seems no possible way for him to get out. As a matter of fact, that does not really matter, because if anything happens to any of the machines (either ours or the Italians') at the speed at which they fly, there is no hope for anybody at all. And as none of the pilots carry parachutes, because there is no room for them, there is not even the hope of doing what the American Army pilots had orders to do in the Pulitzer Trophy Race some years ago, namely, to pull the machine up in a zoom, and then step out with a parachute, and chance where the machine came down.

What really strikes one as being the matter with the Fiat is that she is very much too short for her power. Although the projected frontal area of the engine is very small, the fuselage is smaller still, and it strikes one as being too short to allow the eddies from the cylinder-blocks and the slip-stream to straighten themselves out before they get to the rudder and elevator. Also, like most Italian machines, the Fiat has a cruciform tail-unit—meaning that there is a rudder and fin above and below the fuselage just as there is an elevator and tail-plane on each side. This looks very pretty, and it may be excellent in a wind tunnel with a perfectly straight breeze blowing over the fuselage. But pilots who have flown machines with this cruciform tail say that they are very apt to be directionally unstable, and very tricky to fly because of the whirling slip-stream of the airscrew.

THE OFFICIAL LAUNCHING COSTUME.—Three members of the Italian handling crew.

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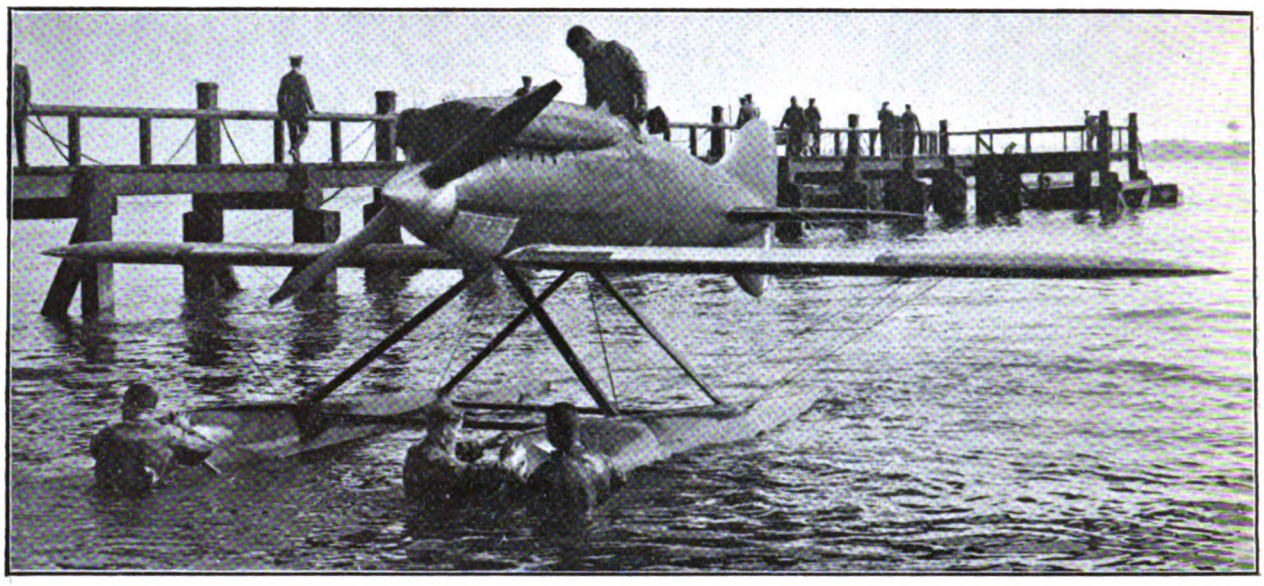


THE "MOOR OF VENICE."—One of the Macchi M-52 monoplanes used for practice purposes by the Italian team.—(*"Aeroplane" photograph.*)

THE HIGH-SPEED EFFORT.

The Savoia-Marchetti is quite an interesting animal. The tandem engine arrangement, with the pilot stuck in between, is precisely as suggested by Herr Dornier some years ago. But instead of continuing the heels of the floats up to carry the tail-unit, as Herr Dornier proposed doing, in this machine the tail-unit is carried simply on two very strong rectangular-section tail-booms—very much as Mr. Koolhoven fitted the tail-unit on the Bat Crow, which he built shortly after the War as a superlatively light light-aeroplane. There is no reason why the arrangement should not work just as well on a very powerful machine.

The general idea of the pilots at Calshot seemed to be that this machine would be terrifically fast on the straight, but would be almost impossible to handle round corners. The notion seems to be that after the Schneider Contest is over this machine may be brought out to go for the speed record over the measured three-kilometre course.

SPEED TIMING.

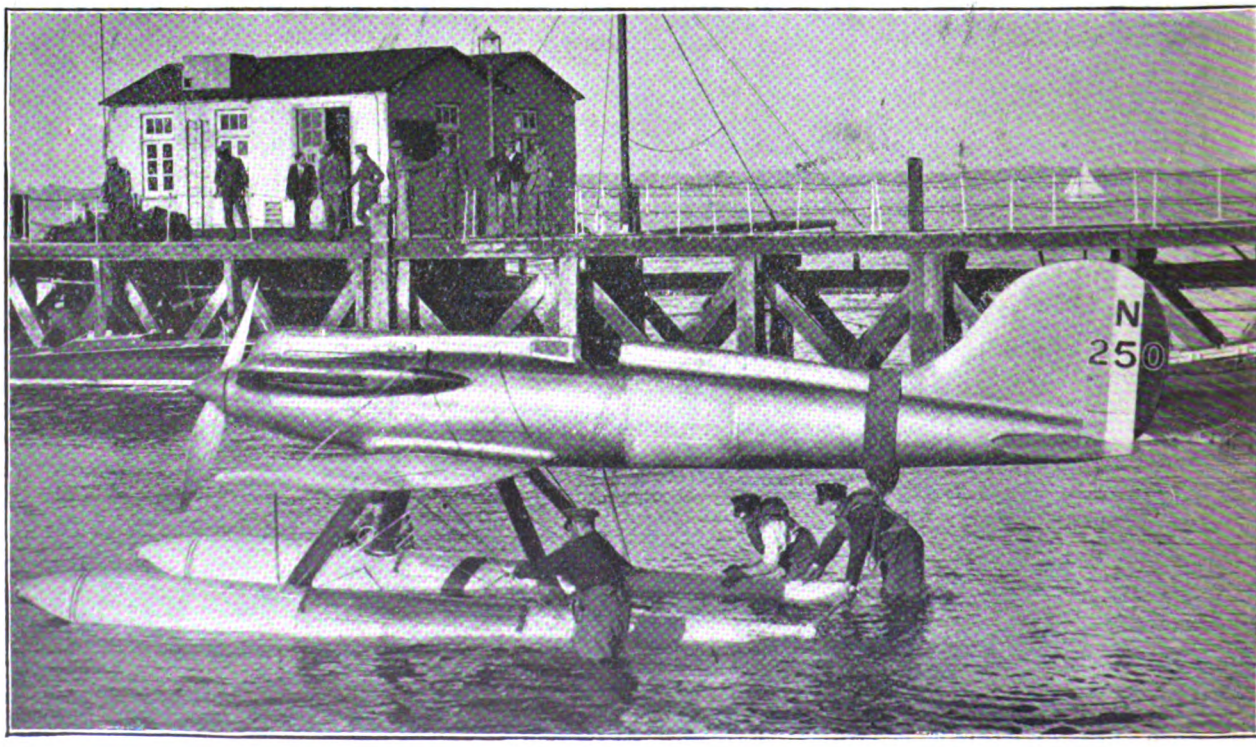
Apropos the speed course, still nobody seems to know how the timing is going to be done. There is a great deal of talk about a cable which has been laid over three kilometres of the Solent, though some people say it is along Southampton Water. This cable is supposed to give absolute synchronisation between two stop-watches, or two cinematograph apparatuses, one at each end.

It may do all that, and yet there may be a horrible personal error because of the delay caused by the nerve-reactions of the time-keeper who has to start and stop the apparatus at each end. There is just as likely to be an error between eye and hand in this way as there is between two first-class synchronised watches each worked by a first-class timekeeper. There is, however, talk of synchronised camera guns, and also of a photographic cinematograph camera.

THE ITALIAN CHOICE.

For the Schneider Contest, the Italians seem to be relying on their two Macchi 67's, with the new Isotta-Fraschini engine, which is alleged to give anything between 1,000 and 1,500 h.p., and as the tail of the team the old record-breaking Macchi 52bis on which Major Bernardi put up the existing World's Speed Record.

A good deal is being made in some papers of the fact that the engines in the Macchis have never been run up. This seems extraordinarily unlikely. One can scarcely imagine the Isotta-Fraschini firm, who are known to have built a quantity of engines for these machines, sending one out in an aeroplane when it has never done its full-power test. The Italians have, in fact, built far more engines for this contest than we have done. The Isotta people alone are said to have built 27 engines, and the Fiat Company have probably built pretty nearly as many.



LAUNCHED.—The Gloster-Napier VI N-250 afloat at Calshot on August 29.—(*"Aeroplane" photograph.*)

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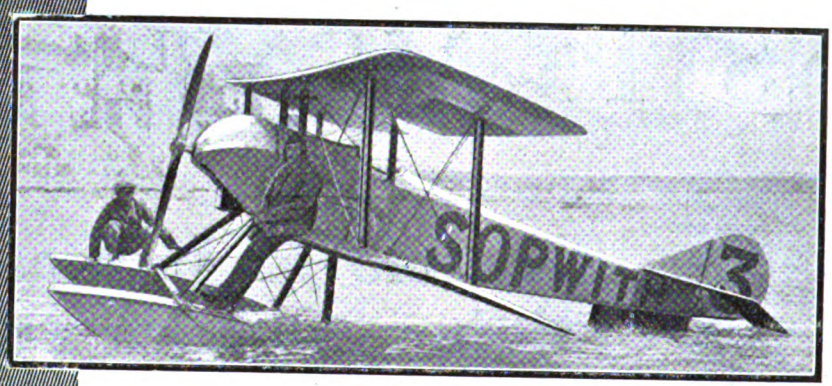
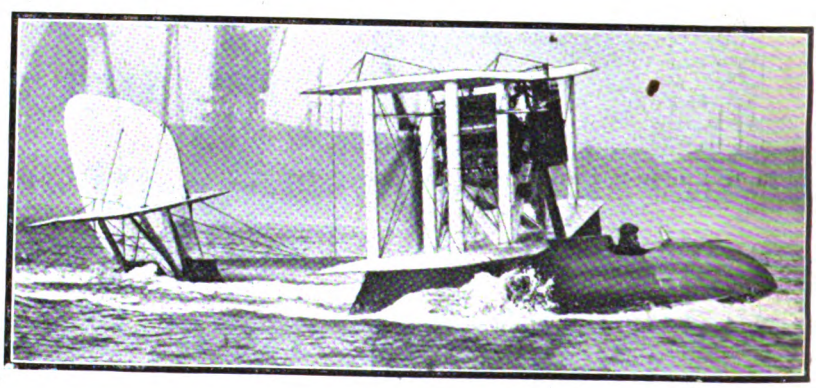
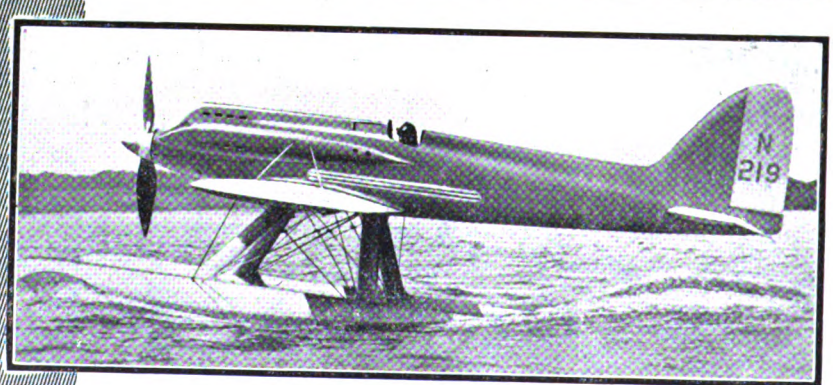


Sopwith Sea Scout (100 h.p. Gnome Engine.) Average speed 86·8 m p.h. Winner at Monaco 1914.



Supermarine Sea Lion (450 h.p. Napier Lion Engine.) Average speed 146 m p.h. Winner at Naples 1922.



Supermarine Napier S.5 (1000 h.p. Napier Lion Engine) Average speed 281·65 m p.h. Winner at Venice 1927.

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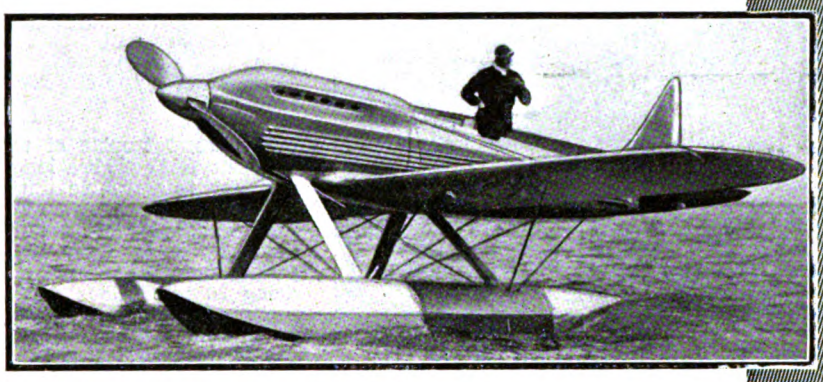
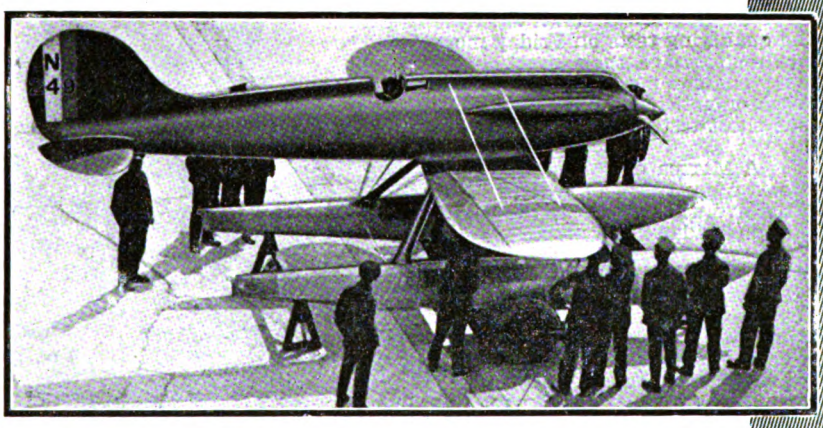


Sqdn. Ldr. A. H. Orlebar, A.F.C., O.C. of the High Speed Flight in the cockpit of the Supermarine Rolls-Royce "S.6." Sqdn. Ldr. Orlebar carried out the first trial flight himself on August 10th, 1929.

Since the early days of Aviation CELLON have always been to the forefront in all the reliability trials and high speed contests where extreme durability and superfine finish have been the aim of the constructors. Despite the rapid development indicated by comparison of speeds over the past few years, CELLON have kept the pace and not only supply the famous Cellon Dope for fabric but also suitable Lacquer Finish for any other form of construction. It is interesting to note in this connection that both Messrs. Rolls Royce Ltd., and Messrs. D. Napier & Sons use Cerric Black Lacquers as a finish for their aero engines.

Thus, since 1914 the principal constructors have invariably used Cellon products for their Schneider Trophy machines. Every British machine that has won the Schneider Trophy has been Cellon finished.

Every British entry this year is finished with the products of CELLON LTD., who wish the pilots every success.



Gloster Napier VI. (1929).

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IN FLYING KIT.—From left to right: Sergt. Agello, Capt. Canaveri and Warrant Officer dal Molin.
("Aeroplane" photograph.)

A Matter of Engines.

As a matter of fact, we might just as well say that our racing engines, which are said to give about 1,900 h.p., with the super-chargers in full blast, have not yet been run up in the machines. There is no intention that they should be.

The Supermarine—Rolls-Royce N-247, which was the first machine delivered, did about four hours' flying, and then a new engine was put in with which this week's practice will be done.

Supermarine—Rolls-Royce N-248 having been flown and found to fly all right, has already been sent back to the factory to have her racing engine put in. And a similar racing engine will be put into 247, probably the day before the contest, which means Thursday of this week. But neither of those two engines will be flown until the machines are put in for the qualifying tests on Friday morning.

The Glosters will also have their practice engines, and their actual racing engines put in before Friday, whether they are both flown or not. And those four racing engines will only have one short test in the air before flying in the competition.

A Matter of Pilots.

Naturally, there is a good deal of talk as to which three British pilots of the five who constitute the team will represent Great Britain on Friday and Saturday

As unfortunately, owing to late deliveries of the machines and/or engines, there has been no chance of trying all five pilots on all four machines, so as to discover definitely whether one pilot likes one machine better than the other, or whether any one pilot or any one machine of any one type or any one engine is better than any other, the whole thing has become simply a lottery.

Sq. Ldr. Orlebar has flown all the machines, but the assumption is that the Commanding Officer will not actually fly in the competition. Mr. Atcherley and Mr. Waghorn happen to have had more flying in the Supermarines than have Flt. Lt. Stainforth and Flt. Lt. D'Arcy Greig.

That has been purely a matter of luck in that though they have all taken the Supermarines out, the two first-named have had more luck with the weather and have been able to get the machine off the water. Consequently Flt. Lt. Stainforth and Flt. Lt. Greig have been allocated to the two Glosters.

Such is the luck of this game that quite conceivably in the last three days before the engine-changing process on Thursday the Glosters may get in more flying than the Supermarines have had

The point really is that there ought not to have been all this delay in delivery. Year after year the same thing happens. We fix the date of a competition. Everybody has months' or years' notice of the date. Then they allow that so many days' practice will be necessary before the competition, and frame a programme for delivery just so long before. And either something goes wrong in the works or something goes wrong with the health of the personnel or something goes wrong with the weather, and we find ourselves putting the finishing touches to the machines on the starting line as usual.

Our only consolation is that other countries are just as bad. Otherwise the Italians would have been over here a month ago with about ten thoroughly tested and tried-out machines.

Sunday's Flying.

On Sunday last we all stood around waiting for something to happen, for although there were no white-caps out on the Solent as there were on the first Monday, August 19, when we all went to see the machines for the first time and Sq. Ldr. Orlebar took up the first Supermarine, in spite of the waves, there was, one was told, quite a nasty swell out in the open, although it looked liked a fairly flat sea with a nice little ripple on the top to help the floats off, and a fine lifting breeze to help lift the wings.

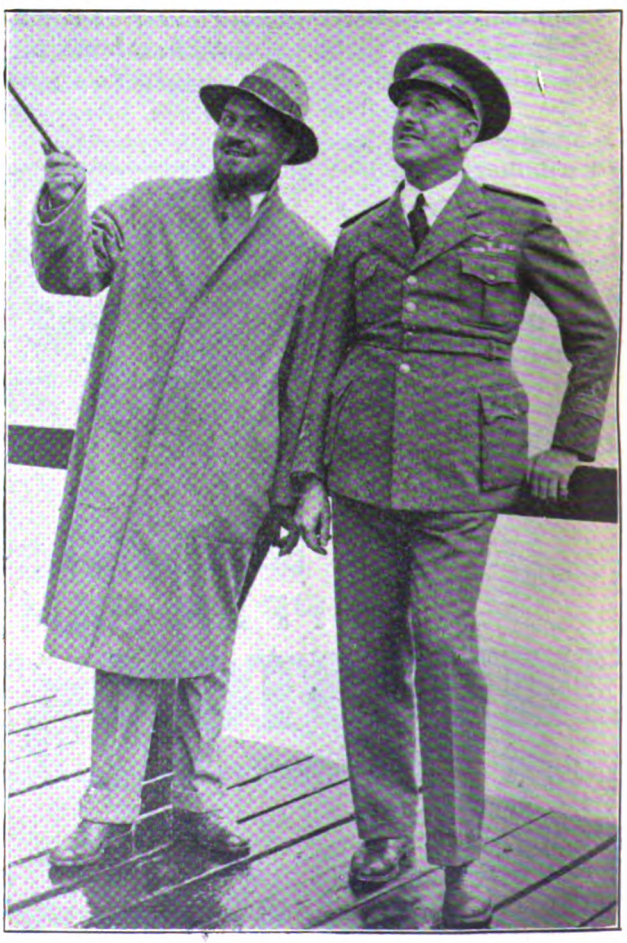
For these high-speed machines a swell coming in from the Channel is far worse than a short choppy sea. The floats can batter their way through a short sea, but a swell leads to porpoising and all sorts of troubles, and dangers. One pilot said that actually these floats took the water more softly than do the flat floats of the Flycatcher which is used for practice.

Wanted,—an Airscrew.

The worst trouble of these very high-speed machines is that they take such a long time to get off. And there is no cure for this trouble until somebody produces a variable-pitch airscrew which is strong enough and reliable enough.

At approximately six miles a minute the speed of the machines through the air is about 520 feet a second. Supposing that the airscrew is doing 1,800 r.p.m., then it is doing 30 revolutions per second, which means that it is progressing forward 17 feet, as near as no matter, per revolution. And you cannot take an airscrew which is intended to go forward 17 feet per revolution and expect it to push efficiently when it is going no feet per revolution, or only going a mere 5 or 6 feet of forward progress per revolution,—which is about what it is doing when the machine is somewhere near its taking-off speed.

The fact is that the most effective part of the airscrew blade is hopelessly stalled while the machine is working up from 0 m.p.h. to about 90 m.p.h. And it only begins to get in any of its fine work at about 250 m.p.h. So the mere fact that a machine takes a long time to get off may con-



THE ITALIAN CHIEFS.—General Balbo and Lieut.-Col. Bernasconi at Calshot.

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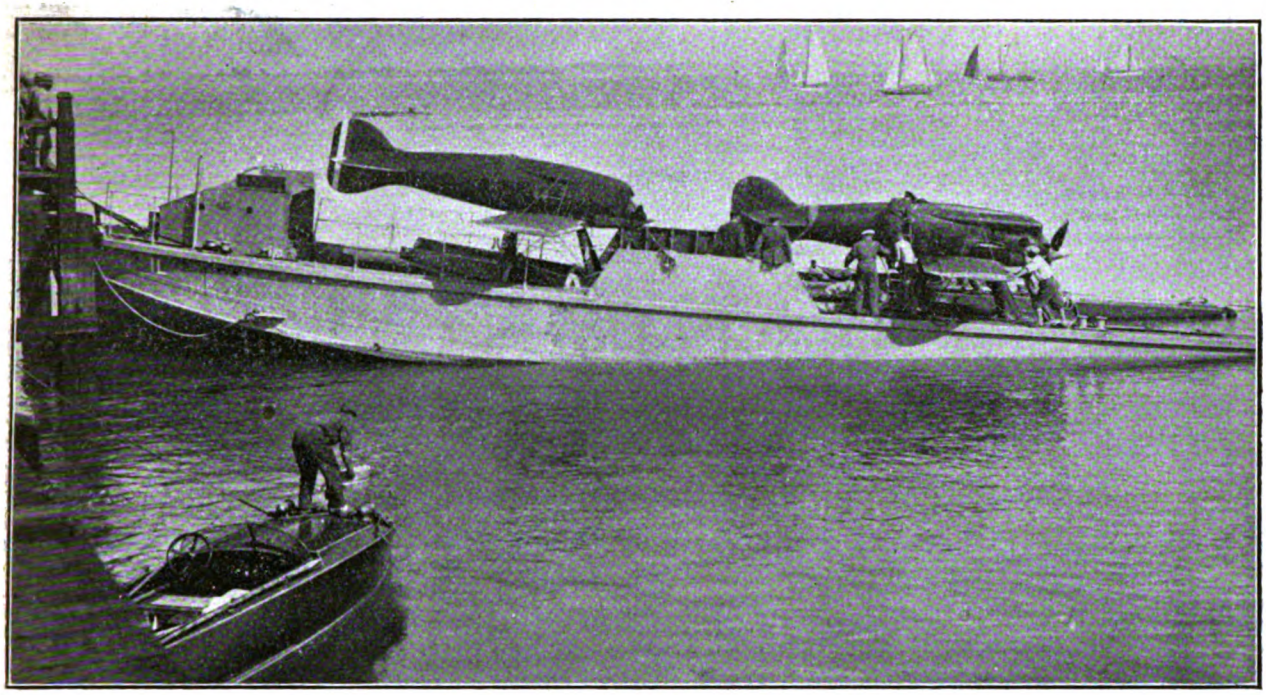

TWO'S COMPANY.—Two Macchi M-52 practice machines on their big lighter.—(*"Aeroplane" photograph.*)

ceivably prove that it is very much faster than any of the others when it does get into the air.

But for these long runs the water must be reasonably flat, though it is better if it is not smooth. And meantime the Fairey-Reed duralumin airscrews are doing their job wonderfully well.

Despite all these minor worries and all this waiting for a chance of getting off, all of which are calculated to get on anybody's nerves and make them jumpy and bad-tempered, the British Team seem to take everything just as calmly as if they were doing ordinary duty in a squadron. And they keep themselves very fit with various forms of exercise, particularly swimming.

Incidentally, a week or two ago one of the officers, who is apt to be a bit absent-minded at times, was walking along the diving plank, and for some reason took it into his head to dive before he got to the end of it, without considering whereabouts the tide was. The result was that he dived into a couple of feet of water and cut the top of his head quite badly. But barring a bit of plaster on his head it seemed to do him no harm.

A MEMORABLE SIGHT.

Late on Sunday night when a good many of the visitors had gone and heavy, stormy-looking clouds were banking up from the south-west, the Supermarine 247 with Mr. Waghorn as pilot went out in its float to the far side of the Solent and hung around for a long time waiting for the swell to flatten still more.

Then Sq. Ldr. Orlebar and a couple of other officers in a speed boat went out to see what was happening and found that conditions were improving considerably. So they hurried back, and Sq. Ldr. Orlebar went out again with the Gloster 250 in another float.

The shades of night were falling uncomfortably fast when a patch of white in the far distance showed that the Supermarine was trying to get off in the usual cloud of spray. Mr. Waghorn made four or five shots at it before the machine lifted, but when he did get away there was no doubt about the speed. Some of the knowing people said that it was the fastest bit of flying that had ever been done. But in that half-light speed is apt to be deceptive.

Shortly afterwards the Gloster also got up and careered around apparently quite amiably under control.

The amazing thing was that anybody should dare to take any kind of a high-speed machine up in such a shocking light, with the prospect of getting it down again. Going up Southampton Water the glow of the set sun must have been

ITALIAN TERRITORY.—Two practice Macchi M-52 monoplanes outside the Italian shed at Calshot.
—(*"Aeroplane" photograph.*)

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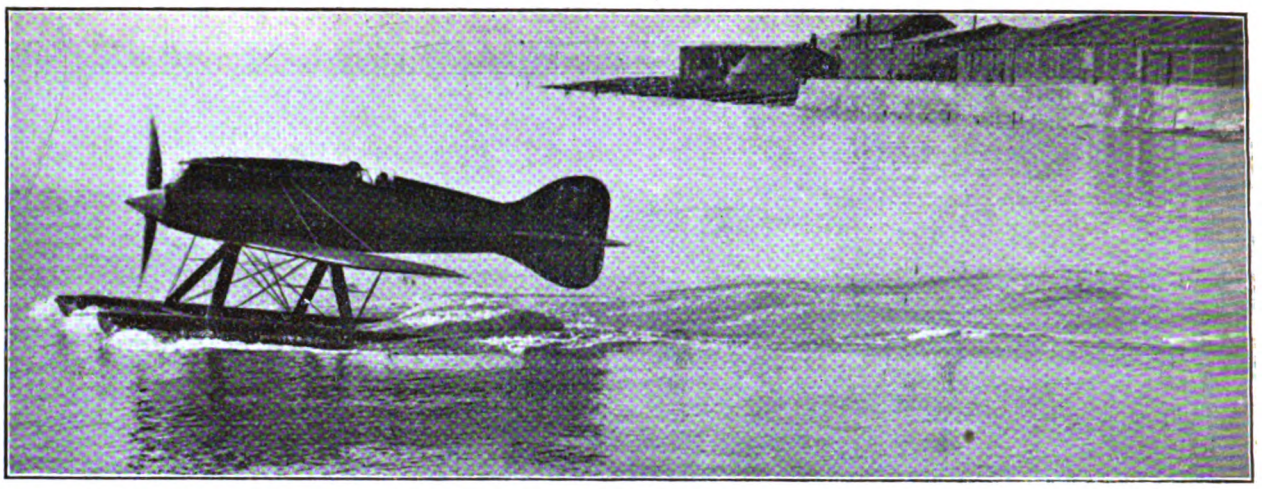


ITALIAN PRACTICE.—A Macchi M-52 afloat at Calshot.—(*"Aeroplane" photograph.*)

in the pilot's eyes, and coming down again he was going into darkness with heavy clouds closing in on the west.

However, both machines got down all right, much to the relief of the onlookers. And those who saw those tiny machines streaking along the sky against the background of angry cloud and falling night, will long remember the sight.

MONDAY.

For Monday's doings THE AEROPLANE has to depend on the excellent report in *The Times*, and a little local gossip, as the Staff of THE AEROPLANE were busy getting this issue of THE AEROPLANE ready and could not be at Calshot. Mr. Colebrook's reports are invariably accurate, and he never misses anything that is essential, so that this information may be taken as authentic.

Apparently the chief excitement of the day happened when Mr. Atcherley, who had taken up the Supermarine-Rolls-Royce N-247 came in with the duralumin fairing of one of his float-struts badly torn. Mr. Atcherley reported that he had intended to fly for half an hour, but after ten minutes he felt that there was something wrong with the feel of the machine so he came down. When the machine got back to Calshot the fairing of the strut was found to be broken, and, what was more curious, the pieces of the fairing left were "fused at the edges much as lead-foil crumbles in the flame of a match."

The experts assumed that the friction of the broken metal parts rubbing each other in the blast from the airscrew was such as actually to burn the metal. At one point the petrol pipe from the tank in the float up to the engine was bent.

The general assumption was that the machine must have hit a sea-gull while flying. This seems quite probable. Gulls are slow flyers and anyhow the gulls over the Solent are so accustomed to slow flying-boats and such things that they have not yet awakened to the fact that they have to get well out of the way before one of these 350 mile-an-hour projectiles comes along.

No doubt if Schneider practice continued long enough the gulls would learn to obey the Air Ministry's temporary Air Navigation Regulations, and would sit on the water so long as the white cross was displayed at Calshot.

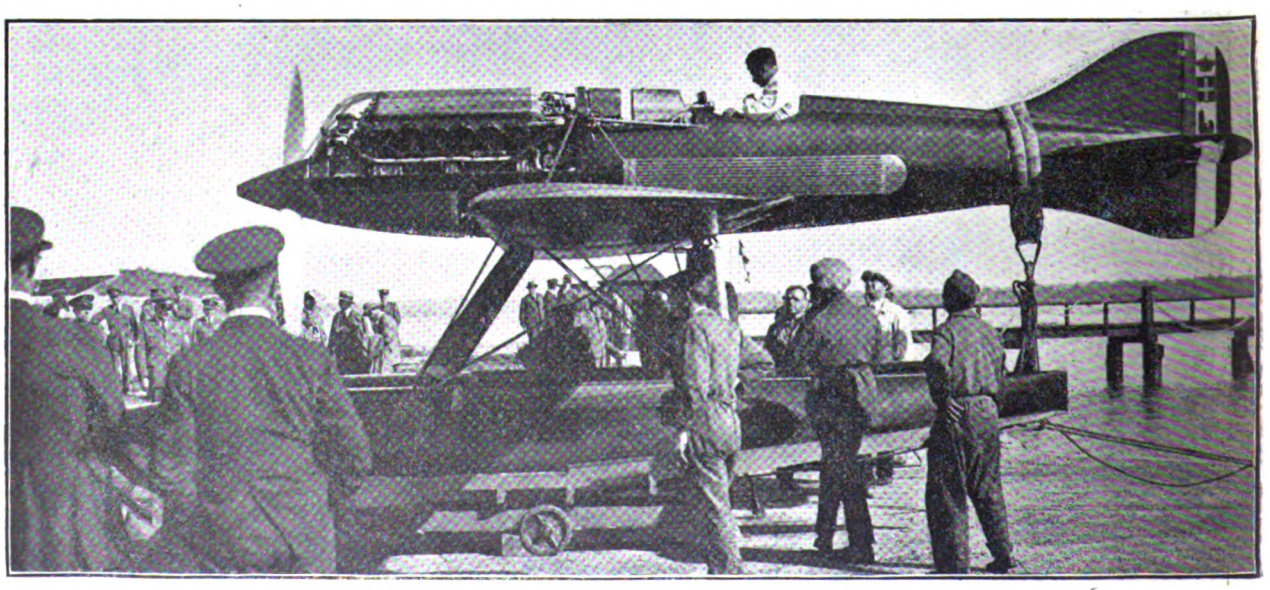
Mr. Colebrook points out very rightly that a collision with a gull might sometimes be as dangerous to the seaplane as to the bird. Ripped cowling or a crumpled wing-tip might throw the machine right out of control.

In another paper there is a report that on examination the damaged strut was found to be covered with blood. This might point to the pilot having been in close proximity to Ryde, in which case possibly the intense vacuum caused by the front of the machine might have caused hæmorrhage from some of the over-charged blood-sucking inhabitants.

The worst part of the incident is that the machine cannot be used for further flying till a new fairing has been made, and the other Supermarine is still having her racing engine fitted. But, as Mr. Colebrook points out, fortunately the experts have now nearly all the data they want about the Supermarines' performance, so while the new fairing is being made the racing engine is being fitted. When the two Supermarines are back each will have one short test flight just to make sure that the engine is all right and then they will be put away till Friday for the qualifying tests.

After Mr. Atcherley's incident Flt. Lt. D'Arcy Greig took out one of the Gloster-Napier VIs for the first time. He flew for about ten minutes, and those present when he came back understood that he was quite satisfied with the performance of the machine.

Another mild alarm happened, when Tomaso dal Molin the Italian Warrant-Officer pilot, took up one of the Macchi practice machines. As he got into the air the onlookers saw water pouring out of one float, and jumped to the conclusion that in getting off he must have hit some obstacle which had punctured the float. The pilot seemed quite happy and flew around over the course while all the speed-boats and other means of water transport set out for places where he would be likely to alight, ready to rescue him when the machine sank if it were lucky enough to make a safe landing with its damaged float.



TUNING UP.—The Macchi 67 monoplane (18-cylinder Isotta-Fraschini engine) built for this year's contest. The fine lines of the fuselage can be compared with those of the machine above.—(*"Aeroplane" photograph.*)

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The Italian and British medical officers with stretchers in their boats went out along with the rest, and those who could not find places in boats sat on the shore and waited anxiously. After he thought he had done enough flying Signor dal Molin alighted, rather bumpily one report says, and remained floating placidly.

One of those present says that while the machine was standing on the slipway he noticed that there was a hole in the top of the float, where apparently a towing-cleat or some other attachment had been torn out. He says also that he saw two or three of the Italian mechanics looking at it. But seemingly nothing was done. The hole was above the water-line but evidently let water in when the machine was ploughing along before getting off, or when the nose dipped under water as she slid off the floats.

The Italian engineers finished assembling one of the new Macchis during the day and the engine was given a run, but according to *The Times* the engine did not give full revolutions and was to be changed.

Later the little Fiat seaplane was brought out and its engine was run up in the dark. Mr. Colebrook is not given to fine writing, but his short description of the performance is worth reproducing.

Later the little Fiat seaplane, the smallest made speed aircraft of its power in the world, was brought out, and in the darkness of the night its 1,000 horse-power engine was run up until the spectators plugged their ears to deaden the roar. Anchored down to the concrete, its exhaust ports glowed blood-red at full throttle, and bursts of blue flame were blown out by the rush of air from the airscrew as the engine sang its full song at the greatest number of revolutions. Through the tiny conning-tower a white light shone as the engine tuner flashed a torch on his instruments, mechanics clung to the floats to steady the tiny body still more, and the scene suggested the fantasy of worshippers at the shrine of the God of Power terrified by their own deity.

FINAL HINTS.

In conclusion one would point out that actually the weather on Friday matters a great deal more than does the weather on Saturday. On Friday the machines have to do their Airworthiness and Seaworthiness Tests.

These tests, which may be made at any of four or five places on the Solent, according to the wind and weather, are arranged thus:—Each machine must taxi over a starting line,—which is not likely to be fixed till the morning of the tests. Then the machine must get off the water and continue over a marked course which must measure between five and ten nautical miles. While on this course it must alight twice and taxi over two distances, each half a nautical mile in length, duly marked by buoys, at a minimum speed of 12 knots. After flying over the remainder of the course the aircraft must alight again and taxi over the finishing line.

The official Stewards of the Meeting, or Commissaires, or Kommisars, may allow competitors who have been unsuccessful in the test to make a second and last attempt.

After completing these tests the machines must be moored out immediately to a buoy where they must remain afloat for six hours without anybody on board.

No repairs may be made during these tests, and no modification may be made to the machines between the completion of these tests and the contest itself. Changes of airscrews and certain engine parts are allowed.

This does at any rate give the competitors a chance of putting on low-pitch airscrews which will help the machines to get off and taxi comparatively easily and will still give them reasonable flying speed of say a mere 200 m.p.h.

Thus readers may see that unless the weather is good on Friday there is no hope of getting these machines through a test which involves four lots of taxying and getting three times into the air all in one series of operations.

On the day of the contest itself, when the machines only have to get off the water once and then get down somehow without smashing themselves, no matter what the weather may be there is always a possibility of finding a piece of water either in Southampton Water itself or in a sheltered part of the Solent from which the machines can get off.

Those who have read so far through all this matter concerning the Schneider Trophy Contest will realise that from any common-sense point of view the whole thing is nonsense. The idea that it is in these days any help to the development of seaplanes might just as well be washed out straight away. And with it should go all these so-called navigating and seaworthiness tests.

We may as well recognise in future that the whole thing is purely and simply a speed test and that all we need to do is to produce machines which will get off the water once and get down again.

Failing that, the whole scheme of the contest ought to be altered and the machines should be tied down to a certain definite speed of alighting. This would indeed help the progress of aviation, because when designers had to turn their attention to giving a really slow alighting speed, which would mean a low stalling speed, combined with enormously high flying speed, then they would have to use other portions of their brains besides those which produce personally-conducted projectiles.—C. G. G.

WE'RE HERE.—The Italian team arrives.—Left to right: Lt. Cadringher, Lt. Monti, Lt.-Col. Bernasconi, Warrant Officer dal Molin, and Sergt Agello.

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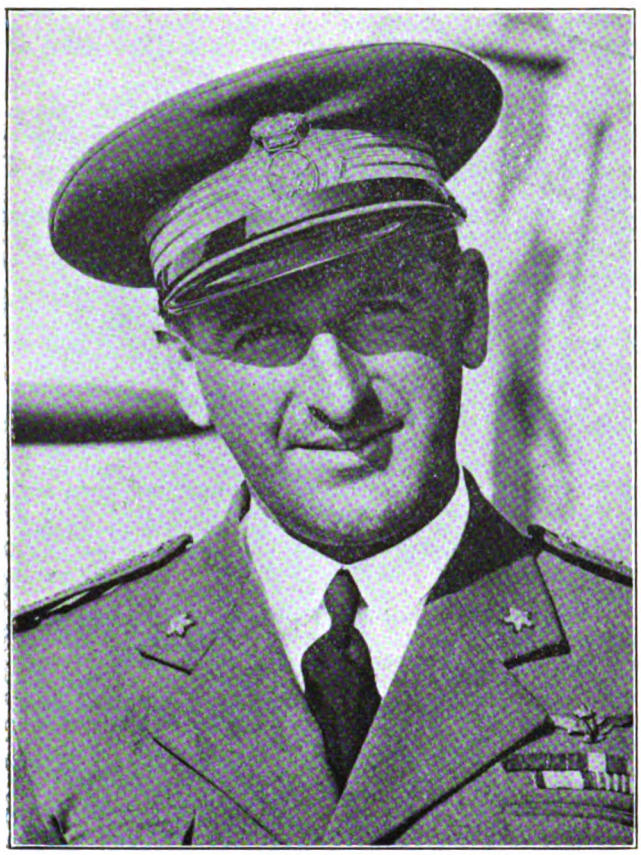

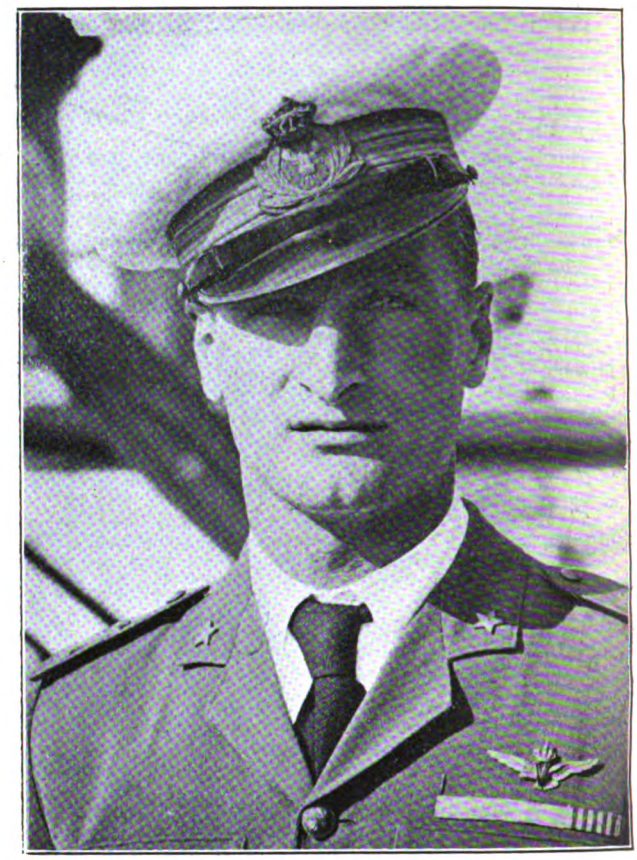

THE ITALIAN OFFICERS.—Left and right:—

LIEUTENANT-COLONEL (ENGINEER) MARIO BERNASCONI (wing commander), aged 36, Chevalier of Saint Michael and Lazarus, Chevalier de la Couronne d'Italie, the Croix de Guerre. He is a Piedmontese. He entered the War an engineer officer, and in 1916 became a pilot. Later he was appointed an instructor at military flying training schools, and subsequently commanded two fighter schools. After the War he remained at the research and experimental station of Monte Celio, near Rome. Then in December, 1927, he was selected as Commanding Officer.

TENENTE (FLYING OFFICER) GIOVANNI MONTI, aged 29, has been a pilot since 1918. After the War he left the Service, but on the formation of the Royal Italian Air Force in 1922 he rejoined as a pilot in D'Annunzio's old squadron "Serenissima." In 1924, 1925, and 1926, he was in a squadron in Cirenaica. He has the bronze medal for valour, the Croix de Guerre, and colonial decorations.

TENENTE (FLYING OFFICER) REMO CADRINGHER, aged 27. He has been a pilot since 1924 in fighter squadrons.

CAPTAIN A. CANAVERI, the reserve pilot, who was prevented by sickness from qualifying for the special high-speed badge, is 31, and was born at Bologna. He has been a pilot since 1918 on sea and land machines both for reconnaissance and for army co-operation, eventually becoming a fighter pilot. After serving in the War he took part in campaigns in Libya. He is a Chevalier de la Couronne d'Italie and has the Military Cross for Valour and two Croix de Guerre.

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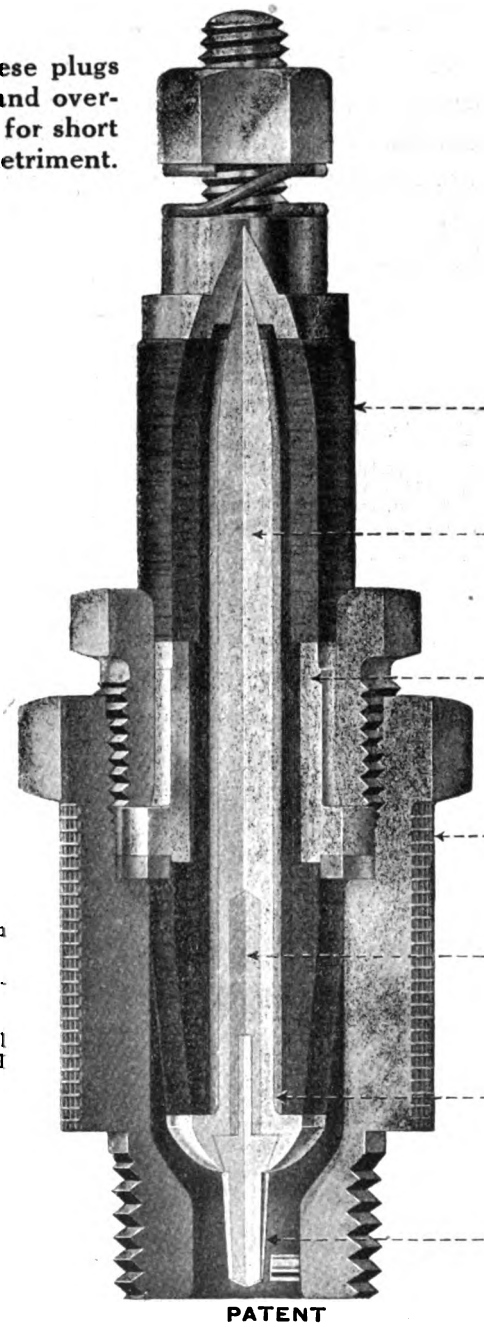

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The London Gazette.

August 27.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—The following flight cadets having successfully passed through the R.A.F. College, Cranwell, are granted perm. comns. as Plt. Offs. with effect from and with seniority of July 27:—D. W. Lane, G. G. Barrett, J. A. Powell, R. L. Phillips, F. C. Cole, R. C. Keary, K. W. Niblett, S. S. Murray, K. P. Lewis, E. R. Simonds, L. Croker, R. E. de T. Vintras, G. K. Fairtlough, M. L. Heath, W. S. Hebden, W. V. L. Spendlove, I. B. Newbigging, F. W. Stannard, F. R. Drew, W. T. F. Wightman, W. I. H. Burke, E. J. Corbally, H. R. L. Hood, A. D. Selway, C. A. Watt, L. E. J. Lucas, A. O. Molesworth, R. C. Mead, F. A. J. Pollock-Gore, D. J. Douthwaite, Lord Malcolm A. Douglas-Hamilton.

G. V. Carey is granted a S.S. comn. as a Flg. Off. with effect from and with seniority of Aug. 6. The following are granted S.S. comns. as Plt. Offs. on probation with effect from and with seniority of Aug. 15:—R. B. Abraham, M. J. Adam, A. C. Bailey, J. L. C. Banks, D. Barclay, D. Carr, R. J. Cohen, N. Kirkham, A. N. Luxmoore, J. E. C. McClure, R. M. Noblston, A. W. B. Page, M. E. Pickford, W. J. Scott, W. B. J. Sharp, G. E. B. Stoney, G. R. Stroud, L. Watson, R. L. West, A. M. Wood. The following are granted S.S. comns. as Plt. Offs. on probation with effect from Aug. 16, and with seniority of Aug. 15:—J. C. Atkins, E. Poole.

Lt. F. M. R. Stephenson, R.N., is re-attached to the R.A.F. as a Flg. Off. with effect from Aug. 3 and with seniority of July 14, 1924. Lt. R. G. Poole, R.N., is re-attached to the R.A.F. as a Flg. Off. with effect from Aug. 14 and with seniority of June 16, 1924.

The following Plt. Offs. on probation are confirmed in rank:—J. R. Ayling (Aug. 15); W. S. C. Adams, R. A. Beynon, E. J. Brighton, D. A. Craik, E. B. Grace, R. Jones, G. R. Montgomery, M. G. Parker, S. P. Richards (Aug. 24).

Group Capt. P. L. W. Herbert, C.M.G., C.B.E., is placed on the half-pay list, scale A (Aug. 25).

The S.S. comn. of Plt. Off. on probation J. Lewis is terminated on cessation of duty (Aug. 28).

MEDICAL BRANCH.—Flt. Lt. G. H. H. Maxwell, M.B., is promoted to the rank of Sq. Ldr. (Aug. 22).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—The following are granted comns. in the Special Reserve as Plt. Offs. on probation:—M. M. Hutchinson (June 21); F. W. Hartridge (June 29).

The following Plt. Offs. on probation are confirmed in rank:—J. T. S. Horsfall (Aug. 22); G. C. Holland (Aug. 27). Flg. Off. E. F. Smith is transferred from Class C to Class AA (1) (Aug. 14). Flg. Off. C. U. G. Tristram is transferred from Class A to Class C (July 4). Flg. Off. G. V. Carey relinquishes his comn. on appointment to a S.S. comn. in the R.A.F. (Aug. 6).

Appointments.

Week ending Sept. 2.

GENERAL DUTIES BRANCH.—Wing Commanders R. G. D. Small, to H.Q., Fighting Area, Uxbridge, for Air Staff duties, 16/9. J. H. Herring, D.S.O., M.C., to H.Q., Inland Area, for Personnel Staff duties, 6/8. W. S. Douglas, M.C., D.F.C., to H.Q., Middle East, for Air Staff duties, 16/8.

Squadron Leaders E. J. Cuckney, D.S.C., to School of T.T. (Men), Manston, 20/8. M. F. Browne, to No. 1 F.T.S., Netheravon, 9/8. G. W. Bentley, D.F.C., to H.Q., Coastal Area, 9/8. C. W. Mackey, to R.A.F. Training Base, Leuchars, 12/8. E. L. P. Morgan, to H.Q., A.D.G.B., 15/8. C. Boumphrey, D.F.C., to H.M.S. *Hermes*, 11/8.

Flight Lieutenants G. O. Venn, to H.Q., A.D.G.B., 2/8. S. L. Quine, M.C., to School of Army Co-operation, No. 16 (A.C.) Sqdn., Old Sarum, 20/9. A. M. Wray, M.C., D.F.C., A.F.C., to No. 3 F.T.S., Grantham, 2/8. F. G. Jennings, to H.Q., Coastal Area, 1/8. A. L. R. Duke, to No. 3 F.T.S., Grantham, 17/8. D. W. F. Bonham-Carter, to H.Q., Wessex Bombing Area, Andover, 12/8. R. L. McK. Barbour, D.F.C., A.F.C., to A.A.E.E., Woodbridge, Suffolk, 12/8.

Flying Officers T. O'N. East, to R.A.F. Practice Camp, Catfoss, 21/8. C. Dickson, to Armament and Gunnery School, Eastchurch, 30/8.

Pilot Officers R. A. Beynon and M. G. Parker, to No. 2 (A.C.), Sqdn., Manston, 14/8. S. P. Richards, to No. 4 (A.C.) Sqdn., S. Farnborough, 14/8. R. Jones, to No. 13 (A.C.) Sqdn., Andover, 14/8. W. S. C. Adams, E. B. Grace and M. V. Delap, to School of Naval Co-operation, Lee-on-Solent, 14/8. D. A. Craik, to No. 58 (B) Sqdn., Worthy Down, 14/8. G. R. Montgomery, to No. 502 (Ulster) (B) Sqdn., Aldergrove, 14/8. G. D. Hoyland, to No. 26 (A.C.) Sqdn., Catterick, 14/8. S. S. Mackay, to No. 35 (B) Sqdn., Bircham Newton, 14/8. R. E. Watts, to Aircraft Depot, India, 10/7. T. W. G. Eady, to No. 28 (A.C.) Sqdn., India, 10/7. E. Rotheram, to No. 20 (A.C.) Sqdn., India, 10/7. The following Pilot Officers are posted to R.A.F. Depot, Uxbridge, on appointment to S.S. Comns. (on probation):—Ralph Bagshaw Abraham, Maurice James Adam, Adam Carter Bailey, John Langton Courtenay Banks, David Barclay, David Carr, Ronald Joseph Cohen, Norris Kirkham, Arthur Noble Luxmoore, John Evelyn Crosland McClure, Reuben Michael Noblston, Arthur Wilfred Brian Page, Maurice Edward Pickford, William Joseph Scott, William Bernard John Sharp, George Edward Bowes Stoney, Graham Robertson Stroud, Leslie Watson, Ralph Leonard West, Allan Morton Wood, 15/8. John Croft Atkins, Edward Poole, 16/8. The undermentioned Pilot Officers are posted on appointment to Perm. Comns. from the R.A.F. College, with effect from 27/7:—D. W. Lane, to No. 13 (A.C.) Sqdn., Andover. G. G. Barrett, L. Crocker, F. R. Drew, W. I. H. Burke, to R.A.F. Base, Calshot. J. A. Powell, G. K. Fairtlough, to No. 56 (F) Sqdn., North Weald. R. L. Phillips, F. W. Stannard, to No. 2 (A.C.) Sqdn., Manston. F. C. Cole, C. A. Watt, L. E. J. Lucas, D. J. Douthwaite, to No. 17 (F) Sqdn., Upavon. R. C. Keary, A. O. Molesworth, to No 25 (F) Sqdn., Hawkinge. K. W. Niblett, to No. 100 (B) Sqdn., Bicester. S. S. Murray, M. L. Heath, W. S. Hebden, to No. 16 (A.C.) Sqdn., Old Sarum. K. P. Lewis, R. C. Mead, to No. 26 (A.C.) Sqdn., Catterick. E. R. Simonds, to No. 43 (F) Sqdn., Tangmere. R. E. de T. Vintras, I. B. Newbigging, to No. 33 (B) Sqdn., Netheravon. W. V. L. Spendlove, Lord M. A. Douglas-Hamilton, to No. 3 (F) Sqdn., Upavon. W. T. F. Wightman, E. J. Corbally, A. D. Selway, to No. 1 (F) Sqdn., Tangmere. H. R. L. Hood, to No. 23 (F) Sqdn., Kenley. F. A. J. Pollock-Gore, to No. 35 (B) Sqdn., Bircham Newton.

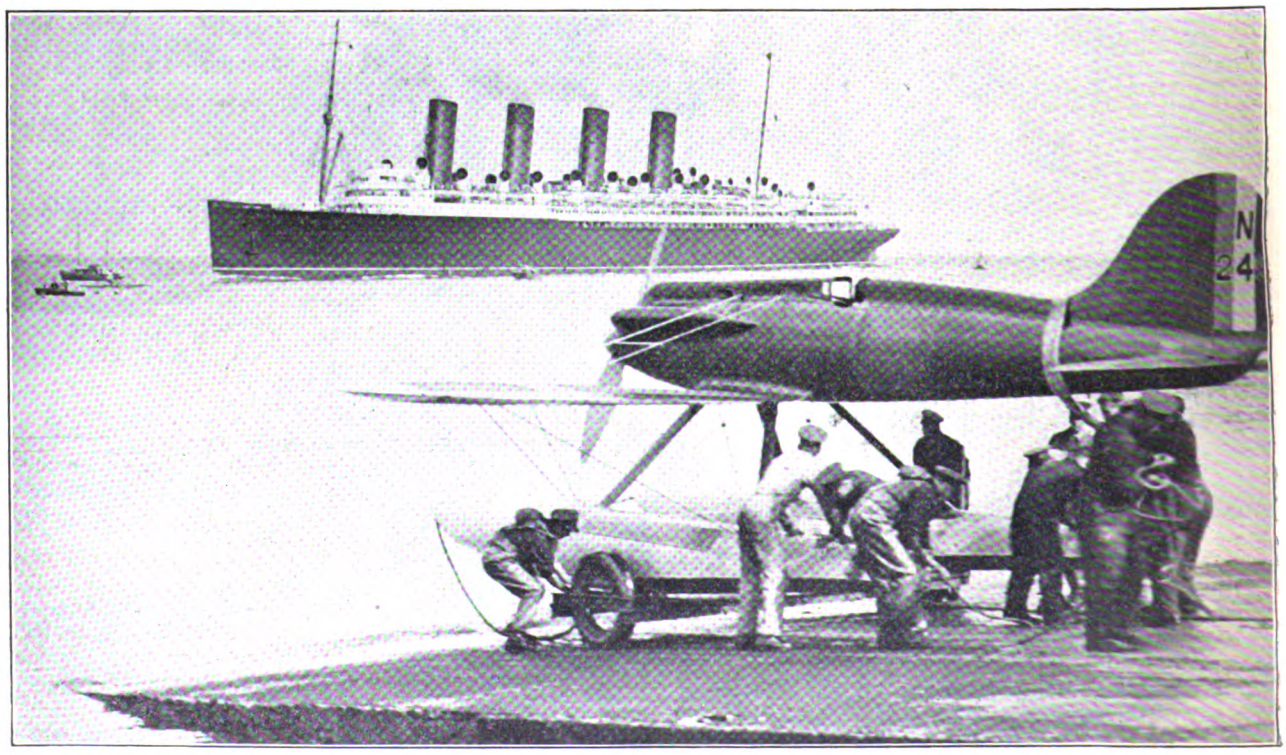
MEDICAL BRANCH.—Flight Lieutenants J. P. Hederman, to Station H.Q., Hendon, 16/9. G. P. O'Connell, M.B., to H.Q., R.A.F., India, 16/8. B. Fitz-James Haythornthwaite, M.B., to A. and G. School Eastchurch, 18/9. L. I. Hyder, to R.A.F. Depot, 30/8. L. C. Palmer-Jones, M.B., to R.A.F. Base, Malta, 5/8.

Flying Officer L. O'Connor, to No. 26 (A.C.) Sqdn., Catterick, 27/8.

STORES BRANCH.—Flight Lieutenant S. D. Dennis, to No. 5 F.T.S., Sealand, 17/8.

Flying Officers D. G. McDiarmid, to No. 2 Stores (Ammunition) Depot, Altrincham, 17/8. C. S. Whellock, to Station H.Q., Upper Heyford, 17/8. C. B. Horsfield, to H.Q., Inland Area, 19/9.

ACCOUNTANT BRANCH.—Flight Lieutenant H. W. Carpenter, to Station H.Q., North Weald, 12/8.



TRIALS.—R.M.S. "Mauretania" doing her best to wash away the Supermarine-Rolls-Royce S.6 just in front of her bows, and the Gloster-Napier VI on the slipway.—(*"Aeroplane" photograph.*)

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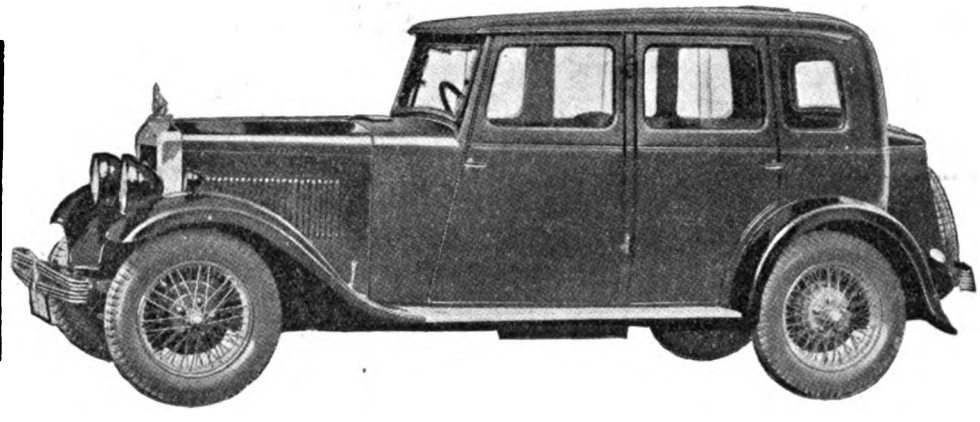

1930 PRICES (*ex works*)

Morris Minor

Tourer	£130
Saloon (Fabric)	£140
Saloon (coachbuilt with folding head)	£149

Morris Cowley

Two-Seater	£162-10
Four-Seater	£180
Coupe (with folding head) ...	£185
Saloon (four door)	£195
Saloon (folding head and luggage grid)	£200

Morris Oxford Six

Four-Five Seater Tourer ...	£275
Saloon (Fabric)...	£285
Coupe (with sliding head) ...	£295
Saloon (coachbuilt with sliding head)	£299

Morris Isis Six

Tourer	£375
Saloon (All Steel) ...	from £385
Club Coupe (Fabric)	£399

Dunlop Tyres Standard

100 per cent. Triplex Safety Glass on all models.
Chromium plating on all external bright parts.
Opening heads on wide range of enclosed models.
New colours, new refinements and new comforts in coachwork

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The Riots in Palestine.

The following statement was issued by the Colonial Office on Aug. 27:—

General Situation.—The situation is reported as well in hand, all being quiet in Jerusalem and Jaffa, where up to the present most of the rioting has taken place. The country outside these centres is, however, still unsettled, continuous organised attacks being carried out by Arabs on numerous scattered Jewish colonies. There have been no attempts so far at interfering with essential services.

The following reinforcements have either arrived in Palestine or are on their way from Egypt and Malta:—

H.M. ships *Sussex, Barham, Courageous, Veteran,* and *Wanderer.*

The 2nd Battalion, The South Staffordshire Regiment; 2nd Battalion, The Green Howards; 1st Battalion, The South Wales Borderers; one company, 1st Battalion, The King's Regiment; one squadron Armoured Cars, 12th Lancers; Detachments of Royal Engineers, Signals, and Royal Army Service Corps; and one squadron, Royal Air Force.

[The Unit referred to was two flights of No. 45 (Bomber) Squadron from Helwan.]

Two infantry battalions at Malta have received orders to hold themselves in readiness if required.

With regard to the recent report that British troops being conveyed from Haifa in a railway train were attacked by Arabs and disarmed, no official report to this effect has been received.

A *Reuter* message from Jerusalem dated Aug. 27 states:—

The situation in Palestine may now be said to be well in hand, with sufficient forces available to preclude any fear of more than local and sporadic outbreaks and to ensure the power of the Government to deal with any such. From Friday to Sunday last week, however, the state of the country was extremely critical. During that time the total strength of the forces available was 1,200 members of the police force, of whom fewer than 200 were British, eight armoured cars, and a few aeroplanes.

The Colonial Office on Aug. 28 stated:—

There is little change in the situation since the last statement was issued. Jerusalem, Jaffa, and Haifa are reported as quiet, disorder in the neighbourhood of the last-named place being satisfactorily dealt with by a naval detachment from H.M.S. *Barham.*

Aircraft have been employed reconnoitring the disturbed areas, and fire from the air has been opened on parties of Arabs in the neighbourhood of Haifa, Ramleh, and on the hills around Jerusalem. A strong Arab concentration was reported south-east of Gaza, but aircraft have been unable to locate any parties of Arabs in the neighbourhood, and no attack has so far materialised.

The Times correspondent in Jerusalem in a message dated Aug. 29, states:—

In view of the statements which have been made on the subject it is important to make it quite clear that there has been no bombing of villages by aircraft during the disturbances, and that reckless firing on the part of troops and special constables is strictly forbidden.

Messages of sympathy with the Arabs have been received from the disaffected section of the Beni Sakhr tribe in Transjordan. The emissaries who brought these messages have been detained in Jerusalem pending inquiries. The attempts made to send arms and ammunition from the tribes in Transjordan to the Arabs in Palestine have been frustrated.

The Colonial Office on Aug. 29, stated:—

The situation both in Palestine and Transjordan continues to be quiet. A small outbreak at Safed last night was successfully quelled on the arrival of troops who were on their way before this disorder occurred. Considerable forces of Arabs are reported to have crossed the Syrian frontier into Palestine this morning. Aircraft have been despatched to check their progress.

The following statement was issued by the Colonial Office on Aug. 21:—

Our armed forces hold all the important centres in Palestine from Safed in the north to Beersheba in the south, and in this area the situation is reported as quiet.

It is reported that Beduin tribes in Sinai, Syria, and Transjordan are threatening to march on Palestine and that some have already crossed the frontier. Royal Air Force armoured cars have been sent to deal with the situation.

All the aircraft of the Fleet Air Arm carried by H.M.S. *Courageous* have been landed at Gaza.

The following statement was issued by the Colonial Office on Sept. 2:—

The country north of Safed is inclined to be restless, but in other districts the situation is reported as generally quiet.

Yesterday [Sunday] demonstration flights were carried out in strength by aircraft over the north and north-eastern areas of Palestine, where armed bands of Arabs were reported as crossing fom Syria. The proclamation by the High Commissioner of Palestine and Transjordan was distributed over the Jerusalem area by aircraft.

Lord Thomson's Tour of Service Stations.

The Secretary of State for Air, Lord Thomson, visited a number of Units of the R.A.F. during the week ending Aug. 31. On Aug. 26 he flew from Northolt to Tangmere, where he visited No. 1 (Fighter) Squadron and No. 43 (Fighter) Squadron. From there he went on the same day to Gosport, and watched the training work of the Fleet Air Arm.

On the morning of Aug. 27 he visited the Headquarters of No. 10 Group, and the School of Naval Co-operation, at Lee-on-Solent, and in the afternoon he went to Worthy Down. That night he watched the night bombing work of No. 58 (Bomber) Squadron.

On the morning of Aug. 28 he remained at Worthy Down to see the day-time work of the Squadron, and returned that afternoon by air to Northolt. On Aug. 29 he flew to Grantham, where he inspected No. 3 Flying Training School, and returned to Northolt by air the same day.

On Aug. 30 he visited Halton and inspected the School of Technical Training (Apprentices). On Aug. 31 he inspected the organisation of the Air Defence of Great Britain Headquarters at Uxbridge.

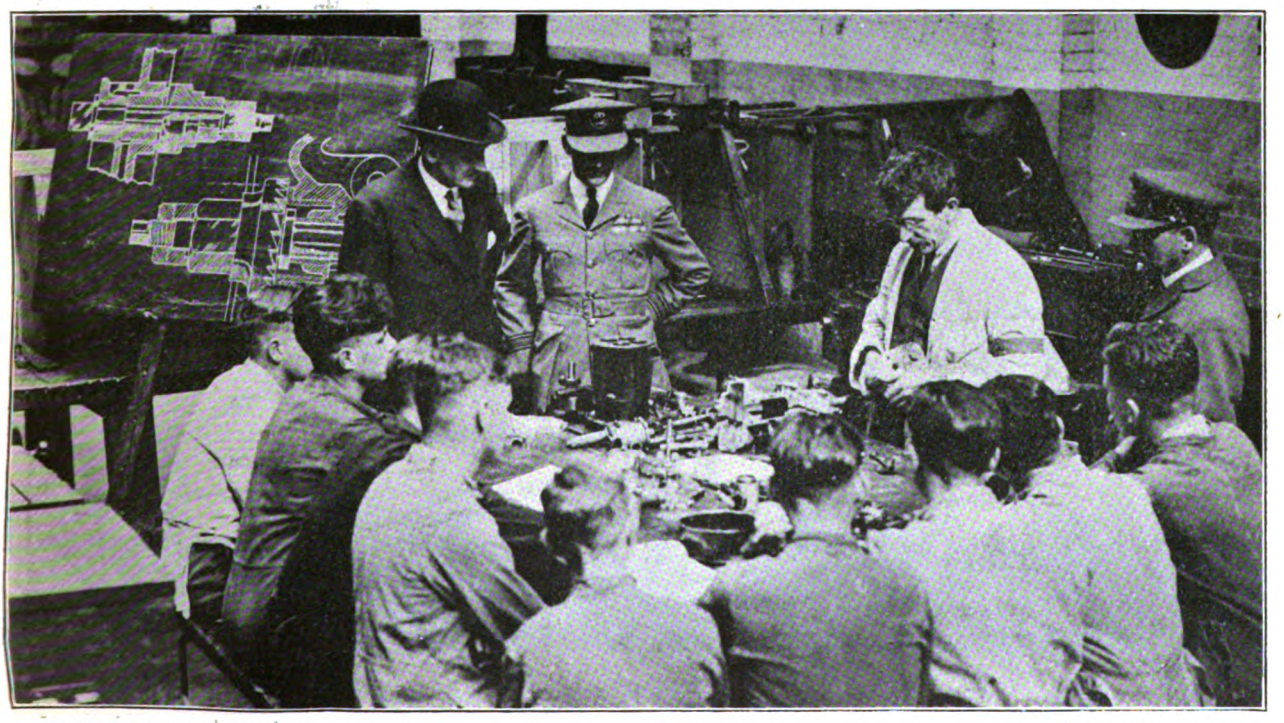
Permanent Commissions.

The following officers have been selected by the Air Council for permanent commissions, subject to physical fitness:—

Flight Lieutenants.—J. C. E. A. Johnson and G. H. Stainforth (Lieut., The Buffs, R.A.R.O.).

Flying Officers.—D. F. W. Atcherley (Lieut., The East Lancs. Regt.), G. D. Harvey.

These officers will be gazetted to permanent commissions with effect from Oct. 1, 1929. Flt. Lts. Johnson and Stainforth will not be called upon to refund the non-effective emoluments granted to them on retirement from the Royal



ENGINE INSTRUCTION.—The Secretary of State for Air, Lord Thomson, during a visit to the R.A.F. School of Technical Training (Apprentices), Halton.

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Navy and Army respectively, but their service prior to the date on which they were granted short-service commissions will not count for retirement, retired pay or any other non-effective purpose.

Flt. Lt. Stainforth and Flg. Off. Atcherley have to forward applications to resign their commissions in the Army for transmission to the War Office.

Medium Service Commissions.

The following officers have been selected by the Air Council for Medium Service Commissions, subject to physical fitness:—

Flight Lieutenants.—R. Duncanson, A. H. J. Howlett, G. A. Simonds (Aug. 29, 1929); G. S. White (Nov. 24, 1929).

Flying Officers.—L. H. Brooke (Aug. 29, 1929); I. G. E. Dale (Mar. 31, 1930); D. W. Gibbon (Mar. 14, 1930); A. J. Holmes (Jan. 17, 1930); H. S. Martin (Aug. 29, 1929); E. G. H Russell-Stracey (Mar. 14, 1930); G. M. E. Shaw (Jan. 6, 1930); P. V. Williams (Mar. 14, 1930).

The selection of Flg. Off. Brooke is provisional only.

Transfers to the Reserve.

The following officers serving on short-service commissions are due to transfer to the Reserve on the dates indicated on the completion of their service on the active list of the R.A.F.:—

Flight Lieutenants.—S. D. Scott (Nov. 8), N. H. N. Fletcher (Nov. 12), R. A. W. Kerr, M.B. (Nov. 22), A. J. R. Moss (Dec. 9).

Flying Officers.—C. B. Rawlins, M.C. (Oct. 22), B. C. Mason (Dec. 9), J. H. Parry (Dec. 18).

Specialist Symbols.

The following officers have been granted the specialist symbols shown against their names:—

Sq. Ldr. C. B. Cooke (E), Sq. Ldr. R. C. Hardstaff (E), Sq. Ldr. P. B. Hunter (E), Sq. Ldr. A. S. Morris (E).

Flt. Lt. N. V. Wrigley (E), Flt. Lt. H. J. Adkins (E), Flt. Lt. R. A. Seaton (E).

Flg. Off. A. H. Harrison (E), Flg. Off. T. Marchant (E).

Flt. Lt. L. J. Chandler (S), Flt. Lt. W. A. Thompson (S).

The applications received from Flt. Lts. E. J. Kingston-McCloughry, J. Noonan, and G. Martyn are still under consideration, and an announcement will be made in due course. The other claims submitted have not been approved, and no further applications for specialist symbols will be considered except under the normal procedure.

Central Flying School Categories.

The undermentioned officers and airman pilots who attended the Flying Instructors' Course at the Central Flying School from May 21 to Aug. 5, 1929, have been categorised as follows:—

A.2.—*Flg. Offs.* E. S. Finch, J. W. Gillan, J. Norwood, P. M. Watt.

B.—*Flg. Offs.* A. P. Bett, L. T. Carruthers, C. E. Galpin, H. T. S. Jagger, B. E. Moody, E. G. Olson, J. H. Sender, N. A. West, The Marquess of Douglas and Clydesdale (A.A.F.).

361832 Sjt. Burch, R.; 335007 Sjt. Gillie, G. B.; 328962 Sjt. Orrell, J. H.; 362570 Sjt. Parsons, E. G.; 362116 Sjt. Payne, L. F.; 347560 Sjt. Simmonds, W. H.; 157062 Sjt. Tilbury, A. P.; 346763 Sjt. Winton, K. C.

C.—*Flg. Offs.* F. N. Moxham, H. E. Power.

The undermentioned officers and airman pilot have been re-categorised as under, from the dates stated against their names:—

A.2 to A.1.—Sq. Ldr. M. B. Frew, D.S.O., M.C., A.F.C., Aug. 12. Flt Lt. D. Macfadyen, July 15.

B. to A.2.—Flt. Lt. S. L. G. Pope, D.F.C., A.F.C., July 15. Flt. Lt. E. A. McKinley-Hay, Aug. 12. Flg. Off. G. R. Beamish, July 15. Flg. Off. R. R. Nash, Aug. 2. Flg. Off. H. A. Howes, Aug. 12. Flg. Off. W. F. Lovering, Aug. 12. Plt. Off. C. S. Ellison, Aug. 12. 244430 Sjt. Frost, C. S., Aug. 12.

The undermentioned officer has been categorised as "B" as from Aug. 9:—

Flt. Lt. F. K. Damant, D.F.C.

Categorisation of Flying Instructors.

The claims of the following to antedate on the strength of having qualified as flying instructors prior to the introduction of the existing C.F.S. categories, have been considered and they have been categorised as "B" Flying Instructors, thus entitling them to six months' antedate:—

Flight Lieutenants J. Lawson, N. S. Paynter, G. H. Harrison, S. H. Ware, E. S. Borthwick-Clarke.

The R.A.F. Swimming Association.

The R.A.F. Swimming Championships will be held at St. George's Baths, Buckingham Palace Road, S.W., on Sept. 13, at 20.15 hours.

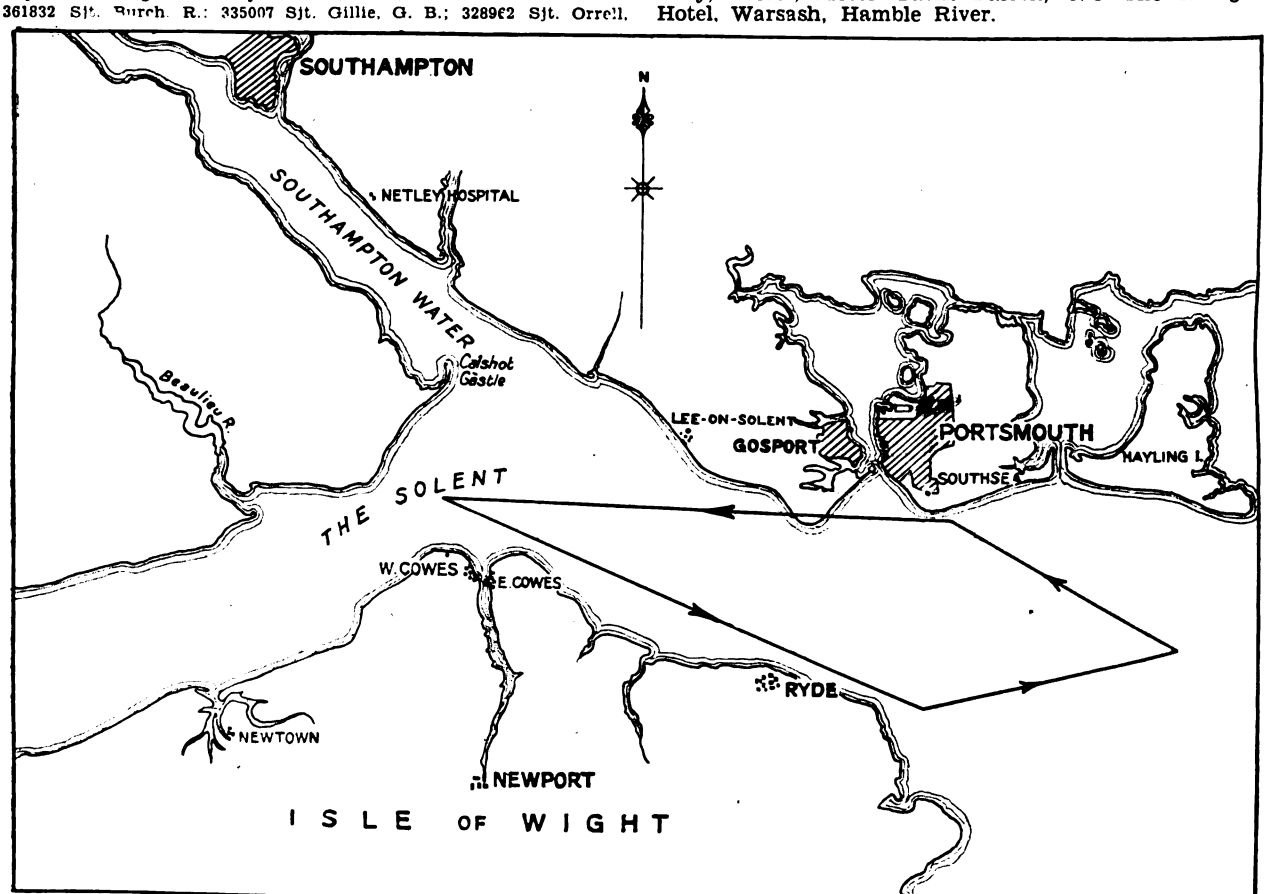
As some districts are unable to hold their annual district Championships before Sept. 13 officers i/c swimming are requested to forward to their districts secretaries, not later than Sept. 6, the names of any outstanding swimmers in their units with particulars of their best times for various events.

A Service Contemporary.

The Planesman, a monthly journal for the Royal Air Force, gives all the latest news from R.A.F. Stations at home and abroad. It also gives comprehensive accounts of sports and athletics and has illustrated articles of topical and general interest. It only costs 6d. a month, and those officers and airmen of the R.A.F. who cannot buy it in their Unit should apply to the Editor, *The Planesman*, R.A.F., Eastchurch, Kent.

TO SEE THE SCHNEIDER CONTEST.

Those who have not yet made arrangements to see the Schneider Trophy Contest, and wish to see it from the water, may be able to obtain accommodation on moderate terms on the Friday and Saturday nights, or room on deck on Saturday, by applying at once to Lieut.-Col. Spenser Grey, D.S.O., Motor Yacht Falcon, c/o The Rising Sun Hotel, Warsash, Hamble River.



THE OFFICIAL SCHNEIDER COURSE, as selected in error and retained in obstinacy. Probably the true reason for having the Head-Quarters of the Committee on a ship off Ryde is to protect them from the assault of a disappointed crowd should the Contest be postponed.

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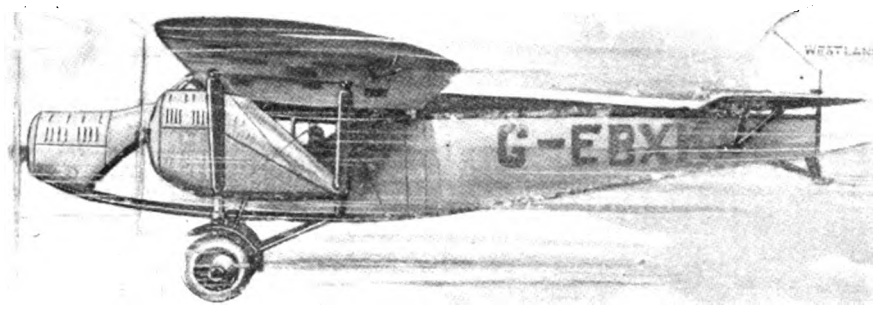

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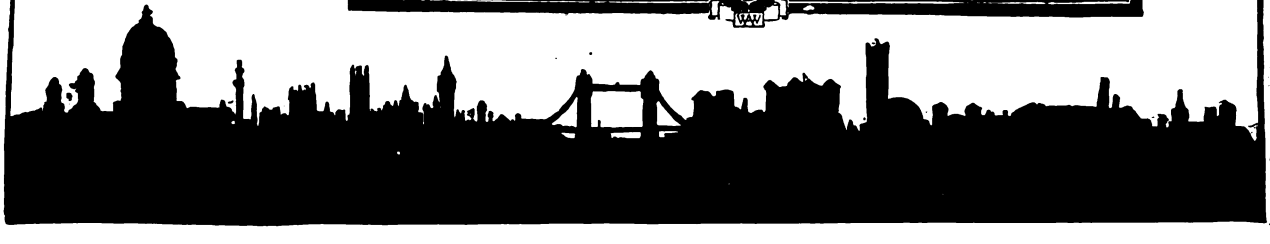

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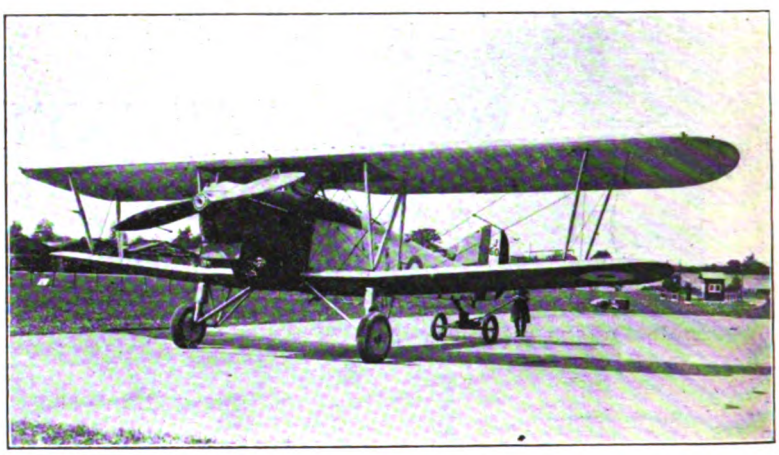
The Short "Calcutta" Commercial Flying Boat (Three Bristol Jupiter Engines) Mediterranean Section of Imperial Airways London—India Service.

Airscrew Co.'s Propellers.

The Hawker "Horsley" Service Biplane (Rolls-Royce Condor Engines) R.A.F. Day Bomber.

Airscrew Co.'s Propellers.



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THE "GRAF ZEPPELIN."

On Aug. 27 the *Graf Zeppelin* left Los Angeles on the last stage of its flight round the World from New York to New York. Shortly after starting, the ship scraped a high-tension electric cable with its tail but only slight damage was done. Later there was a suspicion that it might have difficulty in getting high enough to cross the Rockies and a considerable quantity of tins of superfluous foodstuffs was dumped overboard. Owing to storms the ship's course was changed slightly to pass over new Mexico, Oklahoma, and Kansas.

On Aug. 29 the *Graf Zeppelin* landed at Lakehurst, N.J., and her 16 passengers and 60,000 pieces of mail were landed.

Her journey round the World covered a distance of 21,000 miles, which was done in 21 days 7 hours 34 mins. elapsed time, or 11 days 33 mins. flying time.

On Aug. 30 the officers, crew and passengers, having been ferried from New Jersey to the Battery, paraded up Broadway and were received at the City Hall in the time-honoured fashion,—namely with rolls of ticker-tape and torn-up telephone directories, hurled in lieu of serpentines and confetti from the 30th story and upwards of office buildings.

On Sept. 1 the *Graf Zeppelin,* commanded by Capt. Lehmann, left Lakehurst to return to Friedrichshafen. Dr. Eckener is remaining behind in America to inspect the two airships which are being built at Akron by the Goodyear-Zeppelin Corporation.

Lord Thomson, Secretary of State for Air, has sent the following telegram to Dr. Eckener:—

Air Council tender hearty congratulations on successful completion of your epoch-making flight round the world.

A WANDERER'S RETURN.

The Melbourne correspondent of *The Daily Telegraph* reports that the Shell Organisation in Australia has bought a Westland IV, which will be used for linking up the company's widespread depots.

Mr. Owen and Captain Jones are proceeding to England in order to fly the newly purchased aeroplane back to Australia.

Captain Jones was formerly Deputy Controller of Civil Aviation in Australia. Mr. Owen will be remembered as Flt. Lt. Moir's companion when they tried to fly Mr. Hurley, the cinematographer, to England in an overloaded Ryan monoplane, which crashed at Athens on the last stage of the journey.

They flew back without Hurley in the Vickers Vellore, with a geared Jaguar, and crashed in the dark landing on the north coast of Australia.

VOUGHT-TRANSFERENCE.

On Aug. 28 Lieut. Gorton, U.S.N., flying a Vought Corsair two-seat reconnaissance biplane, succeeded in hooking himself onto the airship *Los Angeles* over Cleveland. The machine was hauled up close under the body of the ship and an officer was transferred from the ship to the aeroplane.

The Vought Corsair was thereafter lowered to flying position and Lieut. Gorton slipped his hook, dived away from the ship and landed safely. This is claimed to be the first time that a man has been transferred from an airship to an aeroplane.

A GERMAN-POLISH ENTENTE.

An Air Traffic agreement was signed in Berlin on Aug. 28 between Poland and Germany.

The lack of such an agreement has till now prevented any mutual air traffic, as special authorisation has been necessary if either Polish or German aircraft wished to fly over the other country's territory. There is now a likeliness that a direct service between Berlin and Warsaw will be organised.

ROHRBACH FLYING-BOATS IN THE U.S.A.

The American Metal Flying-boat Corporation has been formed in the United States with a capital of $2,000,000 to build Rohrbach flying-boats under licence.

The principal production of the company will be the Rohrbach Romar, which, in its American form, will have four air-cooled engines and will carry forty-five passengers.

AN ACCIDENT TO LADY HEATH.

Lady Heath, who has been in the aviation business in America since last year, crashed at Cleveland, Ohio, on August 29. She was taken to hospital with a fractured skull and internal injuries, and latest reports state that her recovery is doubtful.

She was flying at the National Air Races at Cleveland and was coming in to land with her engine shut off, and apparently stalled. The machine hit a wire stay from a chimney and crashed through a factory roof.

Mr. Irwin Kirk, her mechanic, jumped for the roof and, beyond fracturing an ankle and severing three fingers, was not much hurt.

RECORD FUTILITIES.

On August 30 Mr. T. G. Reid took off from Cleveland, Ohio, in an attempt to beat the solo endurance record for light aircraft. He succeeded in remaining in the air for 39 hours, after which he disappeared. An aerial search for him resulted in his being discovered dead fifty yards from his machine a few miles from Cleveland.

He had been promised large rewards for every hour by which he exceeded the previous record of 36 hours. Mr. Reid had been married the day before his attempt.

THE AEROPLANE has incurred the wrath of certain American journals when it has thought fit to criticise certain types of record attempts that are made in the United States. Re-fuelling duration records have achieved much publicity and have also resulted in the death of several aviators.

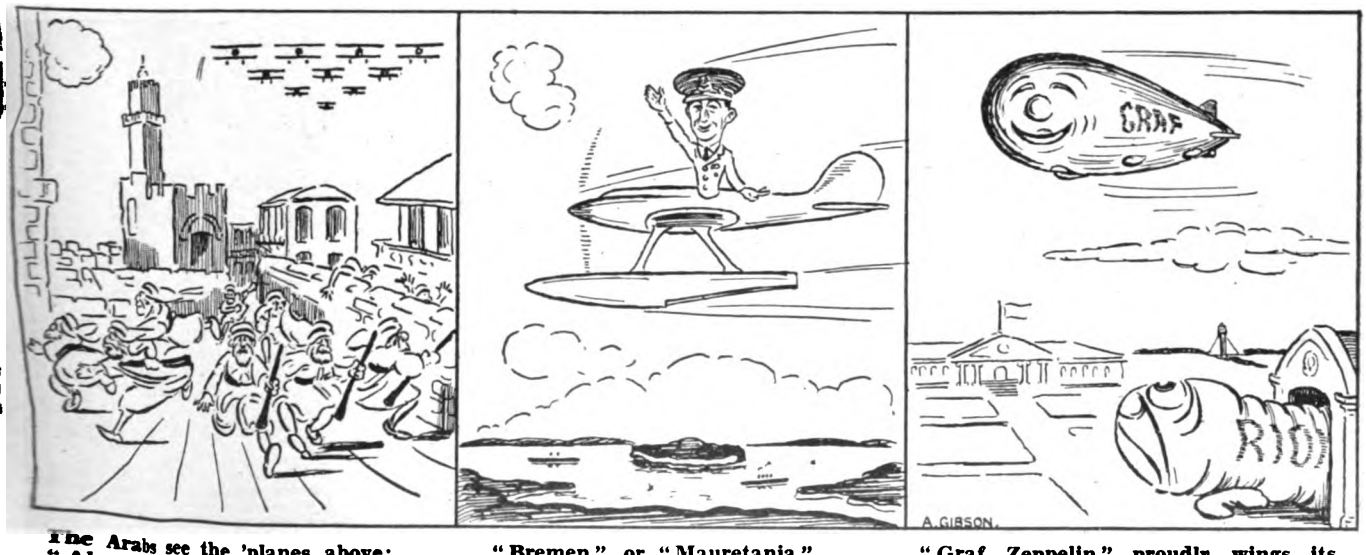
The solo endurance record is a still greater futility which, with the known reliability of modern aircraft and aero-engines, only encourages pilots to strain human endurance to breaking-point.

It seems deplorable that while the bulk of the American Aircraft Industry is striving its utmost to prove that aviation is a safe means of transportation, there is still a minority which will encourage and even finance spectacular records to gain publicity at the expense of human life.

The attempt in which Mr. Reid was killed took place during the National Air Races at Cleveland, and presumably it was staged as a draw for the public. Reports state that 250,000 spectators have witnessed them and that four deaths, including that of a woman, have marred the proceedings.

Such occurrences give one seriously to believe that the interests of the morbidly-minded public come before aviation progress and that the mentality of "Big Show" organisers has changed little since the Roman Circus.

THE PEEP SHOW.



The Arabs see the 'planes above;
"Alas," they wail, "more Christian love!"

"Bremen" or "Mauretania"
Have nothing on A. H. Orlebar.

"Graf Zeppelin" proudly wings its way:
What has R.101 to say?

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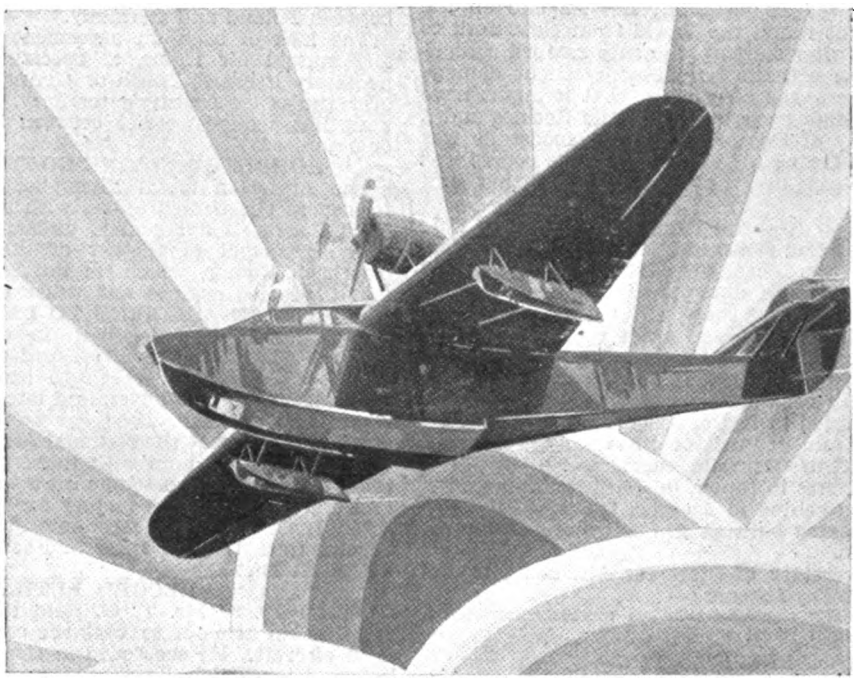

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Twenty years' experience

in the design and production of aircraft, in addition to a century's work in marine construction, is the foundation upon which rests the new and modern organisation of Saunders-Roe.

Since the pioneering days of flying there have been Saunders seaplanes; and the name of Roe, associated as it is with the design of Britain's earliest aeroplanes, becomes, as it were, the final symbol to complete the hall-mark of proficiency in aeronautical research and design.

The flying-boats, seaplanes, and amphibians produced by the house of Saunders-Roe are backed by a combination of experiences, ideas, and achievements, together unique and outstanding in the sphere of aeronautical engineering. This vast constructional and servicing organisation is ready and well able to meet the world's demands for airworthy and seaworthy British marine aircraft.

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

THE OPENING OF HANWORTH.

The London Air Park and Hanworth Club, the headquarters of the National Flying Services group of flying clubs, was opened on Aug. 31. The ceremony was performed by Her Grace the Duchess of Bedford, who fired a pyrotechnic landing signal, a 5½in. smoke shell, by electrical contact from a mortar in front of the Club enclosure.

The London Air Park at Hanworth covers an area of 230 acres with the buildings and gardens in the middle and the aerodrome all round. This is said to give a run of 1,000 yards in every direction of the wind—and it would be magnificent for a circular landing in a cyclone.

Hanworth is twelve miles from Hyde Park Corner and midway between Richmond and Staines. When the trick of finding the turning is known, perhaps the quickest way is by Hounslow, but the simplest is by Richmond and Twickenham, along the Sunbury Road.

National Flying Services, Ltd., intend to make Hanworth the centre for their operating services, including air-taxi services, and the maintenance and repair depot for all their aircraft. The company also hopes that private owners will use its landing and garaging facilities and that it will be a meeting-place for all members of the associated provincial centres.

The programme of the company is to establish ten provincial air parks and sixty intermediate landing grounds.

At Hanworth the north aerodrome will be used for commercial flying and the south aerodrome for club and private flying.

The club house is said to have been built by a Mr. Henry Perkins, a brewer, in 1799, on the site of old Hanworth House, which was said to have been a resort of Henry VIII. In the middle of the 16th century the manor of Hanworth was granted to Anne, Duchess of Somerset, the widow of the Protector. The original house was burnt down in 1797.

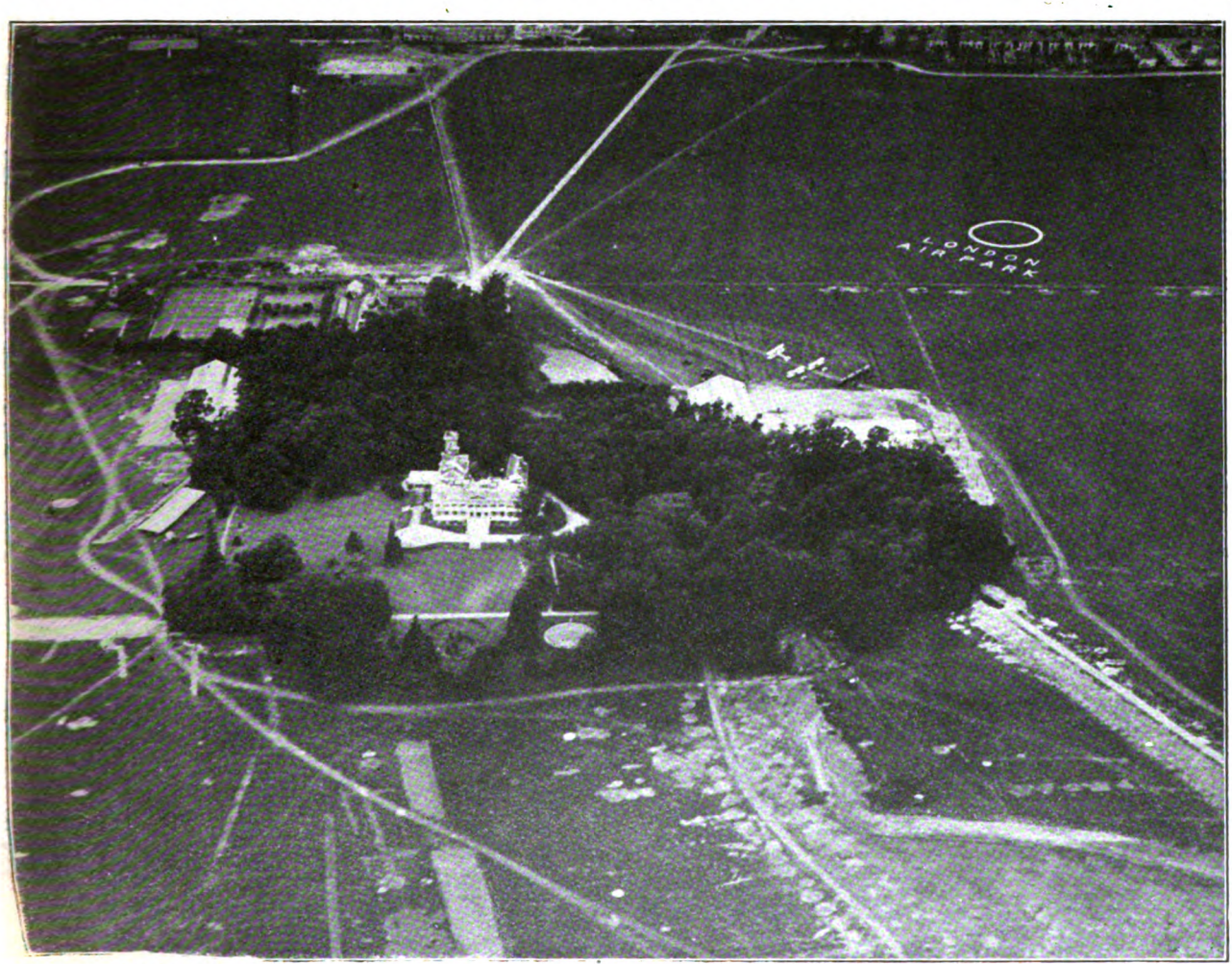
[Though not an expert in architecture, one would hazard the opinion that the cast-ironmongery which disfigures the front is mid-Victorian, though it may have been the brewer's brainwave.—C. G. G.]

National Flying Services have rebuilt part of the house and have decorated the interior in comfortable modern style, with flamboyant wallpapers and cretonnes. The garden has been rigorously tamed, and should be restored to some of its old beauty in the course of the next few years. Homegrown fruit and vegetables have been sacrificed to the requirements of the age, as the walled kitchen-garden has been laid out for hard tennis courts.

With a burst of optimistic sentiment the company states that the gardens are a sanctuary for birds of all kinds, including kingfishers. One is prepared to bet that no kingfisher will deign to live long in such close proximity to the covey of strange, noisy, unnatural, black and orange birds which have been introduced to the neighbourhood. Kingfishers are notoriously exclusive.

A neat piece of engineering has diverted the River Cardinal into underground pipes, leaving short stretches of it in the gardens only. With the departure of the birds and squirrels, natural history may be studied in the hordes of mosquitos which will undoubtedly breed therein.

The accommodation for aircraft includes three sheds, two of them 180ft. by 70ft., and one 90ft. by 70ft. Two of them are on the north side for commercial and general use and one on the south side for club use. Small lock-up aeroplane sheds are being built on the club side for private owners. These will be in blocks of four and eight. Twelve



HANWORTH AERODROME.—The school sheds are under the trees to the right of the chateau.

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petrol pumps are being provided at various points by National Petrol Stations, Ltd.—a subsidiary of National Flying Services.

National Flying Services, Ltd., are also the owners of several acres of factory buildings and some houses on the north-west side of the aerodrome. These are let to tenants. In this area will be a fully equipped overhaul works and stores depot for light aeroplanes.

The Hanworth Club is organised on the lines of other flying clubs, with flying and non-flying members. The entrance fee is £5 5s., and the annual subscription is £5 5s. for flying members and £3 3s. for non-flying members. Serving officers of the R.A.F. are admitted without entrance fee. Flying instruction will cost £2 an hour for dual and £1 15s. an hour for solo flying. Aircraft can be hired by competent flying members from £1 10s. an hour to £1 1s. an hour, according to the number of hours flown in the course of a year.

The company deals in secondhand aeroplanes.

The flying organisation is under the control of Mr. T. N. Stack, A.F.C., who is the Chief Pilot and Air Superintendent. Thirteen pilots have already been engaged to work under him, and none of them has had less then 500 hours of flying experience. They are:—

Flt.-Lt. the Hon. J. B. Rodney, M.C., R.A.F.O. (manager of the Hanworth Club), Mr. H. M. Schofield (First Pilot), R.A.F.O., Mr. C. A. Pennington (Second Pilot), Mr. H. T. Talbot-Lehmann, M.C., Flt. Lt. J. B. Wilson, R.A.F.O., Mr. M. H. Findlay, D.S.C., D.F.C., R.A.F.O., Mr. I. W. Mackenzie, R.A.F.O., Mr. W. A. Andrews, Mr. A. H. Alliott, R.A.F.O., Mr. J. J. Flynn, R.A.F.O., Mr. A. D. Page, M.M., R.A.F.O., Mr. R. T. Shepherd, R.A.F.O., and Mr. L. A. Egglesfield, R.A.F.O.

The pilots and mechanics are, with an undoubted error of judgment if not of taste on the part of their employers, dressed in a uniform which has already been illustrated in THE AEROPLANE. They wear the ribbons of military decorations on this civil uniform.

Air taxis are supplied at 1s. a mile for one passenger and 1s. 6d. a mile for two passengers. They may be picked up at Hanworth, Croydon, or any of the provincial centres. Short passenger flights are also given from 5s. to £3.

The Opening Party.

The Garden Party and Flying Display with which the Hanworth Air Park was officially opened on Aug. 31 started at 15.00 hours when the guests were received at the Club House by Sq.-Ldr. the Rt. Hon. F. E. Guest, P.C., D.S.O., and the Directors of National Flying Services, Ltd. From 15.00 hours until 16.30 hours the guests inspected the club house and garden, and had tea on the lawn.

Invitations to this inaugural meeting are said to have been issued to prospective club members, to enquirers at the firm's stand at Olympia, and those who have enquired by post, as well as to the aeronautical community as a whole. And, judging by the varied classes which were represented in the crowd, the aspirations of National Flying Services are, apparently, of a very comprehensive nature.

[The Club House advertised at the door, dinner and dance for members at 15s., but the majority of the crowd hardly seemed up to the weight—which inspired a would-be humorist to suggest that apparently the firm was trying benevolently to provide Carlton accommodation for a Corner House clientèle.—C. G. G.]

THE OPENING CEREMONY.—Left to right: Col. Sempill, Lieut. Sala (French Air Attaché), Lady Bailey, Air Marshal Sir Edward Ellington, Sir Sefton Brancker, The Duchess of Bedford, Sq. Ldr. Guest.
—("Aeroplane" photograph.)

The meeting was well supported by visiting owner-pilots, members of flying clubs and those who are temporarily or permanently in possession of aircraft for commercial or pleasure purposes. In addition to National Flying Services' own fleet in the distinctive but gaudy black-and-orange colours of the company, there were about 40 or 50 visiting machines, mostly Moths. These included Sq.-Ldr. Guest's Junkers, the first Desoutter monoplane, a Caudron, a Klemm, the Clarke Cheetah, and various Avians, Widgeons and Bluebirds.

No. 600 (City of London) Squadron—Sq.-Ldr. Guest's squadron of the Auxiliary Air Force—came over from Hendon in three D.H.9a's, one Wapiti, and one Avro Lynx.

After the Duchess of Bedford had declared the Air Park open, No. 600 Squadron took off and flew past in flight formation, followed by three Moths of N.F.S., which

AT HANWORTH.—An N.F.S. Formation in the air, the amphibian Moth, and the big-span Spartan on the ground. *—("Aeroplane" photograph.)*

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Messrs. Mauler & Baud

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C.F.H.

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AT HANWORTH.—A general view, with Mr. Neville Stack in the air. —("Aeroplane" photograph.)

also took off in formation. There was then a fly-past of various types. These included a Moth, a Spartan, an Avian, the Martlet, the Dessouter, the Moth amphibian, a three-seat Spartan, a coupé Gipsy-Moth, a Jupiter VI. Wapiti, and an Avro Lynx.

The machines flew round three times, slightly varying their performance each time, and finishing with a dive and a sharp climbing turn past the enclosure.

The next event was a display of aerobatics by Mr. Leach in the Martlet (A.B.C. Hornet engine), the new single-seat light aeroplane designed and built by the Southern Aircraft Company. The Martlet put up an amazing performance. If the object of some of the guests was to "have a good scream," they certainly achieved results. Other guests thought the company were fortunate not to achieve the undesirable publicity which would have been gained if the machine had landed on top of the crowd. However, it was quite a fine display of aerobatics, and the pilot handled the machine with undoubted skill and judgment. The Hornet engine, which was making its first public appearance, made an excellent impression. It should win considerable popularity, as it has many good selling points, and certainly has a good performance.

Thereafter Mr. Neville Stack, Chief Pilot, or Group Captain, of the N.F.S. flying staff, put up a fine show on the white Moth with a Cirrus engine which was presented to him as a parting gift by A.D.C. Aircraft Ltd.

Mr. Cordes then demonstrated slow flying in a slotted Moth. This was interesting without being impressive. Next, Mr. H. M. Schofield demonstrated slow rolls and inverted gliding on a Simmonds Spartan. This was much appreciated by that section of the crowd which loves to point out to its offspring that "the wheels are on top."

The bombing of the Austin "Baby" by three "second pilots" of N.F.S. was particularly remarkable by reason of the wildly inaccurate bombing.

Mr. John Tranum, who has proved, to his own satisfaction, apparently, 700 times "that it is better to leap within ourselves than tarry till they push us," did his now famous if not inevitable parachute drop.

Another demonstration of slow flying was given by Mr. Staniland in a Simmonds Spartan. His machine was one of the latest type with an increased span of four feet (two feet per wing). The get-off of the machine and the slowness of its landing is now quite remarkable, and the speed is, if anything, slightly higher.

The formation flying and stunting by three pilots of N.F.S. on Moths was quite a pretty little show, and the pilot who lost position at the end of a loop only added to the excitement by getting back into position with a complete tail-slide.

The meeting ended with a fly past and salute by pilots of N.F.S. The salute was not a new one invented by the perpetrator of the uniforms, but just a dive past in the air.—C. M. MCA.

ON THE NEW FLYING SUITINGS.

The following letter from a former officer of the R.F.C. deserves attention:—

Sir,—One does not wish to be in any way unduly critical of the activities of National Flying Services Ltd. as that company appears to be doing so much to help forward the cause of aviation in this country. Nor does one want to appear mawkishly sentimental concerning matters that are very much past history.

But at the same time, may I, for one, express at least a mild tinge of regret that the N.F.S. should have seen fit to put its pilots into what is quite obviously a copy of the old R.F.C. uniform?

To give their pilots uniform is an excellent idea, and one can sympathise with the desire of the company to make that uniform distinctive. Yet, somehow, I cannot quite fancy the idea of our old kit being turned—I do not say to base uses, but to any use other than that for which it was originally employed. It is not, even, as if the uniform were particularly suitable in itself,—as some of us remember,—it is not too easy to make really well.

I cannot help wishing that the N.F.S. would think again—and let the R.F.C. uniform rest with the past to which it belongs. "45."

I.F.S.?

The following view may also be of interest:—

Sir,—I met many people in the crowd at Hanworth yesterday who all raised the same point voluntarily. They were persons of sense, so their opinions may be worth while.

They thought that as the Right Hon. Sq. Ldr. F. E. Guest flies in a German aeroplane, motors in an American motor-car, and dresses his pilots like bandmasters in the dear old George Edwardes musical comedies, he might do well to re-entitle his scheme as INTER-national Flying Services! (Signed) "MIDDLESEX."

THE AFTERMATH OF ORLY.

Even now there may be interest in indicating how the curious placings in the Orly Meeting happened.

The marks for speed over the whole tour were allotted thus:—

In the class for bigger aircraft, Category A, 50 marks were given for an average speed of 143 kilometres per hour. Marks were deducted for any speed below that.

In the smaller class, Category B, 50 marks were given for an average speed of 126 kilometres per hour, and marks were deducted for any lower speed.

In each class 20 additional marks were given for the machine doing the highest speed over the course. 10 marks were given for the second highest speed, and 5 marks for the third highest speed.

The result was that Lord Carbery won the 20 marks for the highest speed in Category A and Morzik won the 20 marks for the highest speed in Category B.

Mr. Broad, who was a mere half a kilometre an hour slower than Lord Carbery in Category A, won the 10 marks for second place, but the additional 10 marks were enough to bring Lord Carbery next to him in the total number of marks, in spite of all the marks Lord Carbery's machine had lost for lack of certain desirable qualities.

Similarly, Morzik, by winning the 20 marks in Category B, managed to pile up a total which put him just in front of Mr. Broad in the aggregate for both classes.

AT HANWORTH.—The Desoutter monoplane (Cirrus) and the Martlet biplane (Hornet).—("Aeroplane" photograph.)

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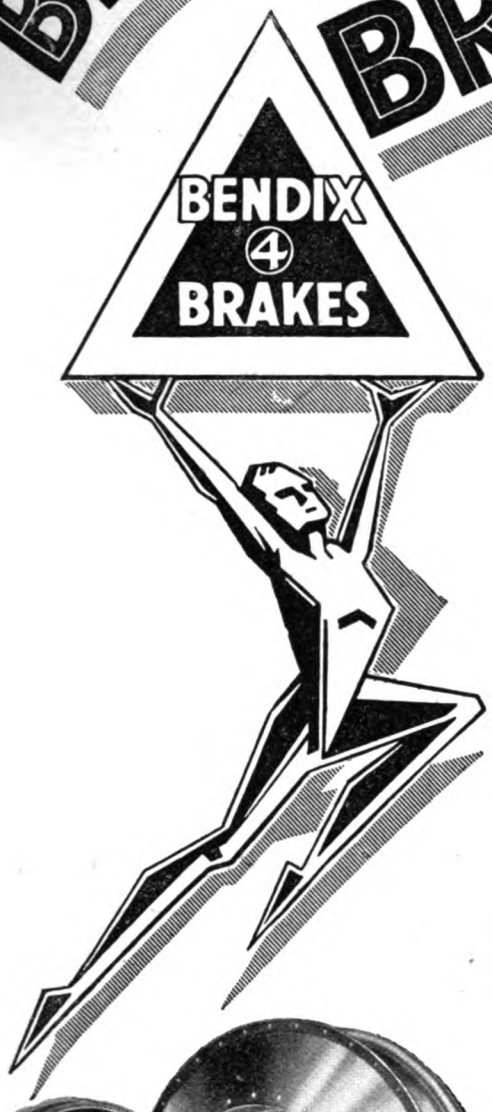
BENDIX BRAKES for GROUND CONTROL



Bendix "Servo" Brakes are recognised by Airplane Manufacturers as the standard safety unit essential for perfect ground control.

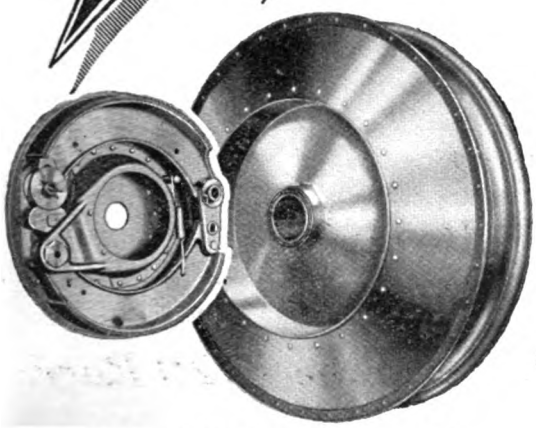
Bendix Brakes control and reduce the run after landing to a minimum, enabling safe landings to be made in small areas.

Eliminate the necessity for a ground crew, since the airplane can be warmed up, taxied and parked in hangar without external assistance.

Provide perfect control on the ground when separately operated, thus preventing disastrous ground loops and permitting cross-wind taxi-ing and take-off.

Permit the use of a tail wheel instead of a tail skid and avoid tearing up the airdrome.

No pilot need be without Bendix "Servo" Brakes if he specifies them when ordering his machine.



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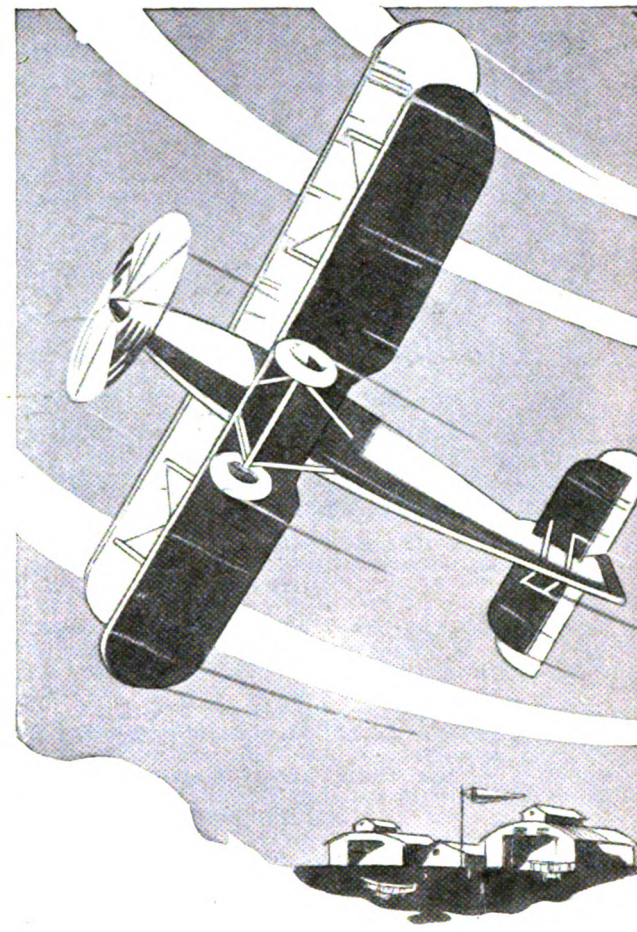

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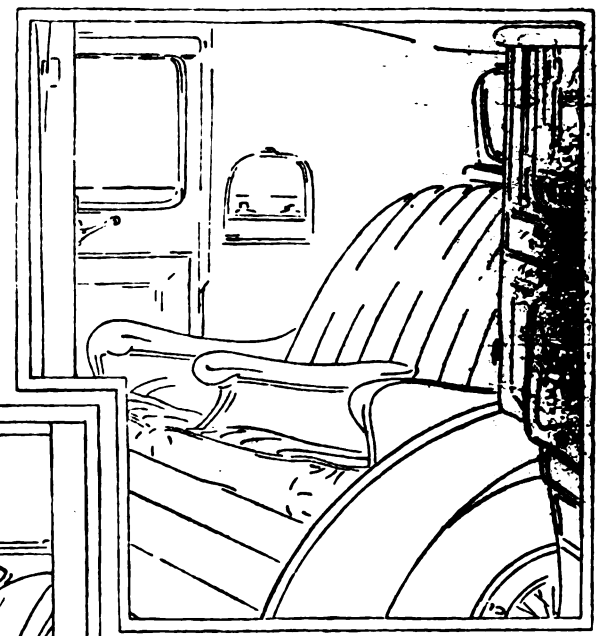
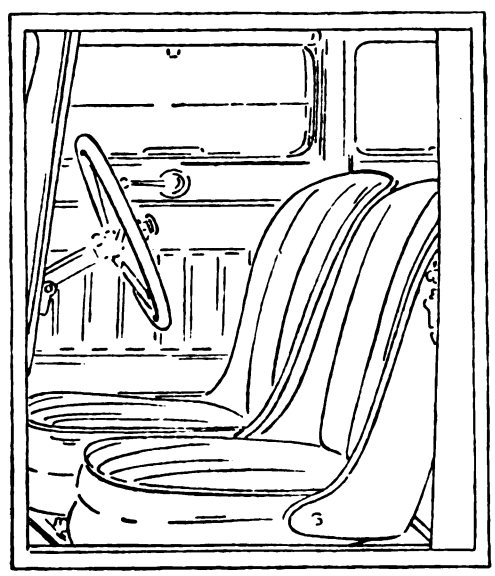


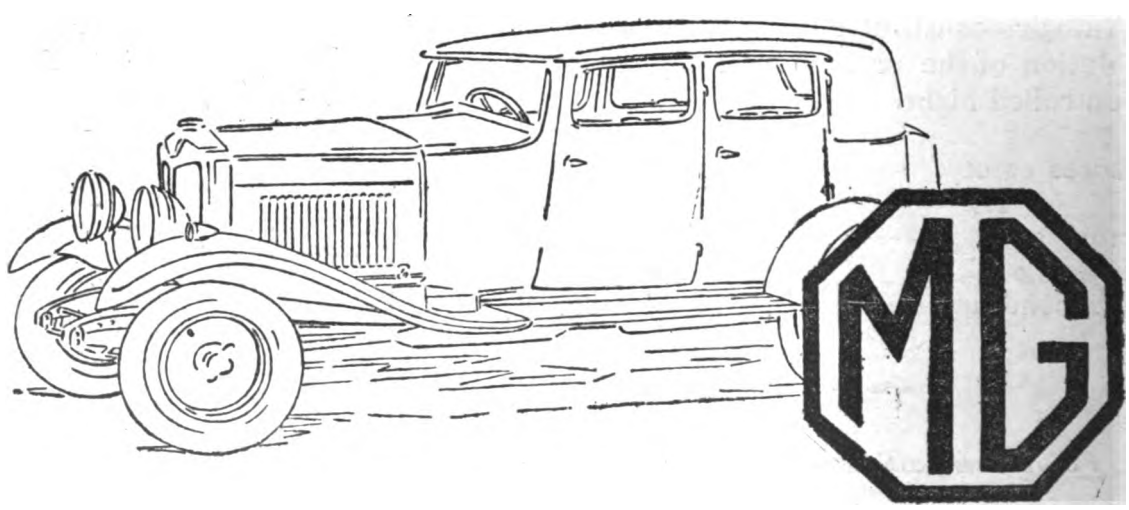


The above illustration shows the ease of access to the roomy rear seats of the Four-door Saloon. The centre arm-rest is detachable, and deep footwells are provided for tall passengers.

The left illustration portrays the inviting bucket seats in front—all upholstery is leather-covered pneumatic.

Below, the illustration shows the attractive lines and low build of the car.

for performance!



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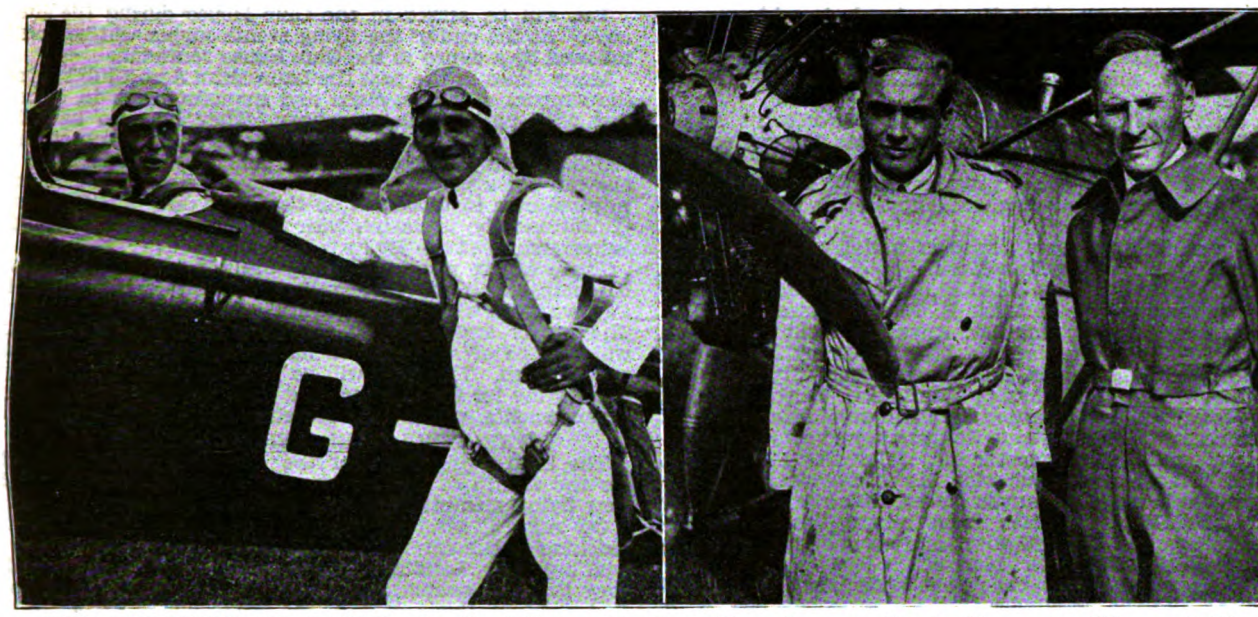

THE HADLEIGH AIR RALLY.—On the left are Mr. R. Quilter who won the landing competition and Mr. John Tranum ready to go up for a parachute descent. On the right are the two Belgian visitors who flew from Brussels to Hadleigh—M. Maus and the Comte de Looz.

THE HADLEIGH RALLY.

In spite of fine, though somewhat windy weather, the International Air Rally at Hadleigh, organised by the Suffolk and Eastern Counties Aeroplane Club on Aug. 31 and Sept. 1, was poorly attended, with the exception of the usual hedge patrons.

The number of visiting aircraft was also small, but this was no doubt due to the counter-attraction at Hanworth. Although described as an *international* meeting, the only foreign visitor was M. Maus, who flew over with a passenger from Brussels in his St. Hubert monoplane. This machine, bearing the marking H2, was flown by M. Maus in the *Challenge Internationale de Tourisme*.

The International Rally was won by that veteran sportsman, Mr. Richardson, of Norwich, on his Klemm. The first prize was £25. The second prize of £10 went to Mr. C. B. Wilson, in a Coupé Moth (AAHS). This machine was flown by Mr. H. S. Broad, at Orly, and is now being used by *The Daily Mail* while "Geraldine" is in dry dock.

Flt. Lieut. T. Rose won third place in the Rally with Moth AAKJ belonging to Pratt's.

Early on Saturday morning the Southern Aero Club's Martlet paid a brief visit from Martlesham, where it was undergoing type tests. It went on to Hanworth for the afternoon, and back to Martlesham later.

This machine is a converted Avro Baby with an A.B.C. Hornet engine (4-cylinder flat opposed). It has a very pleasing appearance. It has been thoroughly cleaned up and climbs steeply at a remarkable rate.

After zero hour a number of machines arrived, including Mr. Ivor McClure in Moth EBUR, Mr. Courcellis, of Norwich, in Gipsy-Moth AAEI, Mr. R. P. Cooper, from the London Aeroplane Club, in Moth AAAV, and Mr. G. Wheatley, in "Arom II," the golden Coupé Moth AAIM, belonging to the Shell-Mex organisation.

The programme on Saturday was opened by Mr. G. E. Lowdell, who gave a demonstration of crazy flying in one of the club's Bluebirds.

After this Sir T. Courtenay Warner, Bart., Lord Lieutenant of the County, inspected the machines, which then took off and flew past the enclosures.

His Highness the Bandhavesh Marharaja Saheb of Rewa paid a visit to the club in the afternoon and was much interested in the machines.

An excellent display of formation flying was next given by the three club Bluebirds, piloted by Mr. G. E. Lowdell, Mr. Courtney Prentice, and Dr. J. C. Sleigh.

These machines subsequently took part in "A Frontier Scrap." A force of hostile tribesmen, in striking sheiks' clothing, holding a fort, were attacked by aircraft, one of

AT HADLEIGH.—Left to right: Mr. G. E. Lowdell (Club Instructor); Mr. Robert Blackburn (of the Blackburn Aeroplane Co.); Dr. J. C. Sleigh (Chairman of the Suffolk Aeroplane Club); Mr. H. L. Billington and Mr. Clayton (pilot).

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which was shot down. The fort was bombed and burned in the correct manner. This was quite a good show. The "tribesmen" later turned out to be a detachment of the Rifle Brigade, whose buglers also contributed to the programme.

An aerial combat was then provided by two Moths, AAKJ and EBWA, piloted by Mr. Lowdell and Mr. Murray respectively.

At 16.45 hours the flying programme was interrupted by a motor-cycle gymkhana by, one supposes, local dirt track wizards.

This was followed by a round of aerial golf, which was won by Flt. Lt. T. Rose in a Moth.

Mr. Cubitt, in an Avian (AAHE), arrived in the afternoon, and was followed by M. Luck R. Nieuwenhuizen in Moth AG from Brooklands, and Mr. Raymond Quilter in Moth DD. Major Pickthorne brought over the Brooklands Flying School Avro from Clacton, and gave pleasure flights.

A very clever and amusing alternative to the wedding party turn was next performed. We were informed that Captain Shotup, of the Texas Rangers, would give an exhibition of sharpshooting from the air. Piloted by Mr. Lowdell, Captain Shotup amazed us with his marksmanship in hitting bottles hung on a canvas screen. We were soon to be disillusioned however, when from behind the canvas appeared a figure in cap and gown, and an umbrella, who bore a close resemblance to Mr. Murray.

The programme was concluded with the bombing of "Babies," and the remainder of the evening was devoted to pleasure flights.

During this time Mr. Clarke, R.A.F., arrived in his Cheetah, and Flt. Lieut. A. F. Scroggs in a D.H.53. Mr. R. B. Cazalet also flew over in his Widgeon RM. He overshot the aerodrome in landing and had the misfortune to run into the tail of one of the Suffolk Club's Bluebirds. The rudder and left aileron of the latter was smashed, and the propeller and leading edge of the left wing of the Widgeon was damaged.

Sunday, September 1.

The programme was opened at 14.00 hours by a demonstration by Mr. Murray on Moth EBWA of aerobatics. His loops and slow rolls were beautiful. He also did spins, the falling leaf, and inverted flying across the aerodrome. He is quite a new pilot, who learned to fly at the Brooklands School, but he is well up to front-rank form.

Another exhibition of formation flying was given in the club's two remaining Bluebirds, piloted by Mr. Lowdell and Mr. Prentice, and a Gipsy-Bluebird, piloted by Mr. Woodhead.

Mr. Lowdell then gave a display of crazy flying in a club Bluebird.

It was announced that the Autogiro would not be coming over as had been expected. Captain Shotup thereupon repeated his performance with variations.

The rest of the programme was very similar to that of the previous day. There was a good deal of time between events, and interest consequently flagged.

The proceedings were enlivened by a parachute drop by Mr. John Tranum from a Moth. He was limping badly from injury to his ankle in a motor-cycle accident, but he sportingly carried on.

The next event was a landing competition. Pilots had to fly to 1,000 feet, shut off their engines, and land near a given mark on the aerodrome. This was won by Mr. R. Quilter in Gipsy-Moth DD. Second prize went to Mr. C. B. Wilson in Moth HS.

At 15.45 hours M. Mans left for Brussels in his St. Hubert monoplane.

A balloon-bursting competition was the next item, but this was marred by the fact that many of the balloons were carried by the wind right across the aerodrome, and it was hard to see what was happening. This was won by Flt. Lt. Chick, who later gave an exhibition of aerobatics in a Moth, which concluded the programme.

It is a pity that the display was not better attended, as one learns that a considerable amount of time had been spent in preparation, but one suggests that more attention be paid to advertising in the future. One saw a few posters in Ipswich, and that was all.

Major Holmes, who has been secretary of the club for a long time, has resigned. The new secretary is Mr. W. J. Offord.

THE LANCASHIRE AERO CLUB.

On Saturday, Sept. 14, the Lancashire Aero Club is holding its first aerial "At Home" at the Avro Aerodrome, Woodford, Cheshire

The party will begin at 2 p.m. and will continue, weather permitting, throughout the afternoon and evening. There will be a number of informal flying competitions open to visiting pilots, including Aerial Golf, Balloon Bursting, and a novel Aerial Treasure Hunt. There will also be a duration contest for model aeroplanes, open to all comers. (Any type of model aeroplane may be entered, but refuelling in the air is barred!)

Tea will be served in the Club House during the afternoon. At the end of the flying events supper will be served, followed by a dance in the Club House verandah.

Many times in the past the Lancashire Aero Club has had the support of pilots, clubs and manufacturers in connection with public flying meetings. They hope to have the pleasure on the 14th of acting as hosts to as many of these supporters as possible, and a cordial invitation is issued to all who possess (or can beg, borrow or steal) an aeroplane to come over to Woodford on that date and join the party. [Unfortunately, it clashes with the opening meeting of the Leicestershire Club.—Ed.]

There will be no public flying display, but something will be going on all the time, and aerial visitors can enter for any events in which they would like to take part on arrival. The supper and dance at the Club House in the evening will also be of an informal nature and evening dress will not be worn. The Club will be glad, however, if those who are staying for the evening, and have not made any special arrangements, will let the secretary know in advance.

THE YORKSHIRE AEROPLANE CLUB.

The total flying time for the Yorkshire Aeroplane Club for the month of August was 106 hours 15 minutes. Six new flying members and two associate members joined.

On Aug. 5, Mr. Ivo Thomson and Mr. Ellison took a machine to the Air Rally at Scarborough and succeeded in winning the Landing Competition. The following day they gave an exhibition of aerobatics over Clarence Park, Wakefield, at the request of the Wakefield Motor Club.

Mrs. Birch did her first solo on Aug. 27, and put up a very good show.

THE NORTHAMPTONSHIRE AERO CLUB.

The Northamptonshire Aero Club are holding a week-end meeting at Sywell, on Saturday, Sept. 28.

A novelty competition is being organised by Mr. Hubert Broad for professional pilots, and another competition for private owners, details of which will be circulated on application to the Secretary, 19, Market Square, Northampton.

Members of other clubs, and private owners, are cordially invited.

THE LEICESTERSHIRE AERO CLUB.

The opening meeting of the Leicestershire Aero Club has been fixed for Saturday, Sept. 14, instead of the 28th, as previously announced. The usual races and competitions will be arranged.

The position of the Club's aerodrome at Desford was given as E.S.E. of Leicester in their last report. This is a mistake, the correct bearing being West by South of Leicester.

Visiting pilots and passengers are cordially invited, and will be the guests of the Leicestershire Club.

Promises of support have already been received from the De Havilland Aircraft Co., Ltd., from the Northamptonshire Club, from the Nottingham Club, and from several private owners.

THE CINQUE PORTS FLYING CLUB.

On Sunday, Aug. 25, an astonishing performance was put up by Dr. Furlong of Dublin, a town in Ireland. Dr. Furlong joined the Club on Aug. 17 and had to return to Ireland on Monday, Aug. 26. He had had a little previous instruction in Ireland in another type of machine, but not in a Moth. Sunday, the 25th, was the eighth day after he began instruction at Lympne, and Mr. Brown launched him solo at 14.38 hours. He did very well in his first solo flight and throughout the afternoon flew consistently. By 19.15 hours he had completed all his flight tests for "A" License. This is probably a record for quick tuition in any Club.

On the same day Mr. W. J. A. R. Cooke of Mayfield, Sussex, also passed his flight test for "A" License.

Besides getting two "A" Licenses on the 25th, Mr. Brown beat all previous Club records for one day's flying by keeping the two machines in the air for 11 hours 5 mins., which is roughly a distance flown of 825 miles by the two machines in the one day.

On this day the Club was visited by the Vicomte Jacques de Sibour who recently travelled round the world with his wife, and a Moth. He brought with him to Lympne Sq. Ldr. Jones-Williams (who was senior Pilot of the Fairey Long-Range Monoplane which flew to India non-stop), Flt. Lt. Fressanges (one of the pilots who made the historic rescues from Kabul), and Mr. Gordon Selfridge, Junr., who is learning to fly at the present time.

On Wednesday, Aug. 28, the Club was visited by the President, Earl Beauchamp, K.G., Lord Warden of the Cinque Ports, accompanied by his son Lord Elmlie, who is learning with the Norfolk Club.

The Club thought that it could not beat its record for July until another machine was in commission, as it seemed that the record of 124 hours was about the limit for a Club working with only one Instructor and two machines. But during August Mr. Brown established a new record for the Club. The two machines made 331 flights, totalling 139 hours 10 mins. in the air, equal to a distance flown of over 10,000 miles.

This total represents a splendid achievement upon which the Club heartily congratulates Mr. K. K. Brown and his staff. Mr. Brown himself actually flew over 96 hours in 27 flying days, which means very hard work. The membership at the end of August totalled 111.

The Club will be closed for Holidays on the evening of October the 6th, reopening on October the 16th.

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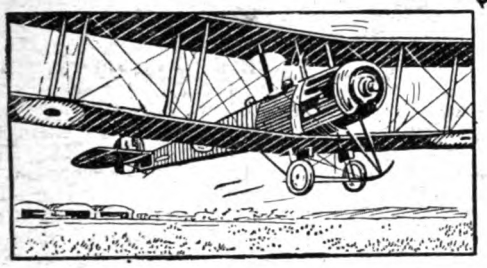
SUPREME THROUGH THE YEARS

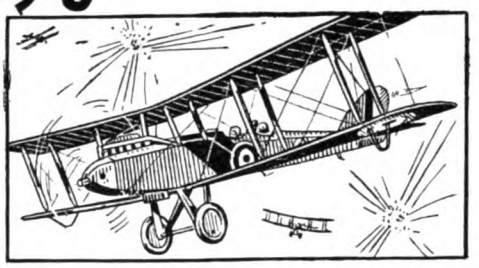
1913



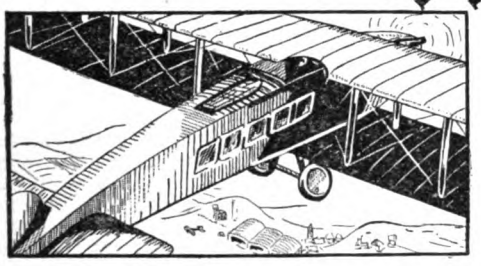
This was the year when Palmer produced the first Landing Wheels and Tyres specially designed for Aeroplane use. Palmer was the only tyre manufacturer who made any intelligent effort to grapple with the problem of supplying Aircraft constructors with suitable Landing equipment.

1914-1918

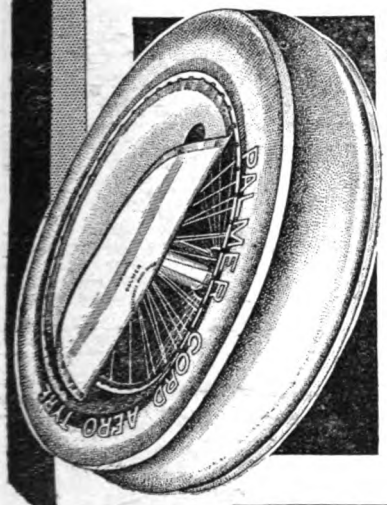
These were the War years, when the entire British demand for Aeroplane Landing Wheels and Tyres was met by Palmer. *Every* British machine which left England was equipped with Palmer Landing Wheels and Tyres.



1919-1929



In the years since the war continuous research and new technical advances have kept Palmer Landing Wheels and Tyres first in efficiency and popularity. They have been chosen for all the notable flights undertaken on British machines, they are fitted as standard equipment on the great majority of British machines, and they are used in every country in the World where Aeroplanes are employed.



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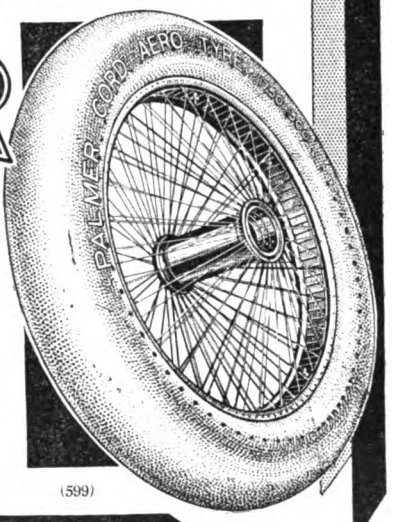

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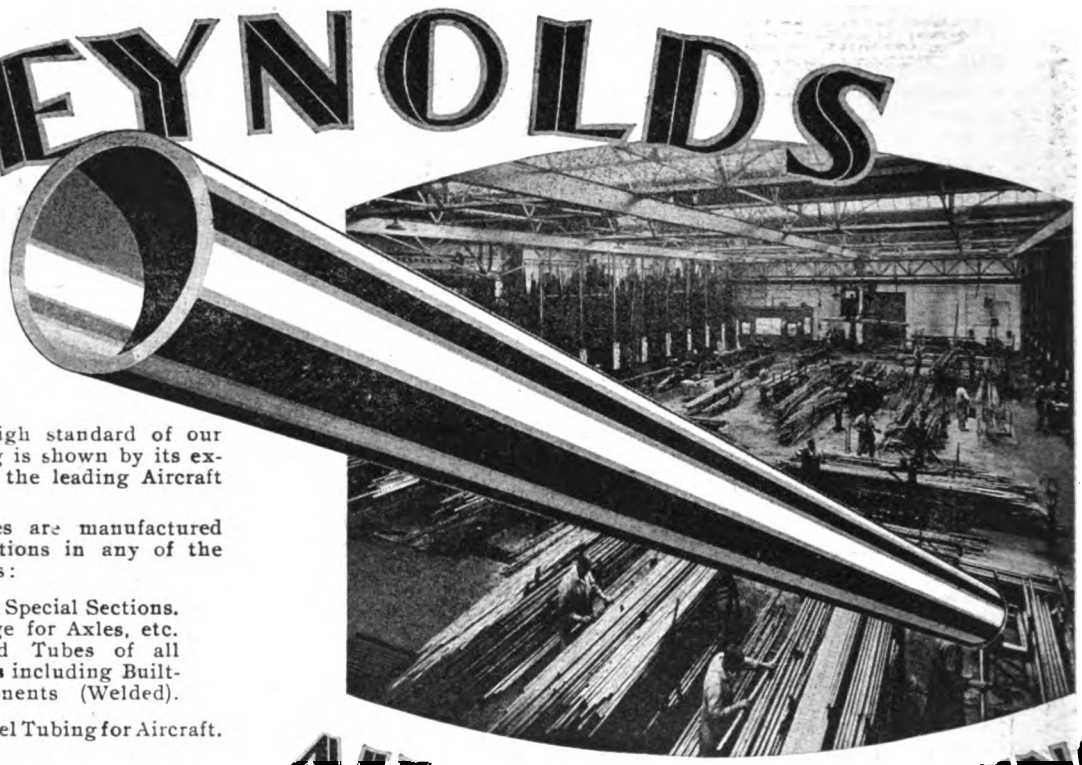

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COMMERCIAL AERONAUTICS.

THE HEINKEL K-2 CATAPULT.

Catapult-starting for sea-going aircraft has been in use some time in naval aviation. In the last year or two, attempts have been made to use similar methods for speeding up mails across the Atlantic.

In August, 1928, a Loiré et Olivier flying-boat with a 480 h.p. Gnome-Rhône Jupiter engine was launched by catapult from the French liner *Ile de France*, when the ship was still 500 miles from New York. By flying this distance 24 hours was saved over the ordinary mail-transit time. The scheme was suspended in October of the same year, after a flying-boat from the same ship had been forced to alight on the sea near the Scillies.

The North German Lloyd liner *Bremen*, recently very much to the fore as a result of her winning the blue riband from the *Mauretania*, has been equipped with a catapult.

This catapult, which has been designed and built by the well-known German firm of aircraft constructors, Ernst Heinkel Flugzeugwerke G.m.b.H., is used to launch an H.E.12 Heinkel low-wing monoplane (500 h.p. Pratt and Whitney Hornet engine). This seaplane is being used to deliver mail and customs papers ahead of the ship.

The Heinkel catapult as fitted to the *Bremen* consists of a skid or launching trolley accelerated over a launching-way about 60 ft. long. The skid is operated by compressed air. The catapult is mounted on the top deck of the *Bremen* between the two funnels. The turntable on which it is mounted allows the launching way to be swung through 90° on either side of the ship's course.

The launching way is a light angle-iron structure 20 m. (60 ft. 7in.) long. On the top surface of this structure which is plated to form a platform, are the rails, which appear to be angle-irons bolted to the sides.

The skid or launching trolley is built of high-grade material highly stressed to keep the weight as low as possible. The skid travels on four shoes and is pulled forward by a cable passing over a return pulley at the nose of the launching-way.

Two additional cables run aft from the skid to a drum at the starting end of the launching-way. These cables besides serving for testing purposes also appear to operate the brakes. The skid is brought to a standstill in a distance of 3 m. (9 ft. 10 in.).

The operating mechanism consists of a cylinder and piston. This piston has a stroke equal to one-sixth of the accelerating distance on the launching-way and is forced out by compressed air from the ship's normal supply.

The cable after passing over the pulley at the nose of the launching-way passes over a fixed pulley at the inner end of the structure. From here the cable is wound several times alternately round pulleys on the piston and pulleys fixed to the structure. When the piston moves outwards, more cable is needed to span the distance between the fixed pulleys and those on the piston. This has the effect of dragging the skid forward at many times the speed of the piston.

The ropes that run aft to the braking apparatus can also be used to rotate a fly wheel which acts as an indicator that the catapult is operating correctly.

The maximum acceleration produced by the catapult is not over 3G, and the flying-off speed is given as 110 km./hr. (68 m.p.h.). The maximum weight of the skid complete with machine in place is 3,500 kgs. (7,730 lbs.).

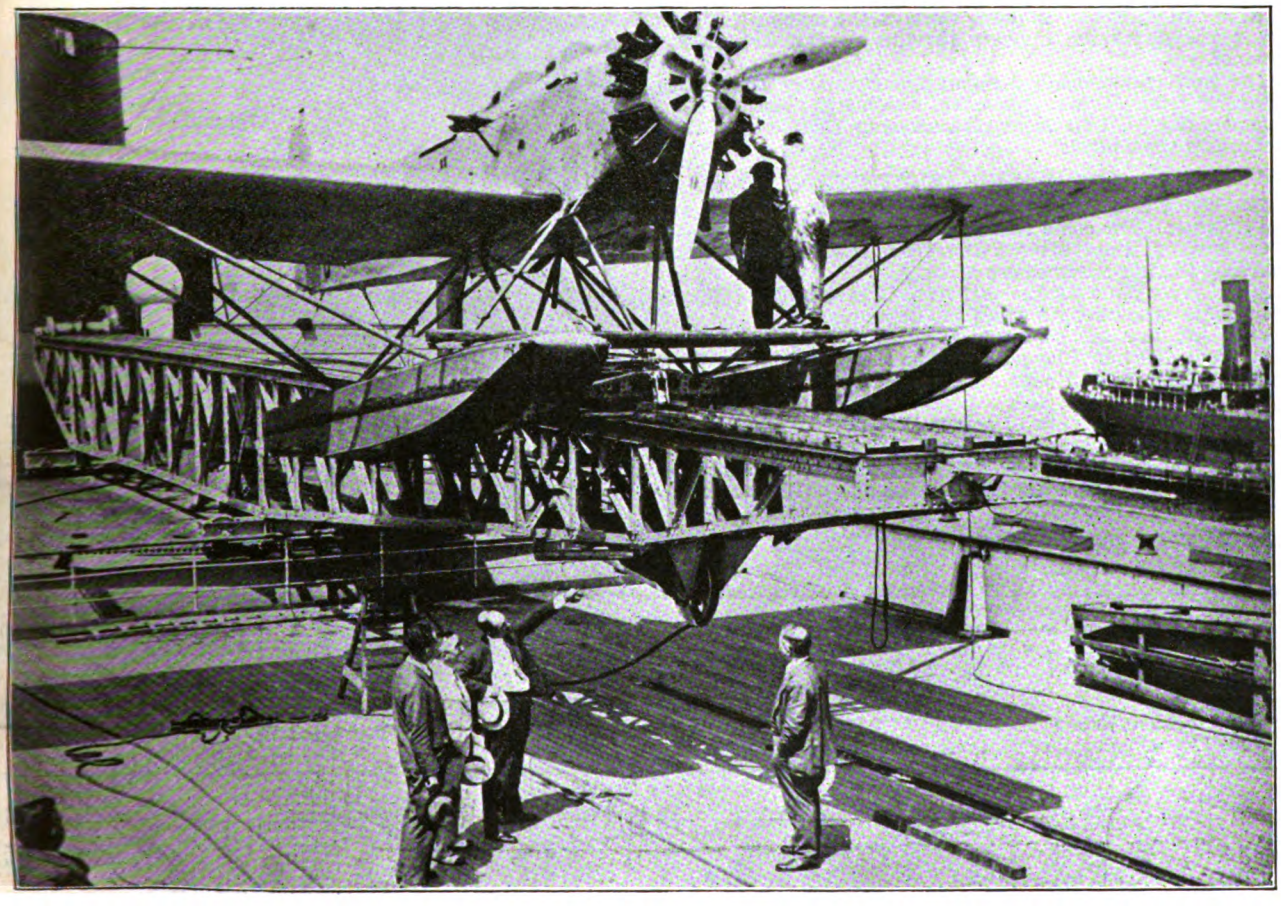
A RIVAL TO THE CATAPULT.

So far all attempts to use seaplanes in conjunction with steamships have been made either with specially prepared runways or catapult launching devices. The latter method postulates the use of a crane to pick up the seaplane from the water on its return.

A long runway is not practicable on a liner and a catapult is expensive. In addition if a catapult be used, the ship must be stopped to pick the seaplane up from the water and fast mail-steamers must not stop.

A method for launching and picking up seaplanes, which is used when the vessel is under way and has the important advantage of low initial cost, is known to our German friends as the Kiwullsche Stausegel,—or the Watersail designed by Dipl. Ing. Kiwull.

The Watersail is an expanse of canvas about 30 m. (98 ft.) long and 10 m. (32 ft. 9 in.) wide with spreader booms on the



THE HEINKEL CATAPULT ON THE "BREMEN."—Here Mr. Anthony Fokker is seen pointing at the catapult, with Mr. Heinkel beside him, and Baron von Studnitz, the pilot of the machine, on this side of Mr. Heinkel. Capt. Bunker of the U.S. Lines is facing them. The Heinkel monoplane is launched at the correct angle for a 68 m.p.hr. flying speed, whereas in the British and U.S. Navies the machines are launched at about 60 m.p.hr. and at an angle which needs about 100 m.p.hr. flying-speed.

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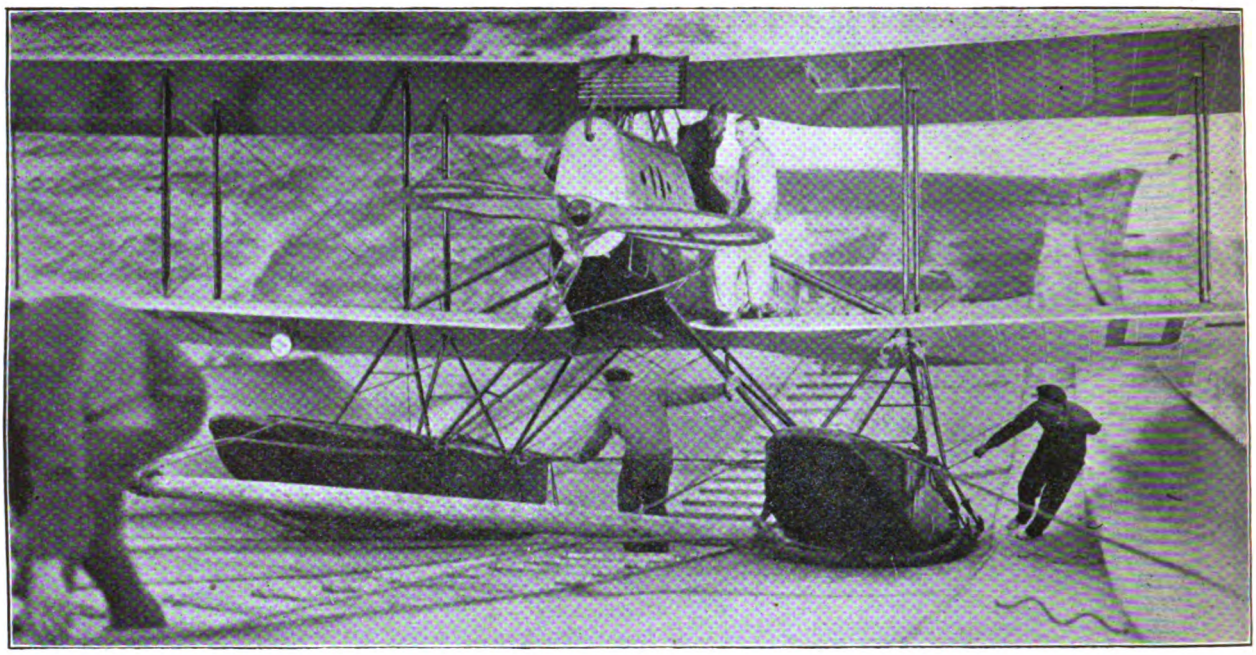


THE KIWULL DROGUE.—Hauling a seaplane aboard.

underside. One end of this canvas runway is attached to the deck over the stern of the steamer and the other ends in a kind of drogue made of wide-mesh netting. This end is attached to the ship by tow-ropes.

The action of the drogue is to cause the water to roll in over the end of the drogue thus making it easy for a seaplane to taxi behind the steamer, and run onto the trailing runway. Once on the runway the floats are attached to skids, and the whole machine is hauled up the inclined canvas slope,—which is held taut by the pull of the drogue.

The process may be reversed for launching, as can be seen from the photographs. The men on the job appear to have little difficulty in doing work on the machine, so that the whole apparatus appears to ride steadily behind the steamer.

The Norddeutsche Lloyd Steamship Company are making extensive trials of this apparatus, which has been fitted experimentally to their local pleasure-ship *Roland* and their steamship the *Lützow*.

CHERBOURG JUNCTION.

Cherbourg is becoming the junction between the Air and the Atlantic. For some time now catapulted seaplanes have been landing there after flying from inward-bound liners and now further schemes are afoot.

A daily seaplane service between Cherbourg and Southampton is scheduled to start on September 15. The Luft Hansa and the Air Union have made arrangements with the North German Lloyd Steamship Co. and the Hamburg Amerika Line for a regular air service connecting Cherbourg and Cologne.

This linking up means of course that passengers from the Transatlantic liners can very speedily reach the middle of Europe and conversely passengers from mid-Europe can leave themselves much less time in which to catch the American boats.

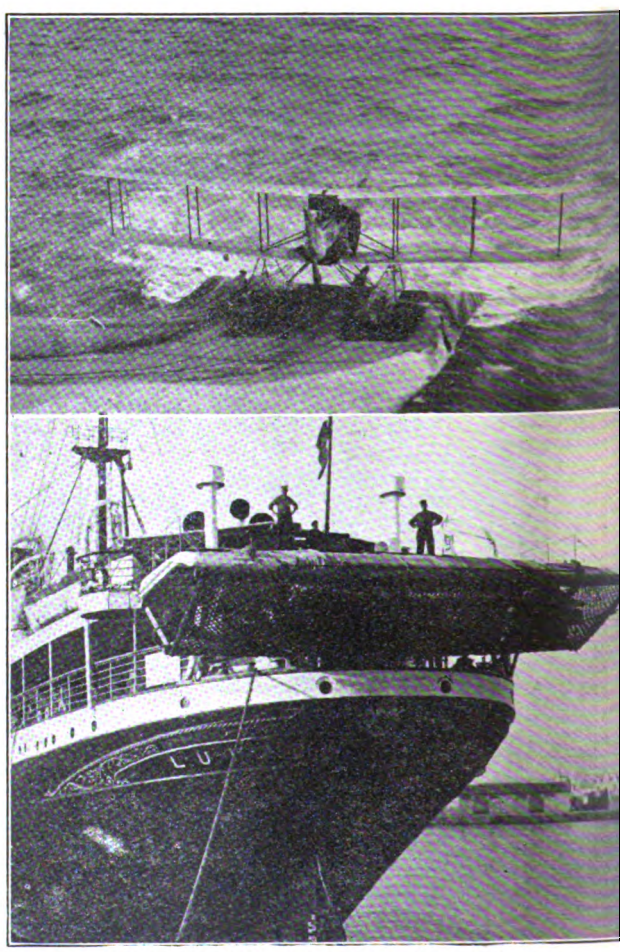
THE USE OF TRI-COLOURED NAVIGATION LIGHTS.

Flying machines with a wing span of less than 60ft. are regarded as complying with the rules and regulations if they display the following modified lights:—

Two tri-coloured lights, one mounted above the centre-section of the aircraft and the other below the fuselage, instead of the usual side and tail navigation lights.

The lamps should be so constructed as to show a green light on the right side, a red light on the left side, and a white light astern, through the angles already prescribed.

This *Air Ministry Notice to Airmen* No. 51 of the year 1929 concludes by saying that flying-machines with a wing span of over 60ft. must carry the usual separate navigation lights.



THE SEA SAIL.—Furled and In Action.

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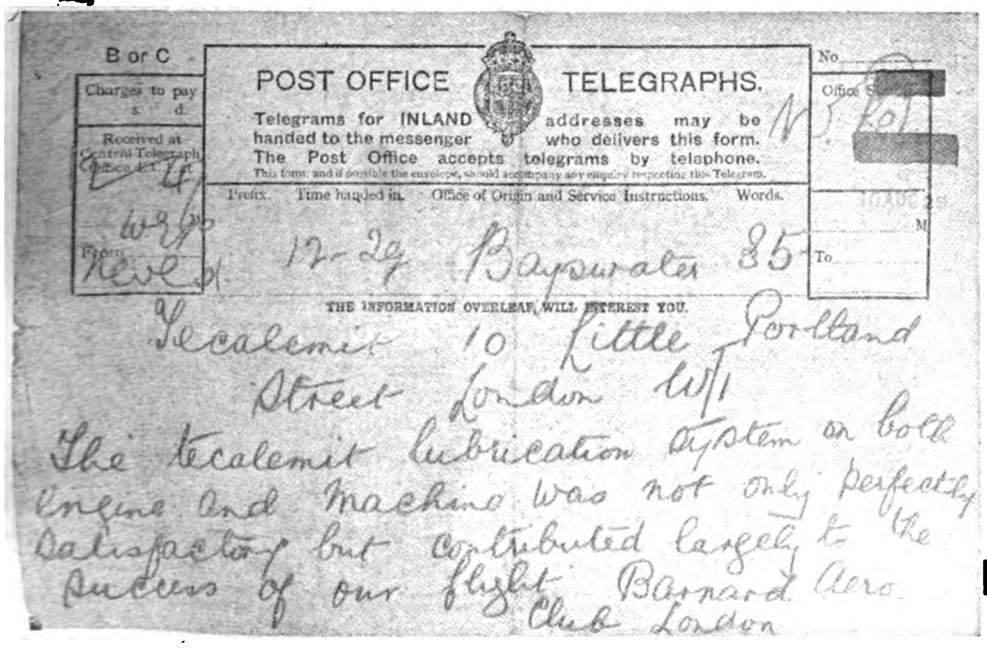
INDIA AND BACK FLIGHT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THE INFORMATION OVERLEAF WILL INTEREST YOU.
Tecalemit 10 Little Portland Street London W1
The tecalemit lubrication system on both engine and machine was not only perfectly satisfactory but contributed largely to the success of our flight Barnard Aero Club London

In 88½ hours flying time by the Duchess of Bedford, Capt. C. D. Barnard, and Mr. R. F. Little, in a Fokker Monoplane with Bristol Jupiter Engine.

Tecalemit is standard equipment on all Government Planes and all British Aircraft.

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AUSTRALIAN AIR MAIL.

The Postmaster-General announces that correspondence for Australia despatched from London on Saturdays by the England-India Air Service will now connect at Colombo with the mail that left London by ordinary route on the previous Thursday.

Correspondence for destinations beyond India—e.g., Ceylon, Straits Settlements, Hong Kong, Australia, New Zealand, can, therefore, now be sent by the India Air Mail, thus allowing about 1½ days' later posting than by the ordinary route. The latest time of posting is 7 a.m. on Saturdays at the General Post Office, London.

The air fee is the same as for India, namely, 6d. per *half*-ounce, in addition to ordinary postage.

Letters, etc., to be sent by the Perth-Adelaide Air Mail in Australia, as well as by the India Air Service, must carry the additional fee for the Australia Air Service, namely, 3d. per *half*-ounce, must also be prepaid, or 9d. per half-ounce in addition to the ordinary postage.

ARRANGEMENTS FOR THE CHANNEL AIR PASSAGE.

The pilots of machines about to cross the Channel, who have no W/T equipment, should read the *Air Ministry Notice to Airmen* No. 52 of the year 1929, which describes the necessary procedure in case the crossing is abandoned.

This procedure is particularly important, as failure to report the cancellation may cause a lot of trouble in the unnecessary organisation of a search.

An aircraft which has effected a circuit around Lympne aerodrome indicating departure for the Continent, but which is obliged, owing to weather or other cause, to abandon the attempt to cross the Channel, must return to Lympne and circuit the aerodrome a second time, such circuit being continued until the signal of acknowledgment (defined in Notice to Airmen No. 6 of 1929) is given. This second circuit will have the effect of cancelling the first circuit.

At present this "cancellation" procedure is only to be employed at Lympne aerodrome. Arrangements may be made later for its adoption at the Continental reporting points.

The notice concludes by stating that the search and rescue service has been augmented by a flying boat belonging to *Compagnie Aérienne Française*, which is available for patrol duty from Calais.

B. GRASE.

European Aviation has suffered a great loss by the death of Mr. B. Grasé, the chief of the test establishment of the Fokker Works in Amsterdam. There can be but few high officials on the Technical or Supply sides of the Air Services of all European nations who have not come in contact with him, or who have not admired his ability as a demonstration pilot and his high level as a scientific and practical engineer.

One never had an opportunity of knowing him well, but from friends in all nations one has heard only good of him. He was liked as a man, respected as a technician and admired as a pilot. To his family, and to his collaborators at the Fokker works one offers sincere condolences on his death at such an early age, and on the verge of such a promising career.—C. G. G.

One of his intimate friends writes:—

After a long and painful illness, the Chief of the Scientific Department and test pilot of the Fokker Works, Mr. B. Grasé, M.E., died at Amsterdam on Aug. 27.

Mr. Grasé was born on May 4, 1891. He studied mechanics at the Delft University and passed with honours the examination for mechanical engineer, a distinction which is only rarely awarded, and indicated his great ability in scientific-technical matters.

His interest in the scientific side of mechanics combined with his love for sports and his interest in aviation were the right base for his first function, which he accepted after having finished his study, i.e., engineer with the Ryks Studiedienst voor de Luchtvaart (National Research Institute for Aeronautics). He entered on Sept. 8, 1918, and as soon as this organisation had been completely installed—which was in the beginning of 1919—and it became desirable for the Institute to have an engineer-pilot at its disposal, Mr. Grasé was the right man in the right place.

He, therefore, was attached to the military flying service at Soesterberg where he learned to fly. He got his ticket on Feb. 27, 1920, after which he continued his training by interrupting his work at the National Institute with periods of training at Soesterberg and Schiphol. His extraordinary aptitude as a pilot soon appeared.

Not only did he fly with unusual gallantry, but he found in his scientific and technical knowledge a touchstone to analyse the qualities of the machines he flew.

Mr. Fokker, who himself possesses this rare combination of being an extraordinary pilot and having a cool criticising mind soon discovered the qualities of Mr. Grasé and enabled him to fly various new types.

This co-operation quickly led to the mutual desire to come to a closer form of collaboration and on June 1, 1923, Mr. Grasé left the R.S.L. and entered the Nederlandsche Vliegtuigenfabriek as Chief of the Scientific Department, in which function he had to fly and test all new types, to study them and indicate the necessary improvements. Since then Mr. Grasé has been with the Nederlandsche Vliegtuigenfabriek, and his advice has contributed to a high degree to the development of new types and his ability as a pilot has greatly furthered the success of the Fokker products.

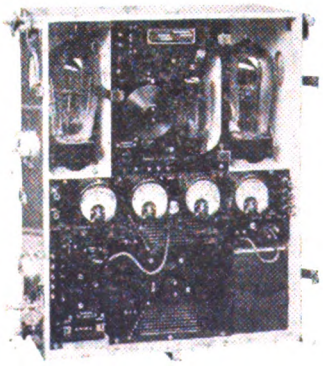
Mr. Grasé was well-known in the whole of Europe and beyond. In 1924 he secured a big success for the Fokker Works in a military competition at Madrid and further by obtaining the second place in the Rally to Gothenburg. In 1925 he broke four World's Speed Records with useful load in the single-seater fighter Fokker D.XIII. and soon afterwards he improved on the existing World's Altitude Record with 1,000 kgs. load in an F.VII.

To recall the whole list of Mr. Grasé's special performances would take us too far afield. With a few exceptions all new types have been tested and made *au point* by him.

In the last years the malady which was then not yet discerned, but which finally carried him off, was often an annoyance to him; but it could not prevent him from achieving his task. In the Autumn of 1928 he started for a demonstration flight to the Balkans and Turkey, after having been operated upon before his departure, and apparently being cured. Notwithstanding the fact that during this trip new troubles arose, he continued fulfilling his duty without speaking of his suffering. He returned towards the end of January last, after a series of fine performances, cheerful about the results obtained.

Since he has been confined to a sick-bed.

Netherlands Aviation in general and the Fokker Works particularly lose in Mr. Grasé a figure of proved ability.



Marconi Short-Wave Transmitter Type A.D.19.

SHORT WAVE WIRELESS FOR AIRCRAFT

Short wave wireless equipment is particularly suitable for military and naval aircraft. Fixed aerials, giving complete freedom for manœuvring, may be used, and a number of important services may be conducted within a narrow waveband without interference. New short wave aircraft transmitters and receivers, Types A.D.19, A.D.20 and A.D.21, designed by the Marconi Company, combine these advantages with high efficiency, light weight and extreme compactness.

MARCONI'S WIRELESS TELEGRAPH CO. LTD.
MARCONI HOUSE · STRAND · LONDON · W.C.2

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The

SHORT-CALCUTTA

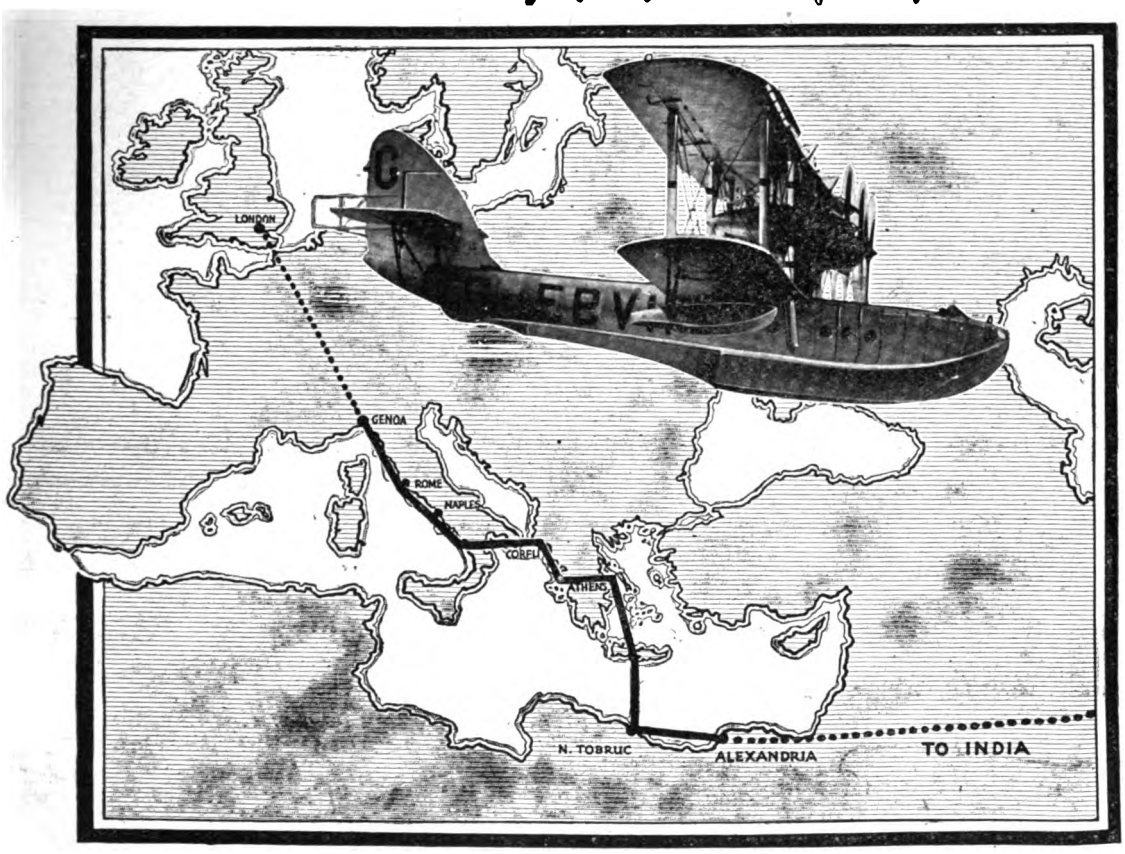
THE LEADING BRITISH ALL-METAL

FLYING BOAT

AS ORDERED BY THE FRENCH GOVERNMENT

ALSO BEING BUILT FOR U.S.A.

"Makes a new flying link of Empire"



IMPERIAL AIRWAYS CHOSE THIS BOAT

for the longest commercially operated Sea Route in the World, 1,700 Miles

15 PASSENGERS
TOTAL PAYLOAD 4860 lbs

CRUISING SPEED 100 M.P.H.
RANGE 6½ HOURS NO PETROL IN HULL

Designed and Built by

SHORT BROS. (ROCHESTER & BEDFORD) LTD

Pioneers in Metal Flying Boat Construction

ROCHESTER, KENT, ENGLAND.

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HANDLEY PAGE
AUTOMATIC SLOT CONTROL

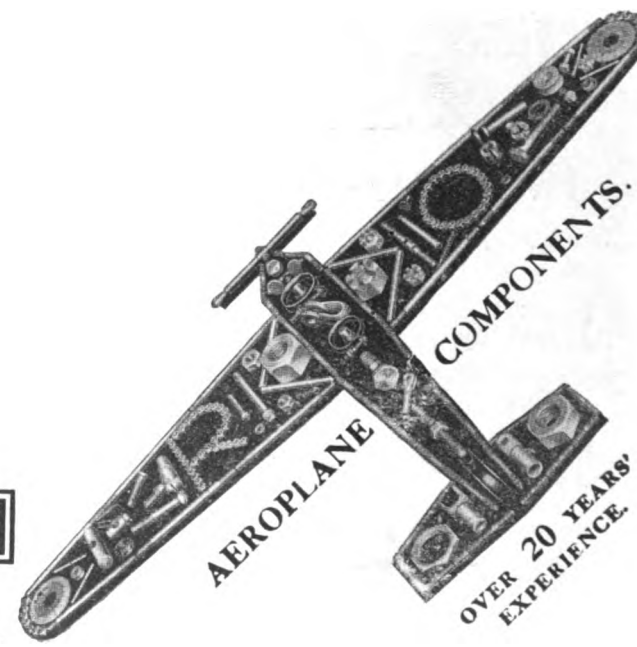
"That the slotted wing has been found to be particularly useful in landing in water, is the opinion of the Director of the Provincial Air Service, who contends that a pilot is thus enabled to 'flatten out' ten or more feet above the surface, without resulting damage, in a 'pancake' landing. Among fliers it is generally conceded that unless there is a ripple to serve as a guide, it is practically impossible to judge distance accurately in landing on calm water."

"EVENING TELEGRAM,"
TORONTO.

HANDLEY PAGE, LTD.,
Cricklewood,
LONDON, N.W.2.

FIRST IN THE FIELD and STILL MILES AHEAD.

The fact that Rubery, Owen components were used on Sir Alan Cobham's machine in his flight to Australia and back; on Flt. Lt. Webster's machine in which he won the Schneider Trophy; on Capt. Hinkler's Avro "Avian" machine on which he made his remarkable flight from England to Australia, and on the Fairey Monoplane which made the first non-stop flight to India, is in itself sufficient evidence of the outstanding quality of these products.



RUBERY, OWEN & Co.

DARLASTON, SOUTH STAFFS.
PHONE:—DARLASTON 130.

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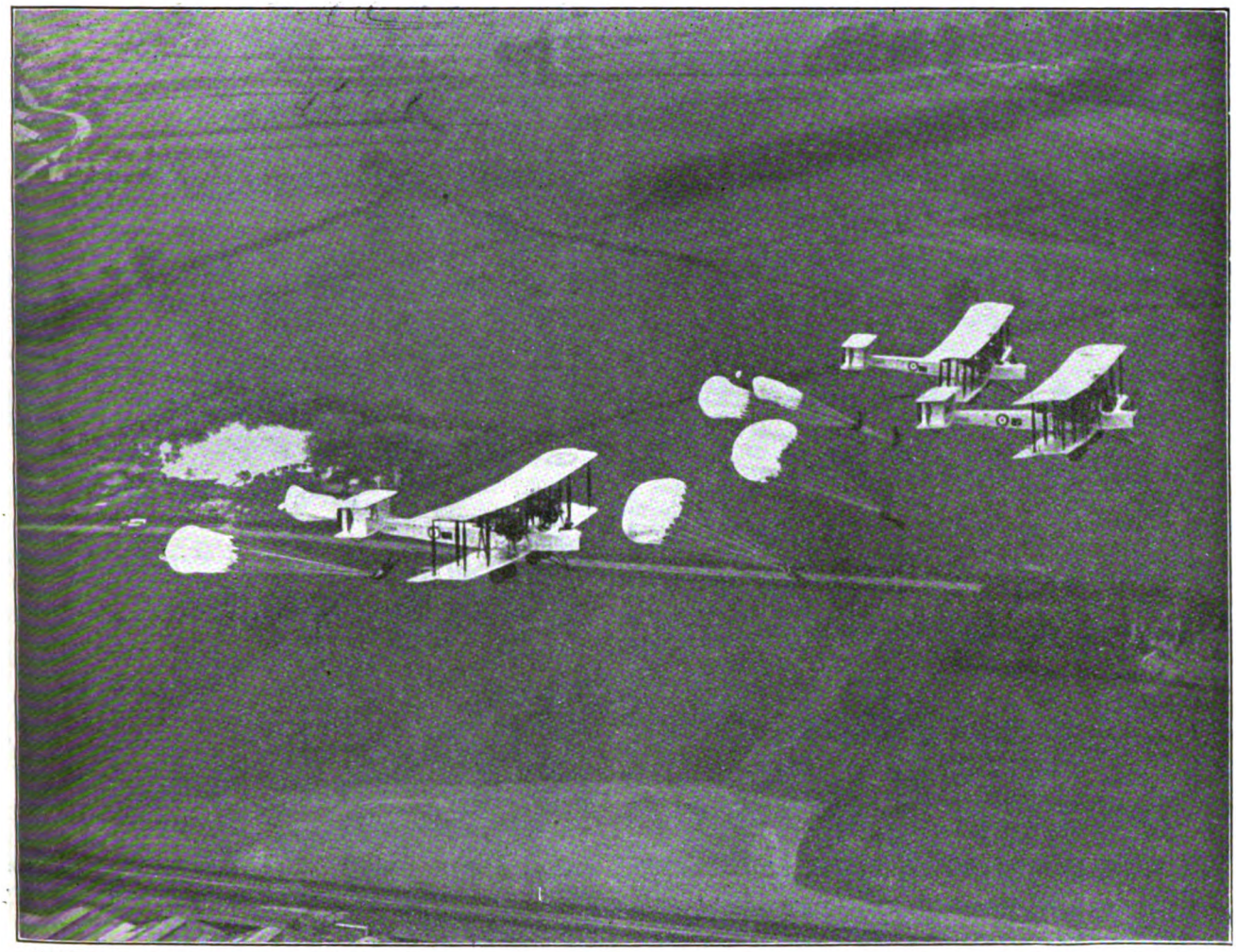

SAFETY. - Actual photograph taken from an accompanying plane of six members of the Royal Air Force jumping simultaneously with IRVIN Air Chutes from Vickers Virginia bombers.

Jump—

----Zip!

IT'S OPEN.—You're safe! Your fall stops in mid air. And then relax. You rest

You glide smoothly, easily groundward, sharing the long-proven confidence of certain safety that Irvin Air Chutes have bred all over the world, in the minds of men who fly—and sometimes jump.

Scores and scores know what a life saver this is, from their own wide experiences in the air.

Already more than 200 aviators have been saved by use of their Irvin Air Chutes when naught else could possibly have brought them safely down.

Among these are aviators in the Air Forces of Great Britain, Japan, Sweden, Denmark, Poland and the Argentine Republic, as well as scores in the United States.

A number indeed have been saved in commercial operations.

Many of the emergencies were of the most extreme nature, and in every case the Irvin Air Chute functioned perfectly.

After thorough investigation and rigid comparative tests, many Governments have adopted the Irvin Air Chute as the standard life-saving equipment for their Air Forces.

If extreme emergency—all unannounced as it usually comes—suddenly confronts you in the air, will you, too, be ready to meet it with Irvin confidence?

AIR CHUTES IRVIN TRADE MARK

Irving Air Chute of Great Britain, Ltd.

Works Road, Letchworth, Herts, England.

Telephone: LETCHWORTH 370

Cable & Telegraphic Address: "IRVIN, LETCHWORTH."

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The Firm which has made the

ALL METAL AEROPLANE

possible.

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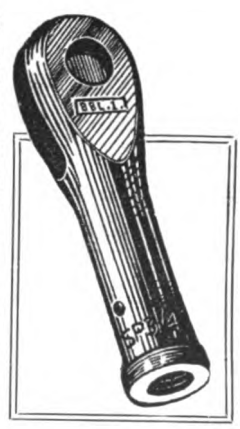
HOLMES MILLS - ROTHERHAM.

'Phone: Bishopsgate 3244
or Post your enquiries to us to-day.

AIRCRAFT FITTINGS
of every description.

We hold complete stocks of fittings and Accessories, passed and guaranteed as to materials and specification. We specialise in Press Work and Machined Parts and would appreciate an opportunity to quote.



All Aircraft Parts when they leave the warehouses of Brown Brothers Ltd., are accompanied by a release note issued by them from their own inspection department under the official authority of the Air Ministry.

Metal Parts include Steel and Duralumin Rivets, Brass Screws, Cadmium Coated Steel Fork Joints, Duralumin Bolts, Nuts and Washers, H.T. Pins, etc.

Brown Brothers Limited
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THOMSON AND BROWN BROTHERS LTD
BROWN BROTHERS (IRELAND) LTD.
GREAT EASTERN STREET,
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Bolts, Nuts, Set Screws, Etc.
by
KIRBY BANKS SCREW CO. LTD.
LEEDS.

In mild, high-tensile nickel, nickel-chrome or stainless steel to any standard.

ESTABLISHED 1864.

Mass Production and Precision in every detail.

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SCALE MODEL METAL AEROPLANE MASCOTS.
"MOTH," "AVIAN," "BLUEBIRD," "DESOUTTER," £3 3s. each.
SPECIAL MODELS AND TROPHIES OF EVERY DESCRIPTION.
CHALLENGE CUPS, ENAMELLED BADGES, ETC.

BIRMINGHAM MEDAL CO., LTD.,
FREDERICK STREET. —— —— BIRMINGHAM

WACO AIRPLANES

THE winning of last season's major air events again demonstrated the characteristic performance responsible for WACO'S leading position in the American Aircraft Industry.

Overseas representation is now being arranged.
INQUIRIES INVITED.

THE ADVANCE AIRCRAFT COMPANY,
TROY, OHIO, U.S.A.
CABLE ADDRESS : : WACO.

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FORTHCOMING EVENTS.

Sept. 6.—Qualifying Tests for the Schneider Contest.
Sept. 7.—Contest for Schneider Trophy.
Sept. 14.—Leicestershire Aero Club Meeting at Desford.
Sept. 14.—Lancashire Club "At Home."
Sept. 14-15.—International Seaplane Rallye at La Baule.
Sept. 21.—Rallye at Haldon (near Teignmouth, Devon).
Sept. 22.—The Bristol Club's farewell party at Filton.
Sept. 28.—Northamptonshire Aero Club meeting at Sywell.
Oct. 5.—Newcastle Air Pageant at Cramlington, with R.A.F. support.

WARNING TO PILOTS.

A well-meaning correspondent writes:—

One understands that the Air Ministry is taking steps to stop the growing practice of unlicensed pilots flying further than three miles from a recognised aerodrome. Occasional license inspections are to be made at flying meetings. It is probable that such an inspection will be made at Hamble and Cowes during the coming week-end when aircraft are arriving to see the Schneider Contest, so all pilots will be well advised to see that they have licenses which are up to date.

Even if not their own,—presumably.—C. G. G.

AN AERODROME FOR EASTBOURNE.

At a lunch given to Sir Alan Cobham during his visit to Eastbourne in *The Youth of Britain* the Mayor of Eastbourne said that Sir Alan had promised to come to Eastbourne again later in the year to help them to select a suitable site for an aerodrome. He assured his hearers that the aerodrome would not be on the Downs or anywhere near them.

Judging by the local newspapers, there is very considerable opposition in Eastbourne to building an aerodrome on the Downs.

CROYDON NOTES.

A recent distinguished traveller by K.L.M. from Holland was Capt. Kingsford Smith.

K.L.M., like all other firms, is doing extremely well in passengers, considering August is over. This firm made a change of programme on Sept. 2, when two of the four daily services were taken off. So good is the traffic on the London—Holland—Scandinavian line, however, that it may be necessary to call for the new 18-passenger triple-Jupiter Fokker for the London line. This aeroplane is now undergoing flying tests in Holland, of which pilots report extremely well.

Mr. Wilson, more or less as an afterthought, got out his Gipsy-Moth on Saturday last, and flew it with such rapidity and accurate timing to Hadleigh, that he won second prize in the International Rally there.

Of the tenth anniversary of the I.A.T.A. held recently in the Hague, very little was heard. It is supposed that the conference was held in a cellar by candlelight in whispers,—for that terrible fellow Snowden was in the Hague at the time, and liable to turn and rend any inoffensive international conference he happened to notice about the place.

Large men, at first suspected of belonging to the A.I.D., erected a strong brass cage around one of our leading Aerodromites recently, as he sat brooding in his office in the Main Hall. It was the well known Capitano Corko Lino (10d. per mile, laid free of charge) and at first we were unlucky when, ejaculating "Corko caged at last" we hurriedly thrust a small nut between the bars. A cigar, similarly proffered was, however, grabbed with true Zoo zeal, and Capitano Corko unbent and told us all about it. The cage, it appeared, was to protect him from unreasonable customers who, proffering a shilling, demanded twopence change, and insisted on flying a mile in the middle of the night.

If the misunderstanding waxed, Corko Lino expected the brass bars to keep the customer at bay until he got another of his inventions under way. This was a contraption of trap-doors and ladders behind the counter, resembling the companion-way of a ship, which enable Corko to disappear with remarkable suddenness. "The idea came to me," he said modestly, when studying the habits of that eccentric mammal, the Marzipan, which sits at the mouth of its burrow on the boundless veldt until a bit of bother starts in the vicinity, and then, with a derisive cry of "Bung ho!" precipitates itself backwards into security.

Capitano Corko Lino tried out the methods of the Marzipan recently on board s.s. *Savanother*, but found ordinary companion ways had too many knobs on, and his private chute will be lined throughout with sorbo sponge in consequence.

Warned by the dread fate of a certain Italian "monk of great renown," one Father Rosa, we feel a certain delicacy in continuing to jest with the great ones of the Aerodrome. Father Rosa seems to have written in a Jesuit organ comparing Mussolini to Napoleon, whereupon the whole of Italy rang with cries of "Viva Longo Baro Trocadero" and other loud expressions of patriotic zeal.

The good Father, however, tongue in cheek, wrote a second instalment, prophesying the fate of Napoleon for Il Duce. Immediately Mutes with muffled piccolo, played that impressive dirge "O doloroso spaghetti, chianti isoffo" in every town and village, and the monk was obliged to make a quick getaway to Spain.

Certain important-looking little men with magnetic eyes and a tendency to fold their arms across the paunch, have been eyeing us over recently in a manner far from reassuring to one who does not wish to drag out weary years of exile in Balham or the waste places of Wandsworth. Our terror will be well understood when we whisper the dread name "Organ P. Golly."—?.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 22, Monday, 42, Tuesday, 45, Wednesday, 44, Thursday, 45, Friday, 51, Saturday, 40.

IMPERIAL AIRWAYS LTD.:
London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 106, passengers 1,001, freight 36 tons. India Route: Inward, passengers 2, mail 723 lbs.; outwards: passengers 7, mail 697 lbs.

AIR UNION:
Paris—London and return: Machines 88, passengers 455, freight 31 tons.

K.L.M.:
Amsterdam—Rotterdam—London and return: Machines 40, passengers 278, freight 15¼ tons.

SABENA:
Brussels—London and return: Machines 12, passengers 66, freight 4 tons.

DEUTSCHE LUFT HANSA A.G.:
Amsterdam—London and return: Machines 25, passengers 49, freight 7¾ tons.

MISCELLANEOUS:
British machines 17, passengers 15.
Foreign machines 1, passengers 0.

Total number of trips by British machines 123, carrying 1,016 passengers. Foreign machines 166, carrying 848 passengers.

COMPARATIVE FIGURES.

Week ending Aug. 31:
Machines, 289; Passengers, 1,864; Crews, 636; Total personnel, 2,500.
Corresponding week, 1928:
Machines, 246; Passengers, 1,604; Crews, 475; Total personnel, 2,079.
Corresponding week, 1927:
Machines, 165; Passengers, 945; Crews, 296; Total personnel, 1,241.
Corresponding week, 1926:
Machines, 126; Passengers, 844; Crews, 158; Total personnel, 1,002.
Corresponding week, 1925:
Machines, 154; Passengers, 794; Crews, 221; Total personnel, 1,015.
Corresponding week, 1924:
Machines, 145; Passengers, 684; Crews, 177, Total personnel, 861.
Corresponding week, 1923:
Machines, 139; Passengers, 636; Crews, 222; Total personnel, 858.
Corresponding week, 1922:
Machines, 135; Passengers, 433; Crews, 245; Total personnel, 678.
Corresponding week, 1921:
Machines, 104; Passengers 356; Crews, 127; Total personnel, 483.
Corresponding week, 1920:
Machines, 129; Passengers, 285; Crews, 154; Total personnel, 439.

DISC WHEELS FOR AIRCRAFT.

Aeroplane wheels of the disc type are being tested by the Air Ministry to acquire data on the strength of that type of wheel; also to investigate the various advantages which are claimed for it, such as reduction of weight for equivalent strength and adaptability to the requirements of brake gear, etc.

Wheels suitable for three types of aeroplanes are being supplied, and their behaviour will be observed under different conditions, including service in the Near East.

Mr. E. F. Goodyear, Managing Director of the Dunlop Wheel Works at Coventry, states:—

The experience gained in producing the landing wheels for the Beardmore Inflexible indicated that wire wheel equipment was not capable of meeting the test requirements, and this proved to us that the wire wheel did not represent finality in design and, indeed, in the larger sizes had certain undesirable features and definite limitations.

The disc wheel as we produce it to-day is carefully designed and made and its performance is unquestionable, representing a definite advance in the art. Two important features of any aeroplane wheel are strength and lightness, and in the development of the Dunlop

MALLITE PLYWOOD
USED BY THE LEADING AIRCRAFT MANUFACTURERS
THROUGHOUT THE WORLD.
Telephone: BISHOPS GATE 8641 (4 lines)
Manufactured to Specification 2.V.3 by
THE AERONAUTICAL & PANEL PLYWOOD CO., LTD., 218-226, KINGSLAND RD., LONDON, E.2.
Telegrams: VICPLY KINLAND LONDON.

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disc wheel comprehensive experiments were made, embodying the use of practically all the commercial light alloys.

The tyre-carrying rim is of novel section and is extruded, the metal being Duralumin. This rim is securely connected to the heavily webbed hub unit by two Duralumin discs, the whole representing a neat and strong wheel, which gives a very satisfactory ratio of strength to weight, particularly in the larger sizes, and in addition affords unique possibilities for housing the brake gear.

A disc wheel weighing 66 lbs. and having a breaking load of 50,000 lbs. compares most favourably with the wire wheel of two years ago which weighed 71 lbs. and sustained a maximum load of 39,000 lbs. The wire wheel of 1926 weighed 81 lbs. and its breaking load was in the region of 28,000 lbs.

A notable advantage of the disc wheel is its capability of bringing a machine safely to rest although the wheel itself may be damaged and distorted by reason of a bad landing, which would have brought about the complete collapse of a wire wheel.

This feature was recently demonstrated satisfactorily with a wheel which had been deliberately buckled. Again, certain possibilities of puncture of the tyre tube are eliminated, as the internal rim surface is smooth and free from the risk of spoke protrusion present in wire wheels under bad landing conditions.

A distinct advantage is gained with the disc wheel through the elimination of the canvas fairings associated with the wire wheel which owing to their tendency to become partially detached are a most troublesome and objectionable feature.

Its shape tends towards a reduction in head resistance, as the brake parts can be snugly housed, a particularly useful feature at a time when breaking systems are attracting the attention of designers. Shorter landing run and control of the machine without external help being of considerable importance, these objects must be obtained with a minimum increase of head resistance.

Aeroplane wheels and tyres are necessary evils and if the aeroplane designer could do without them he would; but, as he has to have them, he likes as little of them as he possibly can. That explains the popularity of our disc wheel which was fitted to a large proportion of the planes on view at the recent Aero Show.

"SEA CLIFF" Trade Mark.

C. Clifford & Son LTD
BIRMINGHAM.

Phosphor Bronze
IN ALL FORMS.
Non-corrosive. Hard as Steel.
Looks like gold.

FOR THE FAR EAST.

A first-class seaplane pilot is wanted. He must be quite first-class, he must have a "B" licence, he must have been a seaplane instructor, he must be a hard worker, he must be single, and he must be capable of training pilots on the ground as well as in the air. The salary works out at about £900 per annum, with first-class fare there and back. Applicants can write direct to Mr. R. Vaughan Fowler, The Far East Aviation Co., Asiatic Buildings, Hong Kong, and should send a copy of their application to "C. G. G." at this office.

PERSONAL NOTICES.

Death.

ANDERSON.—On Aug. 23, at Muree, India, David Robin, the beloved elder son of Flt. Lt. and Mrs. David Forgham Anderson, aged three years.

Marriages.

WILKINS—BENNETT.—On Aug. 30, at Cleveland, Ohio, Sir Hubert Wilkins to Miss Suzanne Bennett.

DIMENT—JUDGE.—On Aug. 31, at West Bromwich, Second Lieut. Walter John Diment (late R.A.F.), eldest son of Mr. Walter Diment and the late Mrs. Diment, Wolverhampton, to Ruth, daughter of the late Thomas Judge and Mrs. Judge, Handsworth.

Forthcoming Marriage.

THOMPSON—HILL.—The engagement is announced between Flt. Lt. D. R. W. Thompson, R.A.F., Little Heath, Herts, and Aileen Millicent, daughter of Mrs. and the late Rev. J. Seymour Hill, of Park House, Southwell.

Births.

ALLINSON.—On Aug. 27, at The White House, Mattingley, Hants, to Florence Muriel (*née* Hall), wife of Flg. Off. N. S. Allinson, R.A.F.—a daughter.

CROKE.—On Aug. 28, at 6, Nelson Road, Southsea, to Phyllis, wife of Flt. Lt. L. G. le B. Croke, R.A.F.—a daughter (Susan).

GEORGE.—On Aug. 27, at Caythorpe, Lincoln, to Betty (*née* Baldwin), the wife of Flt. Lt. Robert George, R.A.F.—a son.

HILTON.—On Aug. 27, at 42, The Ridgeway, Kenton, Middlesex, to Alice (*née* Cleghorn), wife of Flt. Lt. L. Massey Hilton, D.F.C., A.F.C., R.A.F.—a son.

PALMER.—On Aug. 28, in Dublin, to Catherine Ann, wife of Flt. Lt. C. Dudley Palmer, late R.A.F., of Rahan, Co. Kildare—a son.

PAXTON.—On Aug. 29, at Netheravon, the wife of Flt. Lt. Anthony Lauderdale Paxton, D.F.C., R.A.F.—a son.

SWOFFER.—On Aug. 26, at Ambury, Cheltenham, to Joan, wife of Flt. Lt. Swoffer, M.B.E., R.A.F.O.—a son.

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ON THE SCHNEIDER SHOW.

Politics.

We are definitely pledged to defend our possession of the Schneider Trophy if and when any other nation challenges us. The pledge was given by the Prime Minister at the official ceremony in the steamship *Orford* after the official banquet after the Contest,—all duly described in detail later in this history. Speaking in that wonderful voice of his, no word of which could be misunderstood, he assured our Italian friends that "We are going to do our level best to win again."

A Benevolent Despotism may be the ideal form of Government, according to political science. But a Limited Socialism in conjunction with a Limited Monarchy seems to be about the best working alternative while humanity remains what it is.

If a Conservative Prime Minister had given such a pledge he might have found himself faced a year or so hence with demands from the Opposition to know how, with our hundreds of thousands, or possibly million or so, unemployed, the Government dared to spend hundreds of thousands of pounds on designing, experimenting, making and operating pure racing machines of no practical value when there were doles to be paid and food to be found for the unemployables of the Nation.

When a Socialist Prime Minister pledges his Government to such expenditure there is nothing much to be said about it by the free and independent voters. Possibly Conservatives may ask in the House why the money is being spent on sport and not on subsidising Imperial air lines or National taxi-ranks. But such querulous voices will be quickly quelled. For the great heart of the Nation is after all in the right spot.

Sir Philip Sassoon was profoundly right when he said that the risk of life and the outlay was justified by the friendly chivalry which such contests as that for the Schneider Trophy produced between nations, and by the friendships which arise between the competing nations.

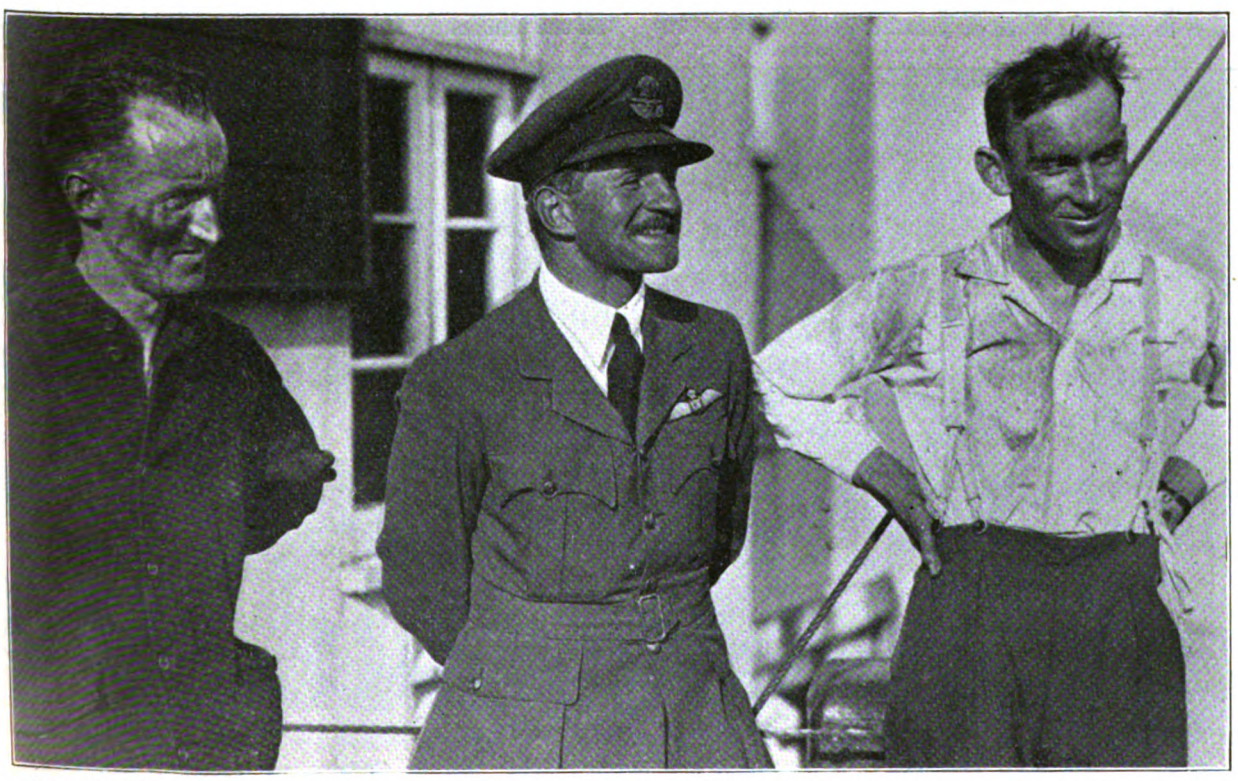
Commercial.

Apart from all that, there is a cold-blooded commercial justification for the risk and the cost. The War 1914-18 did much to cause a better understanding between nations. We know our Allies better than we did in 1914, and we have a greater respect and admiration for, and a closer understanding of, Germany than we have ever had. But the War delayed the progress of Aviation.

Money was worth nothing and lives were worth nothing. Performance was everything. And we got performance simply by jamming on power regardless of cost. We learned a little of what the human physical machine can stand, and of what metal and wood will stand, but we took no trouble to discover efficiency. And we have done little enough in the ten years since then, as is shown by the fact that the performance of the light aeroplanes of to-day is nothing like as much of an improvement as it should be on the performance of the very elementary light aeroplanes on which people learned to fly between 1910 and 1913. And the performance of our war machines of to-day is very little better than the performance of our war machines of 1917-18. But thanks to the Schneider Trophy Contest and the deceased contests for the Gordon Bennett Cup and the Deutsche Cup we are gradually learning something.

"WE WENT THROUGH FIRE AND THROUGH WATER: BUT THOU BROUGHTEST US OUT INTO A WEALTHY PLACE."

(Psalm lxvi. 12.)



THE WINNING TEAM.—Left to right: Flt. Lt. D'Arcy Greig, Flg. Off. Waghorn (the winner) and Flg. Off. Atcherley (the record-holder for 50 kilometres and 100 kilometres).—(*"Aeroplane" photograph.*)

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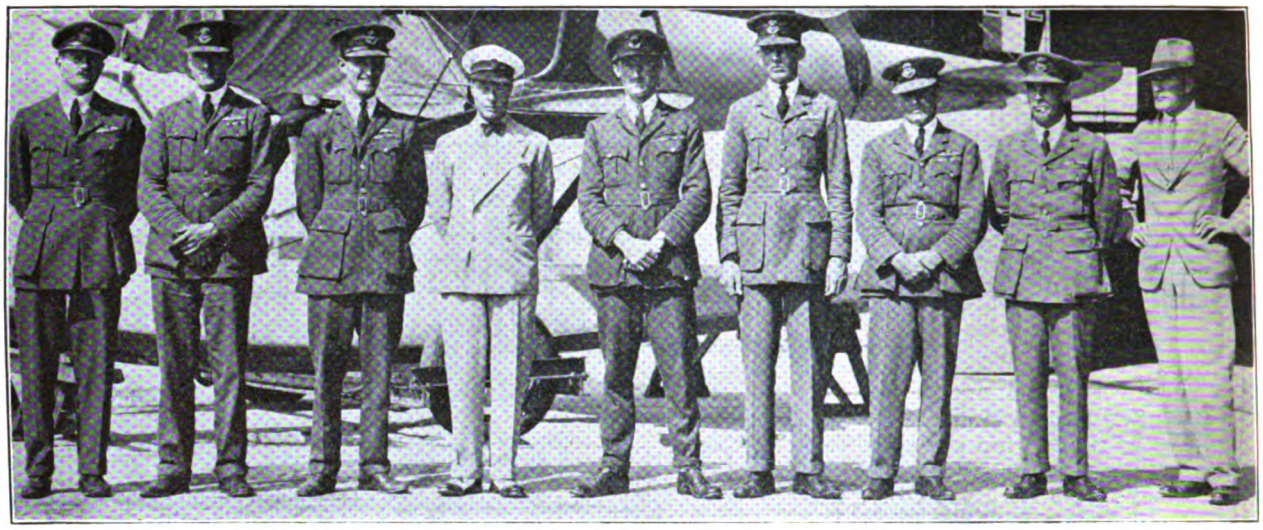


THE PRINCE AND THE BRITISH TEAM.—From left to right: Flg. Off. Waghorn, Flt. Lt. Stainforth, Sq. Ldr. Orlebar, H.R.H. the Prince of Wales, Flt. Lt. Greig, Flg. Off. Atcherley, Wing Cdr. S. W. Smith and Flg. Off. Moon.

KNOWLEDGE.

The one direction in which the greatest progress has been shown in the past ten years is in the increase in speed. Admittedly we have achieved our present quite high speeds by enormous increase of power, but in getting that power our engine designers have learned an immense amount.

The Rolls-Royce R. engine which won the Schneider Contest is said to be giving 1,950 horse power. It is getting it for very low weight. But, what is even more important, it is getting it for a very small frontal area.

No engineer of fifteen or twenty years ago looking at the front end of those Supermarines would have believed that nearly 2,000 horse power could be got into a body of such a small cross-section. And the Napier Lion, although according to its bench tests it gives very much less horse power than the Rolls-Royce, is a very much smaller engine in every way. But it gives horse power proportionate to its weight. And its area has been reduced to a figure so small that if it were made any smaller there would be no room for a man to sit behind it.

That in itself, quite apart from the weight, indicates progress, for the smaller your power plant the less valuable space it will take for whatever purpose it may be used.

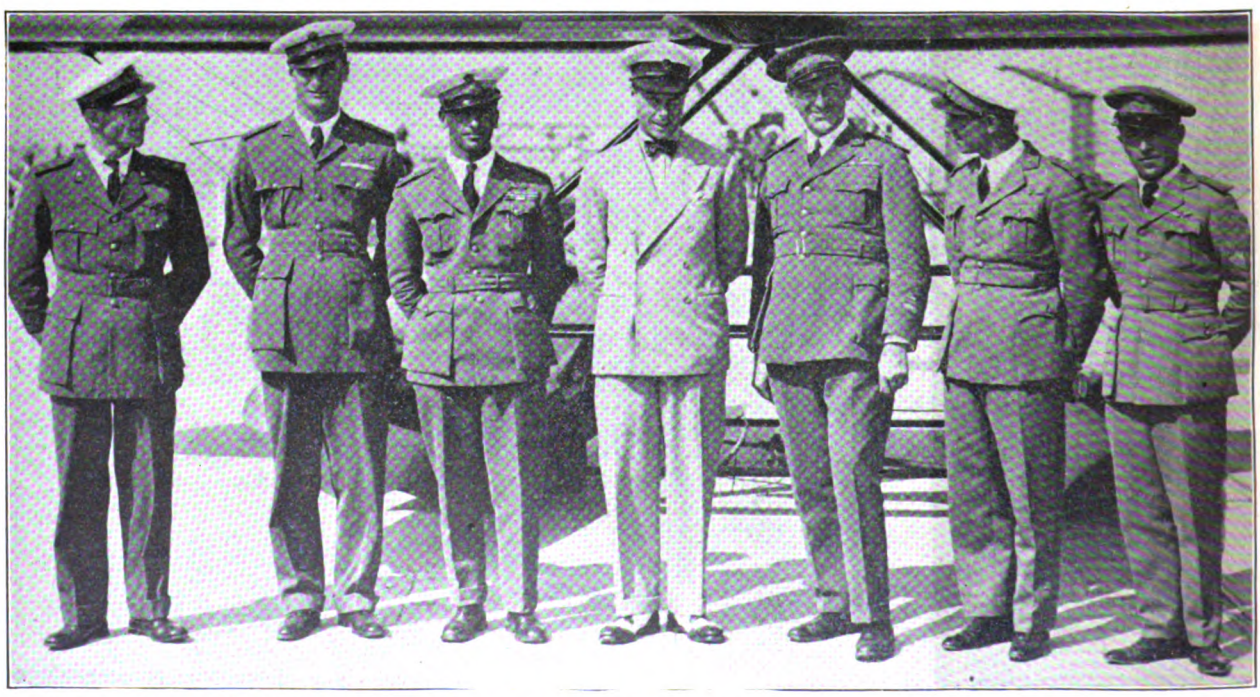
PRACTICE.

In air transport speed is more important than anything else. Speed is the one thing which makes air transport worth while. And, to get speed, whatever goes through the air must be made as small as possible.

If we are going to carry mails as fast as possible we must put them into long slim machines which can slip through the air. Though we must necessarily stow the passengers comfortably, if we are going to carry passengers we should have our power-plants inside the area which is necessary for the passengers, so that there must be no added resistance for the said power-plants.

Also our engine-designers have got their weights down to figures which would have seemed impossible even ten years ago. We are very near that coveted 1 lb. per horse power which at present seems to represent the aim and object of the designers of internal-combustion engines. And we have achieved all this chiefly because one nation has been trying for ten years to beat all other nations in speed contests.

One puts all these sordid commercial considerations first because they are most likely to appeal to a nation of shopkeepers, more especially because, with the notable exception of the Supermarine Company, the Gloster Company, and the Napier Company, who, as was remarked last week, have spent a great deal of their own money on building racing aircraft and engines in the past, so few of our aircraft firms have put their hands in their own pockets to any noteworthy extent to improve the breed of aircraft through air-racing, in the same way as the breed of our horses have been improved by racing. No other British firm has built a pure racing machine for the past eight years, with the solitary exception of the Tiger Moth.—And the Trade, as well as the millionaire Modocks, who remember their association



THE PRINCE AND THE ITALIAN TEAM.—From left to right: Lieut. Cadringher, Lieut. Monti, Capt. Canaveri, H.R.H. the Prince of Wales, Lieut.-Col. Bernasconi, Warrant Officer Dal Molin and Serjt. Agello.

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British Air Triumphs

1918 A Napier-engined D.H. aeroplane climbed to a height of 30,500 feet in 66 minutes. At this time no human being had ever soared so high.

1919 A Napier-engined D.H. aeroplane won the Aerial Derby. Speed 129·3 m.p.h.

1921 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 163·4 m.p.h.

1922 A Napier-engined Supermarine flying-boat regained the Schneider Trophy for Great Britain at a speed of 149 m.p.h.

1922 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 180 m.p.h.

1923 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 192·4 m.p.h.

1926 The first non-stop crossing of South Atlantic ocean carried out by Commandante Franco, flying a Dornier flying-boat with two Napier engines.

1926 First formation flight from Cairo to Cape Town and back to England. Four Fairey aircraft, each fitted with Napier engine, covered 56,000 engine miles without trouble.

1927 Schneider Trophy won by a Napier-engined Supermarine-Napier seaplane flown by Flight-Lieut. S. N. Webster, A.F.C. Speed 281·669 m.p.h. Only two machines completed the course, both Supermarine-Napier seaplanes fitted with Napier engines.

1927 World's speed record over 100 kilometres set up by Flight-Lieut. S. N. Webster, A.F.C. Speed 283·313 m.p.h.

1928 Flight-Lieut. D. D'Arcy Greig, D.F.C., A.F.C., flying Supermarine-Napier seaplane, fitted with Napier engine, set up speed of 319·57 m.p.h.

1928 Capt. H. S. Broad, flying D.H. Hound, fitted with Napier engine, secured three World's speed records whilst carrying loads of 500 and 1,000 kilogrammes.

1928 The greatest formation flight ever carried out was made with four Supermarine-Napier Southampton flying-boats, each fitted with two Napier engines. The machines flew from England to Australia, round Australia and back to Singapore, covering 180,800 engine miles without mechanical trouble.

1929 The first non-stop flight from England to India was carried out with a Fairey monoplane fitted with Napier engine. 4,130 miles in 50 hrs. 38 mins.

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with Aviation only when there is an advertisement to be got cut of it, ought to be ashamed of themselves.

Organisation.

That being that, now let us turn to certain other aspect of this year's Contest. First of all, the Royal Aero Clu does deserve sincere congratulations on the way in whi the whole affair was organised. All our visitors were thusiastic about the whole thing. Americans like Mr. J Ide and Mr. Lester Gardner and Mr. Grover Loening, were in the *Orford,* have all had experience of big Ame air meets and have been concerned with the organis of a good many of them. And they said definitely nothing they had ever seen in the States was quite a as the Aero Club's organisation.

Herr Brandenburg, German Controller of Aviation sistant Herr Hentzen, and Herr von Hoeppner, t President and Secretary-General of the Aero Clu many, who also know just about as much as there about organisation, were equally spontaneousl mentary.

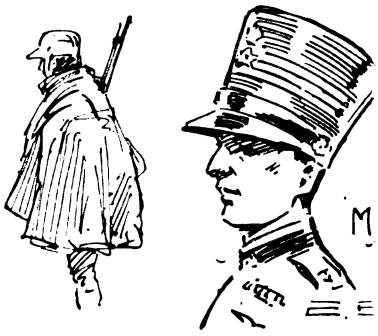
So far as one has been able to check up resu direction, whether it was in the arrangement casting or in the arrangements for the offici in the timekeeping and the transmission o the timekeepers, or the keeping clear of the Navigability Trials (with one sad excepti went with the regularity of clockwork.

Mr. Harold Perrin, the Secretary, and Assistant Secretary, have worked despera the past few weeks over this organisation the thanks and congratulations of eve Never have Mr. Perrin's driving energy imperturbable good nature been tried s have they proved so unbreakable. A achieved such fine results. The only failed, the steamships and railways. range of action

The timekeeping, which was done by and Mr. F. T. Bidlake, was done wit is only achieved by many years of pr ments for the conversion of lap tim per hour, and the transmission of th and/or wireless, worked to perfectio

Even the English weather behave two days before the Contest, and o itself, it was quite perfect. The showers, the wind and the mist at when the Contest had to be postp recollections of that place a dismal with the brilliance of the Solent t

The Meteorological Department warned all concerned early in th



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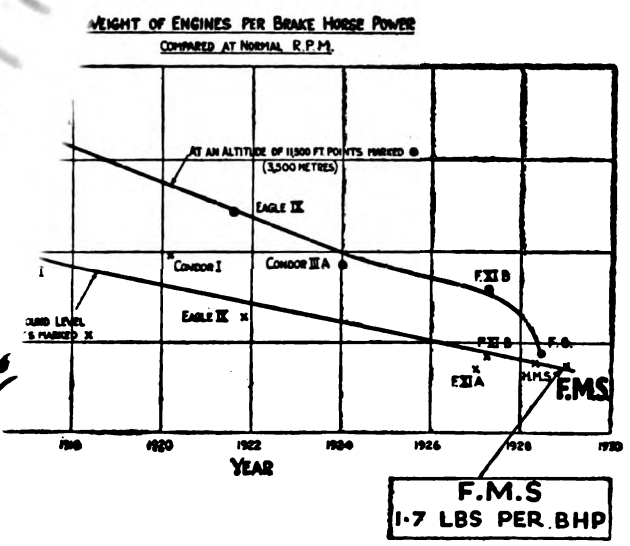
S-ROYCE
ENGINES

2. Weight Reduction



.llustrates the result of 14 years progress in Aircraft
.sign technique. It shows the steady improvement
.ch Rolls-Royce Ltd. have made in power obtained
.eight of material, not only at ground level, but also
.se of a Supercharger, when flying at high altitude.

.OLLS-ROYCE LIMITED
14-15 Conduit St. London W.1
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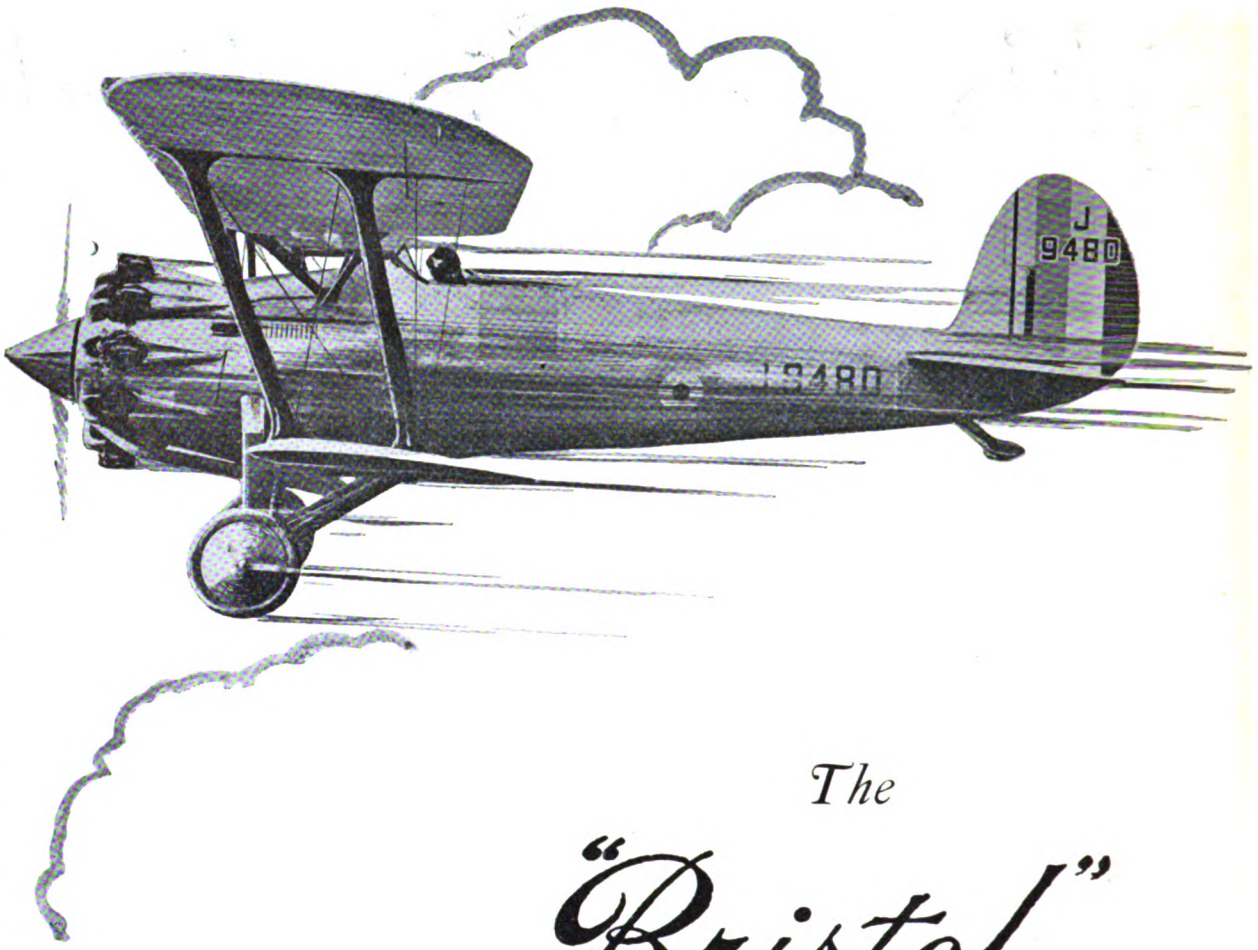

The

"Bristol"

BULLDOG

SINGLE SEATER DAY & NIGHT FIGHTER

Constructed of high tensile steel.

This machine has been put into production for standard equipment of the Royal Air Force, and the Air Services of several foreign powers.

Designed and Constructed by

THE BRISTOL AEROPLANE CO., LTD., FILTON, BRISTOL.

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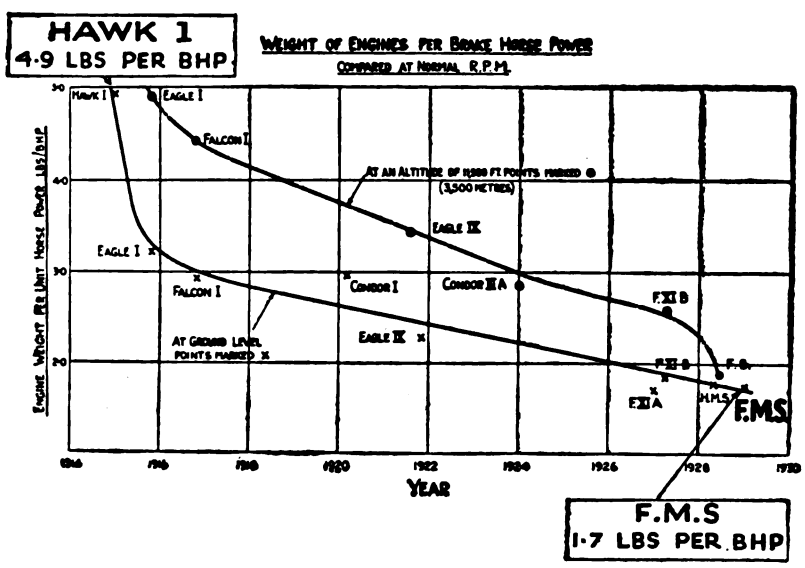
ROLLS-ROYCE
AERO ENGINES

PROGRESS: 2. Weight Reduction



This chart illustrates the result of 14 years progress in Aircraft Engine design technique. It shows the steady improvement given which Rolls-Royce Ltd. have made in power obtained from a weight of material, not only at ground level, but also by the use of a Supercharger, when flying at high altitude.

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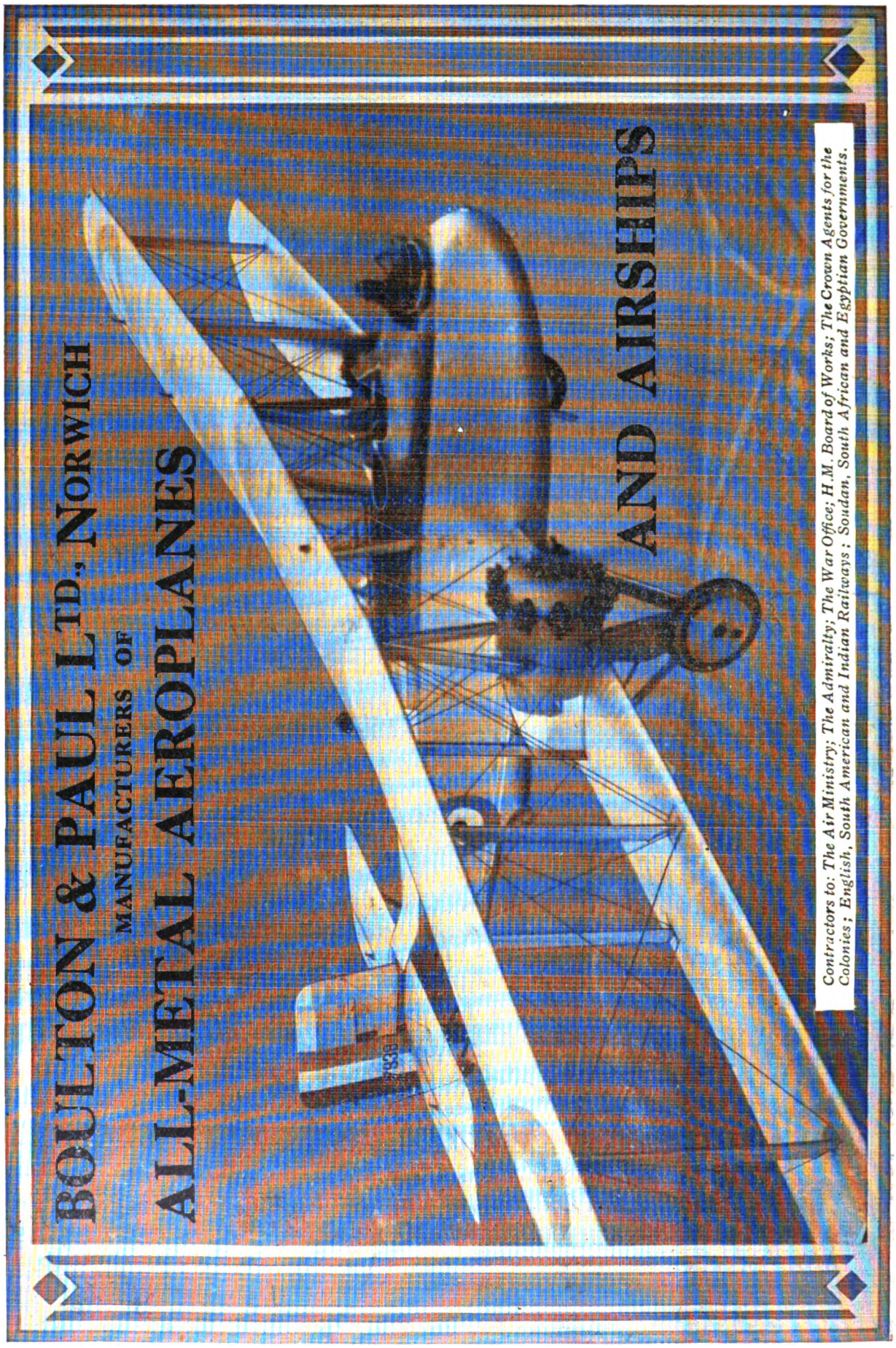

Photograph by courtesy of "Flight."

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The whole experience was one of the most heartbreaking affairs that have happened in the competition experience of the British Aircraft Industry. Whether the cause of the trouble will ever be discovered seems doubtful. If it should be discovered, then the information should be published as widely as possible, for no good purpose can be served by keeping it dark while the engine people blame the design of the aeroplane, and the aeroplane people blame the engine.

WHAT EVERYBODY KNOWS.

Everybody knows that there is some subtle difference between the behaviour of an engine on the test bench, and in an aeroplane on the ground, and in an aeroplane in the air. The difference between the running of an engine on a solid test bench, constantly kept cool with fresh water, and driving a dynamometer, is obviously likely to be different from the behaviour of the same engine in a springy structure like an aeroplane. But anybody might imagine that there could be little difference between the behaviour of that engine in the same aeroplane on the ground and in the air.

Naturally the rush of air past the air-intakes of the carburettor must alter the carburation when there is an airscrew running, or when the machine is flying. And this rush of air must create a mixture of air and petrol which is different from the mixture which that same carburettor takes in when the engine is running on a test bench. But when the airscrew is running on the ground one might expect the rush of air from the airscrew to be practically the same as that which is caused by the machine flying through the air. And in fact it is not.

THAT BOW-WAVE.

The reason for this would seem to be that when the machine is stationary and the airscrew is pushing the air back it does not create a definite bow-wave round the nose of the engine such as is made by the machine rushing through the air. That is to say, when the machine is stationary on the ground the airscrew has to suck the air towards itself, and it then pushes it back in a way which may actually cause what may be best, if unscientifically, described as a "partial vacuum" round the airscrew-boss and the nose of the machine, so that no bow-wave is thrown out, whereas when the machine is flying, especially at these very high speeds, there is enormous pressure on the actual airscrew boss, and quite a different air-flow over the nose of the machine.

Consequently an air-intake which may seem to be quite correctly placed when the engine is running in the aeroplane on the ground may prove to be quite incorrectly placed when it is in the air because of the different direction of the bow-wave.

Added to this there is the further complication that all our new racing engines are supercharged, and when the supercharger is running, if the bow wave throws the air out past the mouth of the air intake, then the supercharger is being starved because obviously with a supercharger more air must be sucked through the intake than would be needed if the engine depended on its own natural suction.

Probably these suggestions are every bit as inaccurate as all the suggestions which have been made by all the experts down at Calshot in their efforts to find the trouble. But at any rate the failure of all the experts to locate the trouble does seem to indicate that the bow-wave has something to do with the difference in the carburation with the engine running on the ground and when it is in the air.

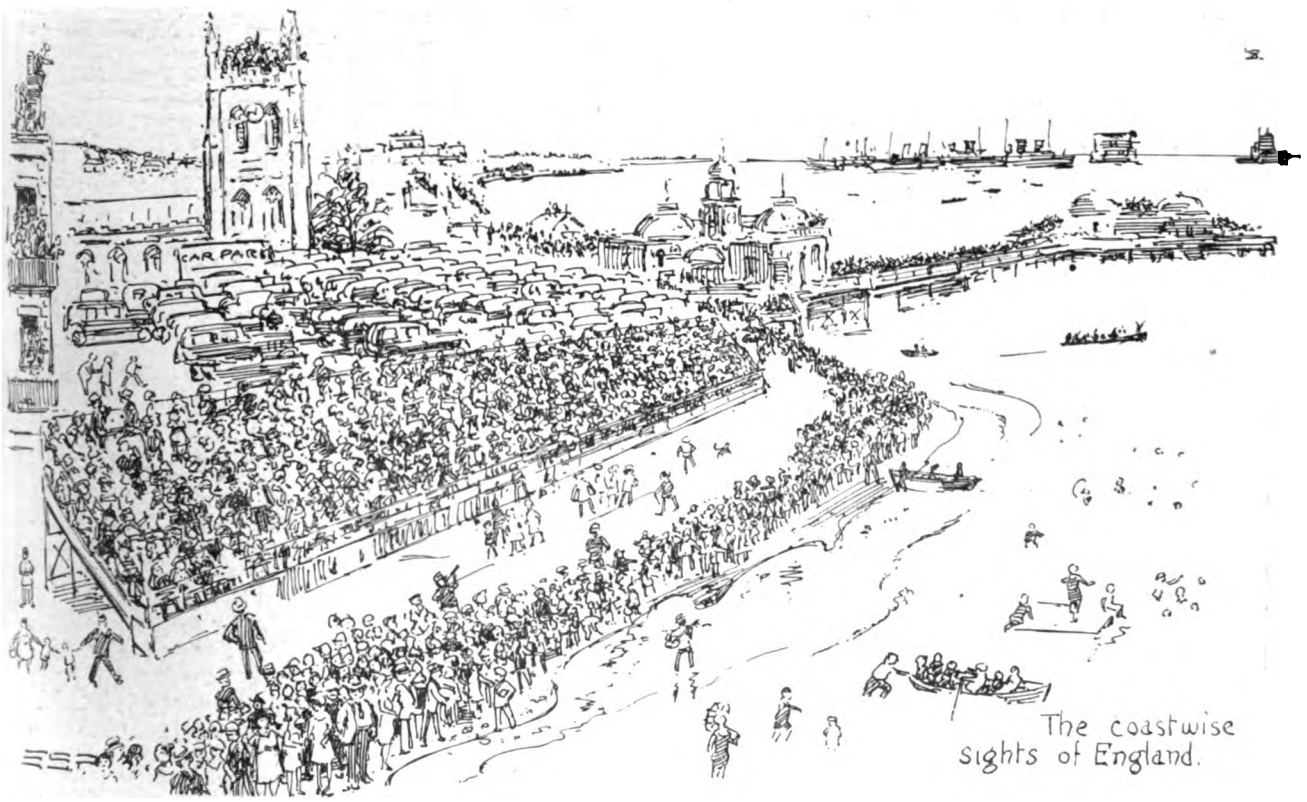
Every time the machine has come in the engine people and the aeroplane people have been quite sure that they have located the trouble. When all hope of getting the machine into the Contest was given up on Friday morning, they were all equally certain that they had found the cause of the trouble and that they would be able to go for the Speed Record this week. One hopes most sincerely that they have located it at last. But on the other hand one will not be in the least surprised if they have failed to do so. One can only wish them the best of luck.

At least everybody must congratulate the engineers who have worked on those machines during the whole of last week as nobody could have worked unless spurred on by the finest sporting spirit. No other inducement could have produced such work. Nothing in the way of overtime pay or hope of personal advancement could have put such energy into men. It could only have come from their innate sportsmanship. And for that they deserve just as high commendation as has been poured forth on the winner of the Contest himself.

THE LESSON.

The only lesson to be learned is that putting things off till the last moment is sheer folly. We have been so afraid of having engines and machines ready a little bit too soon, humbugging ourselves with the idea that if we did so our competitors might get wind of our designs or of our mechanical processes, that we have put things off too late.

If the engines had been ready six months ago and if the machines had been ready for the engines at the same time, and if they had been flown, let us say, in June, and this trouble had then disclosed itself, there might have been some hope of discovering the cause of it. But of course if the machines and engines had been ready and had been flown in June, and if the Italian machines had been ready and had been flown in June, then we might each have learned something about the other's machines and we might have copied something from the Italians and they might have copied something from us, and then we both might have altered our machines accordingly and we should probably both have made a mess of them.



[Note the Object of the Excitement in the Right-Hand Top Corner.]

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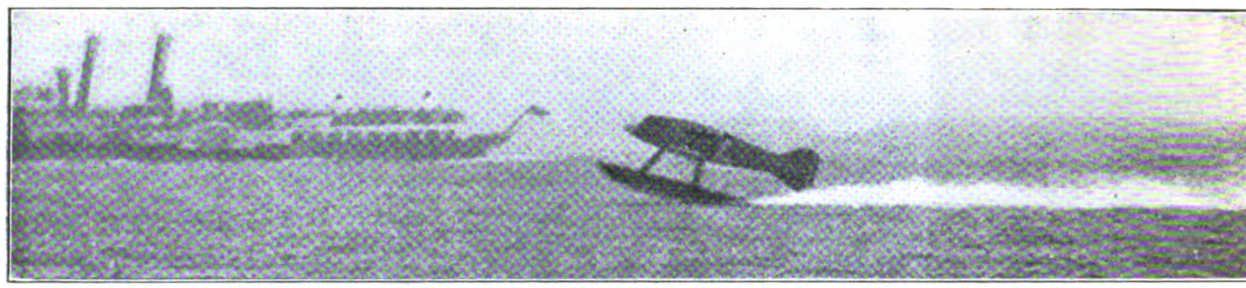


A LONG SHOT.—Warrant Officer dal Molin getting off in the tests on Friday—("Aeroplane" photograph.)

All the same, personally one is perfectly certain that on a job of this sort the proper thing to do is to have the engines and the machines ready and actually flying a good four months before the Contest. There are always little things that can be done in the way of tuning, and minor alterations which can be made which will add just the odd fraction of a mile an hour which makes the difference between winning and losing.

As Mr. Ramsay MacDonald has pledged us to defend the Trophy, and as General Balbo has practically challenged us to compete again two years hence, for goodness sake let us start work now, and let us arrange to have our machines in the air in June 1931. That only gives us a bare twenty-one months for the job, and it is none too much.

THE GENERAL IDEA.

So much for the general aspect of the affair. Let us now turn to the Contest itself. Actually this began on Friday when the machines had to pass tests which were supposed to prove their airworthiness and seaworthiness.

As there are so many phases of the Contest the description has been split up between various members of the Staff of this paper so that readers may get a general idea of how it was seen from many different points of view.

Mrs. McAlery, as befits one whose existence is devoted to the Royal Air Force, chose to represent The Aeroplane at Calshot Air Station on Friday afternoon and Saturday. Her description will be read with particular interest because it is so essentially the point of view of the R.A.F. itself.

Mr. Thurstan James chose to go seafaring with some friends and see the Contest from the Western turning point, where he had an excellent opportunity of observing the working of that curious institution, the Marine Mind, which played such an important part in the whole show right away from the qualifying tests up to the moment when the élite of British Aviation went ashore.

Mr. Leonard Bridgman watched the performance from the *Orford*, and gives his impressions of a life on the Solent wave.

Mr. Norton had perforce to stay at home, and gives his view of the affair as received on the wireless.

Mr. Geoffrey Dorman, being cumbered with much advertising, gives an impression of the affair from the advertiser's point of view.

Interspersed among them all are the excellent photographs of Mr. C. A. Sims, whose work is rapidly becoming World-famous.

For oneself, one was concerned in the naval manœuvres connected with the qualifying tests on Friday, and thereafter one was plunged into the social vortex in the *Orford*. As the said naval manœuvres began the actual contest let us begin with them.

NAVAL MANŒUVRES.

By C. G. G.

The Prohibited Area.

On Friday morning, Sept. 6, certain members of the staff of The Aeroplane rose before dawn to take a hand in those naval manœuvres which are euphemistically called Navigability Tests, by the competitors in the Schneider Trophy Contest. As described in The Aeroplane last week, each competitor before flying in the Contest has to take his machine off the water, fly round a given course of something between 5 and 10 miles, alight, taxi between two marks on the water, get off, fly round, and alight again. There are three of these flights and three alightings to be done. After that the machine is moored out for six hours, and if it has not sunk by then, it is passed as fit to fly next day.

We were warned that the machines might leave Calshot soon after 06.00 hours. We arrived. We waited. And then we waited some more. The Marine Mind affects even the water-borne section of the Royal Air Force.

Somewhere around 07.30 hours the three Italian machines and the three British machines were towed out to their floats, and in them were towed off to the middle of the Solent to a point roughly midway on a line due north from Cowes. For the purposes of the trials a course, in which all traffic was prohibited, was kept clear, so that the machines might do their taxi-ing tests and alighting tests without fear of obstruction. The limit of this prohibited area was a ship of His Majesty's Navy called the *Medea*, whose purpose in life otherwise was not very apparent.

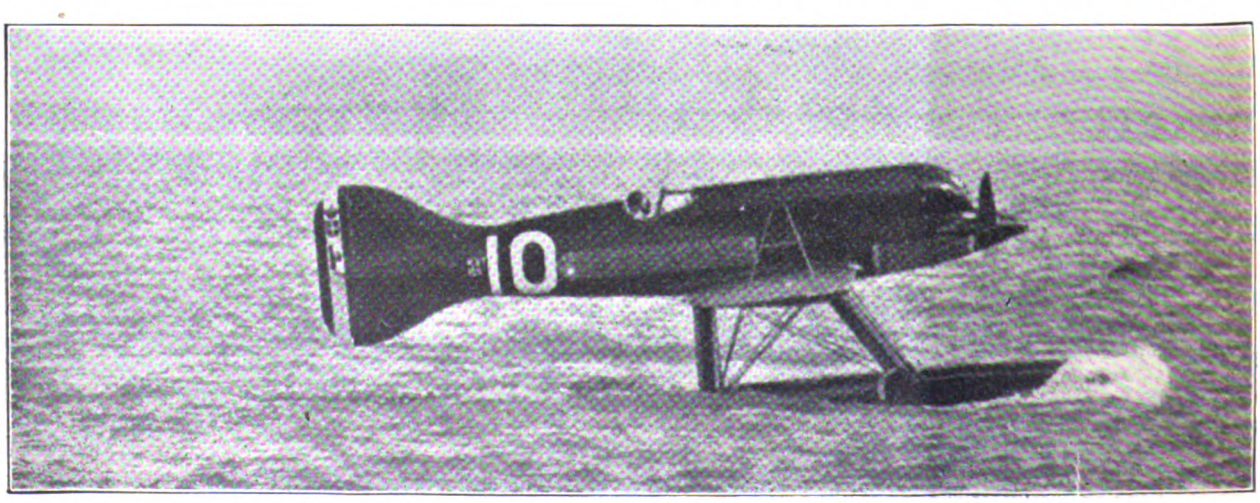
Having acquired marine habits ourselves, we hung around Calshot until the official Press-boat, full of photographers and journalists, had gone off to lay up, or ride to her moorings, or drop anchor, or sling her hook, or swing the lead, or whatever the proper marine phrase may be, somewhere ahead of the *Medea*—but how they discovered which was ahead and which was astern must have been quite difficult, for the *Medea* seems to have but little difference between the blunt end and the sharp end.

Thanks to the loving-kindness of Mr. Harold Perrin, a delightful little motor yacht, the owner of which had sportingly volunteered to do any services required of him, was told off to take us to the borders of the Prohibited Area.

When We Put Forth to Sea.

She was a delightful boat—a very good sea-boat—and her owner-driver was, and one hopes is, a amateur sea-faring gentleman of the most affable. But the boat had two engines. The port engine refused to run, and the starboard engine stopped every now and then.

The first thing we struck—that is the word—in our voyage were two large motor vessels of some kind belonging to the R.A.F. One was full of doctors and flew a Red Cross flag, and the other told us it was a salvage vessel. So we felt that if there was going to be a crash there would be some hope



A GREAT RELIEF.—Lt. Monti at rest after doing his tests.—("Aeroplane" photograph.)

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THE
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AGAIN WON
WITH A
FAIREY
METAL
AIRSCREW

REED LICENCE

In the last five races for the Schneider Trophy the winning aircraft have been fitted with this type of airscrew.

THE FAIREY AVIATION CO., LTD.
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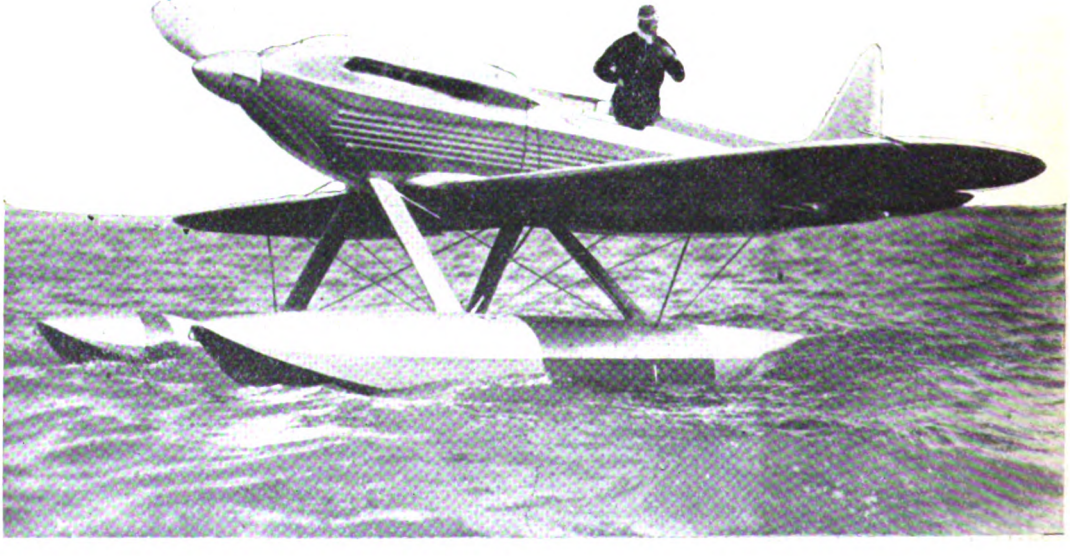

The Supermarine Rolls-Royce S.6.

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TROPHY 1929

		SPEED M.P.H.
FIRST		
SUPERMARINE	**S.6**	**328.63**
ROLLS-ROYCE ENGINE		
SUPERMARINE	**S.6**	**325.54**
ROLLS-ROYCE ENGINE		
(Disqualified for missing mark).		
SECOND		
MACCHI	52 BIS	**284.2**
THIRD		
SUPERMARINE	S 5	**282.11**
NAPIER ENGINE		

3 SUPERMARINE SEAPLANES ENTERED
3 SUPERMARINE SEAPLANES COMPLETED THE COURSE

IN ADDITION

TWO WORLD'S RECORDS WERE CAPTURED :—

50 kilometres	SUPERMARINE (Rolls-Royce)	S.6	**332.49 m.p.h.**
100 kilometres	SUPERMARINE (Rolls Royce)	S.6	**331.75 m.p.h.**

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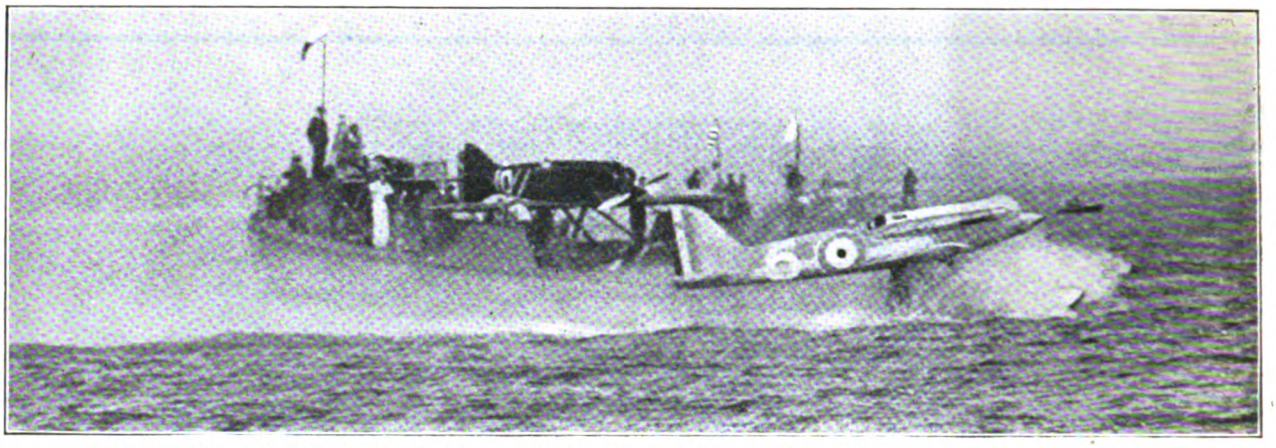


THE TESTS.—Flt. Lt. Greig starting. Lt. Monti's machine on the lighter.—("Aeroplane" photograph.)

of first-aid being taken to the pilot within a very few hours of the accident. For one could not expect the Marine Mind to act more quickly.—Doubtless you realise that the Marine Mind has no conception of Time and very little of Space—transport over oceans has that effect on those who follow the sea on their lawful occasions.

These two vessels had hitched their head-ropes to the banisters of the Calshot lightship, and the personnel seemed perfectly happy lying in the sun smoking.

When we had seen Mr. Waghorn do his tests we came to the conclusion that there was not going to much fun at our end of the area, so we went on several miles further to where the *Medea* and a number of yachts and motor-boats were anchored. As there were motor-boats with female spectators in them tied up to both ends of the *Medea*, we were not very sure what part of the vessel really represented the boundary of the prohibited area, and assumed that it was one side of her, as there were no boats there.

NOT UNDER CONTROL.

At that time neither of our engines was feeling very well, so we drifted with the tide and with the wind a little astern of a boatful of spectators which was tied up to the *Medea*, and let go our anchor. Whether our chain was not long enough, or our anchor was not heavy enough, or the mud was not sticky enough, one did not bother to inquire. But anyhow, we continued to drift.

While we were doing so Mr. Atcherley very kindly did some excellent alightings quite close to us, of which Mr. C. A. Sims managed to get some quite good pictures. As may be seen, they were quite uneventful, and from a purely aeronautical point of view this part of the proceedings was deadly dull.

While we were thinking how kind Mr. Atcherley was, a speed-boat dashed up commanded by Lt.-Col. Bristow complete with seafaring cap, yellow oilskins, American spectacles, and military moustache, and besought us by all his gods to go away, because if we did not he would get into trouble.

Loving Colonel Bristow like a brother, we tried to induce the owner-skipper to up-anchor and away. But he then discovered that though his anchor would not hold, he could not get it up, because one quite imbecile member of his crew had dropped one handle of his winch overboard, and the other was not big enough to heave the anchor. And meanwhile the anchor was dragging.

So both members of the crew got hold of the chain, and after a lot of trying, man-handled it up. During this period of our voyage the R.A.F. Police-boat, carrying the Lord High Provost-Marshal of the Royal Air Force, came tearing over to us and told us to get out—surprisingly politely under the circumstances.

We pleaded plaintively that the owner and his crew were doing their best, but that the tide was too much for them and that the mud was not enough. And then Col. Bristow reappeared and tried to chase the Police-boat away, because in chasing us the Police-boat, which is, in private life, really a motor yacht belonging to Sir Guy Granet, had also got well into the Area, and Col. Bristow thought that it also was a law-breaker.

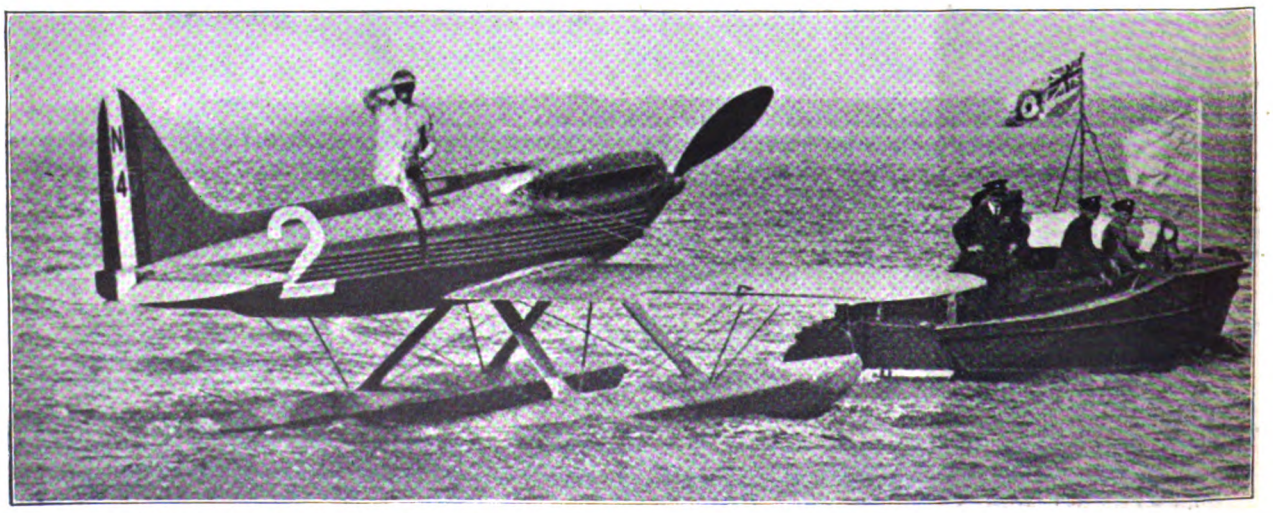
While all this argument was going on, Flt. Lt. D'Arcy Greig and one of the Italian machines proceeded to do some close-up work for our benefit.

HOMEWARD BOUND.

Finally we hove up our anchor and got under way and steamed, or rather petrolled, up among the rest of the shipping, where, thanks to the eccentricities of the engine—that is to say, the one which kept running—and the fact that the crew and the skipper were both so engrossed with the engines that they slightly miscalculated the effects of wind and tide, we very nearly rammed the R.A.F. flag-ship, and we did definitely collide with another R.A.F. vessel on which one recognised Sir Henry Segrave, and was recognised by him. Even that recognition failed to make one blush, for by this time one was past all sense of shame and was merely suffering internal agonies through trying not to laugh openly at the efforts and gyrations of our amiable skipper and his crew.

No doubt if this kind of thing had gone on much longer we should have been sunk by gun-fire from the *Medea*, or we should have been rammed by the police-boat, and arrested when rescued from the water, or perchance we might have been taken in tow by some friendly plutocrat of the Aircraft Industry, whose expensive motor-boats and yachts were lying around in profusion. But happily our right-hand engine did consent to work, and so we stole quietly back towards Calshot—with our painter between our screws, as it were.

After we had been going for about five minutes we were overhauled by a speed-boat with several R.A.F. officers in it. We quite made up our minds that we were going to be put under arrest, but when they came alongside we found they proved to be friendlies, and that all the trouble was



TOWING IN.—Mr. Waghorn being towed in after doing his tests.—("Aeroplane" photograph.)

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Again! Again!

B T-H

MACNETOS

SCHNEIDER TROPHY 1929

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Supermarine-Rolls-Royce S.6 (Rolls-Royce Engine)

Average Speed **328.63** m.p.h.

They were also fitted on the machine which made the World's Speed Record for 100 kilometres.

Speed **331.75** m.p.h.

Supermarine-Rolls-Royce S.6 (Rolls-Royce Engine.)

The British Thomson-Houston Co. Ltd.

Alma Street, Coventry.

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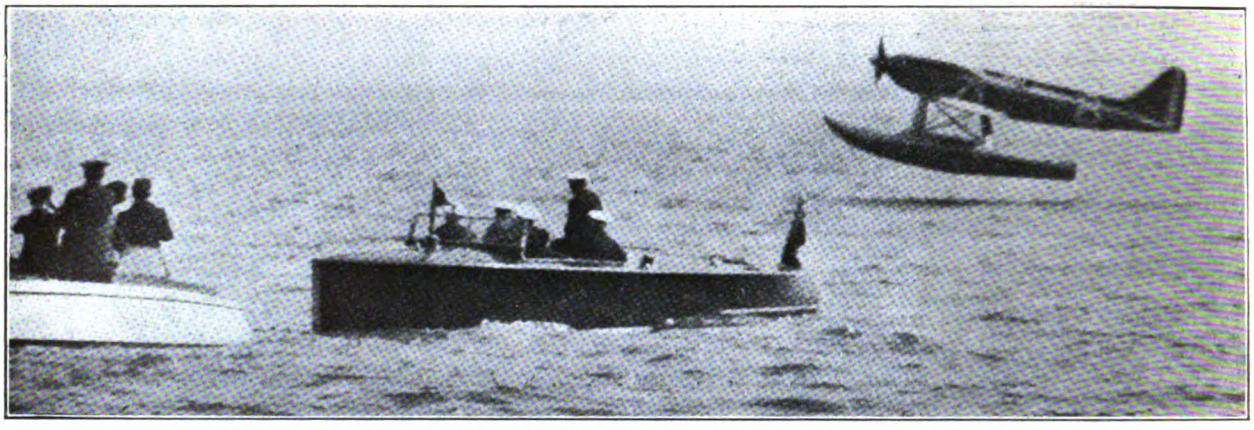

GETTING DOWN TO IT.—Mr. Atcherley doing his last test alighting.—(*"Aeroplane" photograph.*)

that one wanted a lift back to Calshot. He happened to hold an important position on the Station. He came with us trustingly, little knowing that we held him as hostage against being sunk by bombs when we came along under the pier head. And so we escaped back to dry land—leaving skipper and crew to their fate

Back to the Land.

We learned next day that the same motor yacht distinguished itself still more on Saturday. It had been gyrating out in Southampton Water, and for some reason came across the pier-head at Calshot. At that moment one of our competing aircraft was being let down the slip-way to its float. As the boat came past the end of the pier those on the pier-head shouted loudly a warning about the machine on the slip-way just ahead.

The skipper, complete with crew, looked up to the pier-head to see what all the noise was about, and the boat, under its own control, ran good and hard aground on the slip-way. Fortunately the aircraft was so far up the slip-way that it was not touched, and the motor-boat which was to tow it out to the float had not come to the slip-way. But if the machine had actually been in the water, as it would have been a minute or so later, it would have been rammed by the yacht.

Mr. Moon of the R.A.F. team contemplated removing the yacht with dynamite. The Admiral of the R.A.F. Fleet considered towing it off by putting at least three R.A.F. launches onto the job at once. Happily the tide happened to be rising and a few of the stronger members of the R.A.F. beach-party pushed the thing into the water again, and it was cast forth with contumely from the precincts of Calshot.

The British Navy.

So far as we of The Aeroplane were concerned, we were far away when this unfortunate affair of Saturday morning happened. And our escape from the prohibited area on Friday morning passed unnoticed by all the R.A.F. people, and the police-boat and Col. Bristow, because while we were having our own little private collisions, a vast ship came down the Solent from the direction of Ryde and steamed very slowly with immense solemnity slap across the whole of the prohibited area.

One of the Italian machines having circled round by Cowes, was coming down to alight, when the pilot saw several hundreds of yards of huge grey mass right across his course. He opened up his engine, turned round again over the Isle of Wight, and aimed his alighting past the hind-end of the ship—so luckily no regrettable incident occurred so far as he was concerned. But the language of the R.A.F. was distinctly regrettable.

The real joke turned out to be that the offending ship which had disobeyed all the orders of the local Admiral to keep the course clear for the Navigability Trials of the Schneider machines was the Flagship of the said Admiral himself, H.M.S. *Iron Duke*. Serious comment on the incident would be unprintable, and any attempt to be humorous would merely spoil what is in fact just about the funniest story that has ever happened to the sea-going side of the R.A.F.—But it might have been a tragedy.

THE OBSTRUCTIONIST.—H.M.S. "Iron Duke," well in the fairway, with Lt. Monti alighting past her stern.

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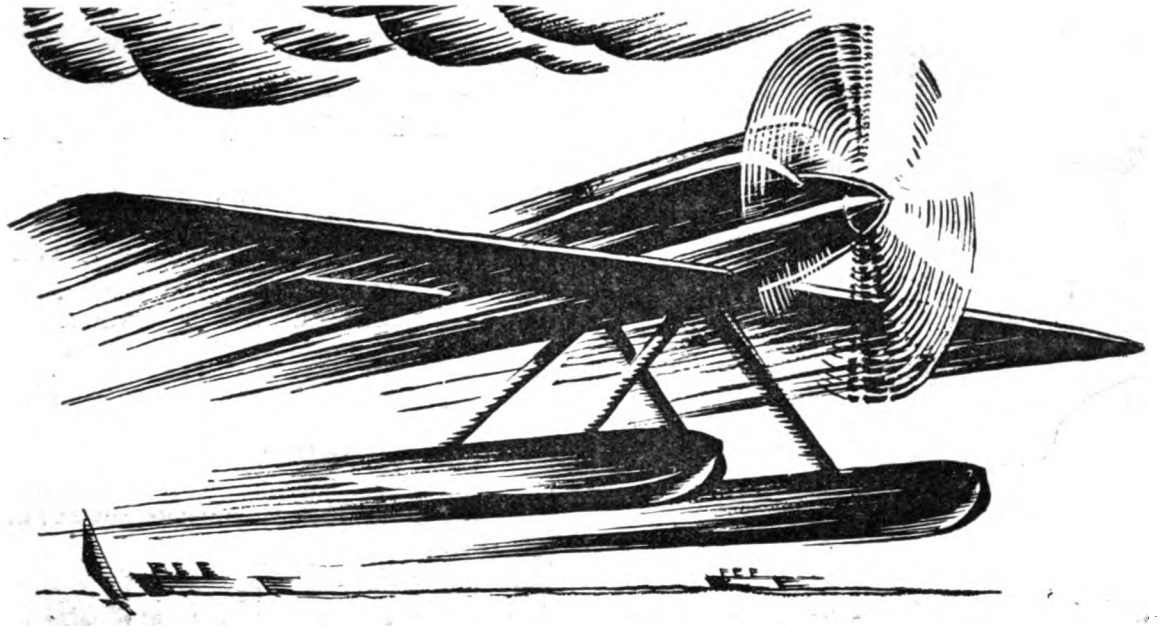
AT THE SCHNEIDER CUP RACE THE GREAT BROADCAST RELAY, THE LARGEST EVER PLANNED, WAS FED BY EXIDE BATTERIES



The progress of this thrilling race was announced by over 200 Marconiphone loudspeakers. These were operated by giant amplifiers containing 756 valves. The responsible task of feeding this great installation, by far the largest ever built, was entrusted to Exide Batteries. Their total weight was over 12 tons.

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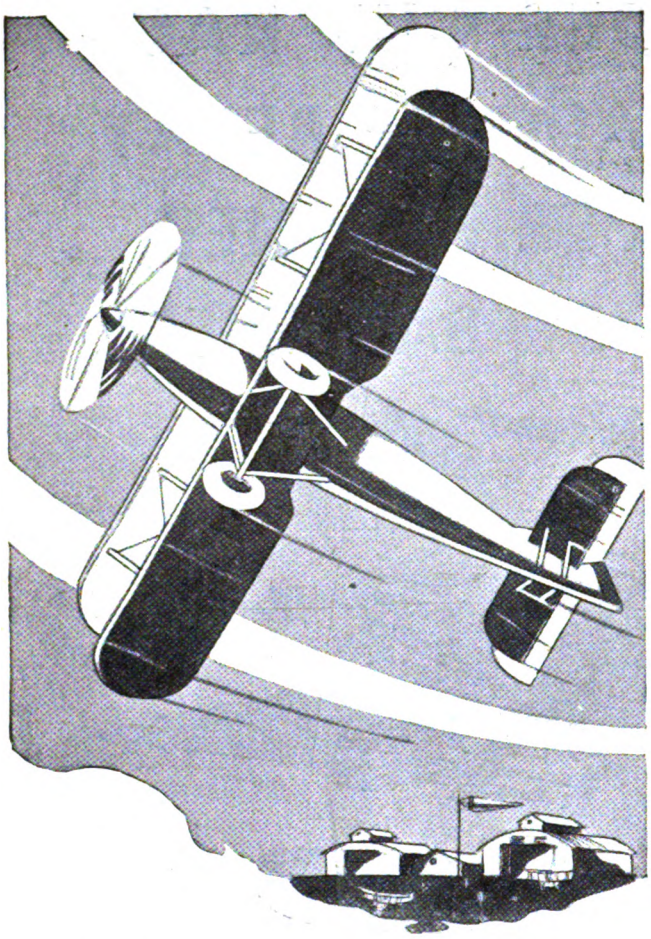

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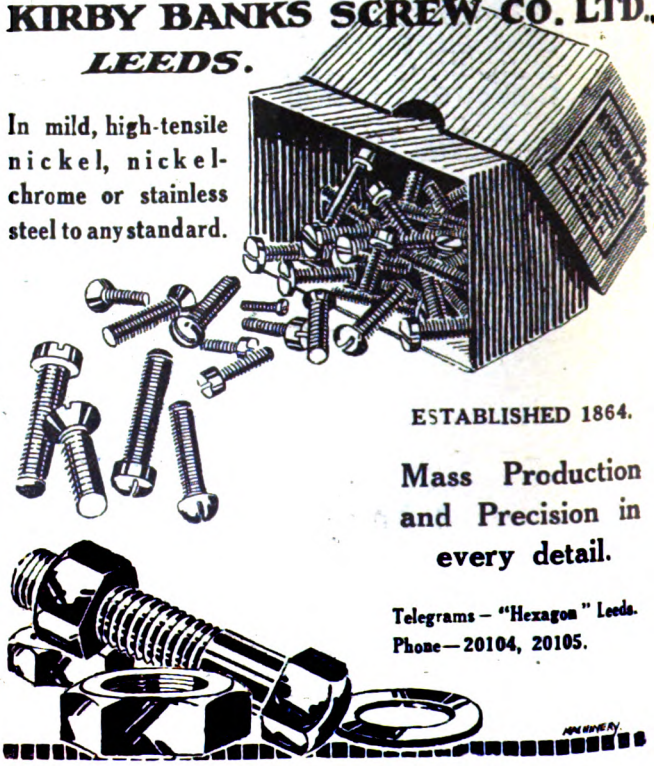

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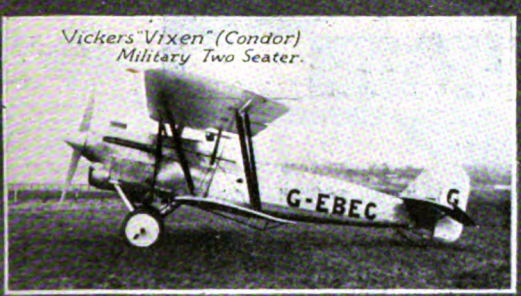

Vickers "Vixen" (Condor) Military Two Seater.

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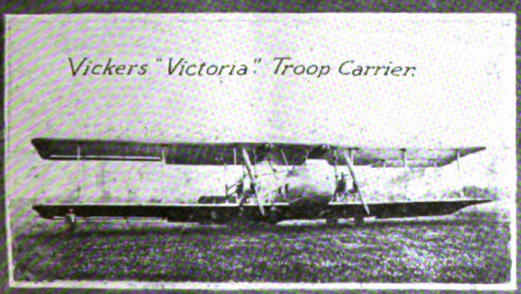
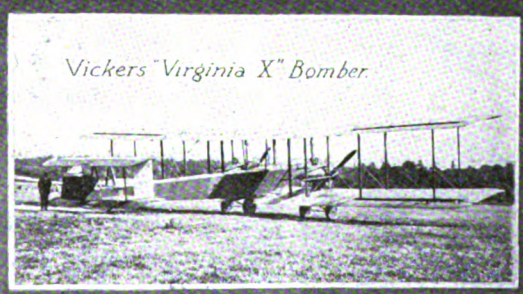

Vickers "Victoria" Troop Carrier.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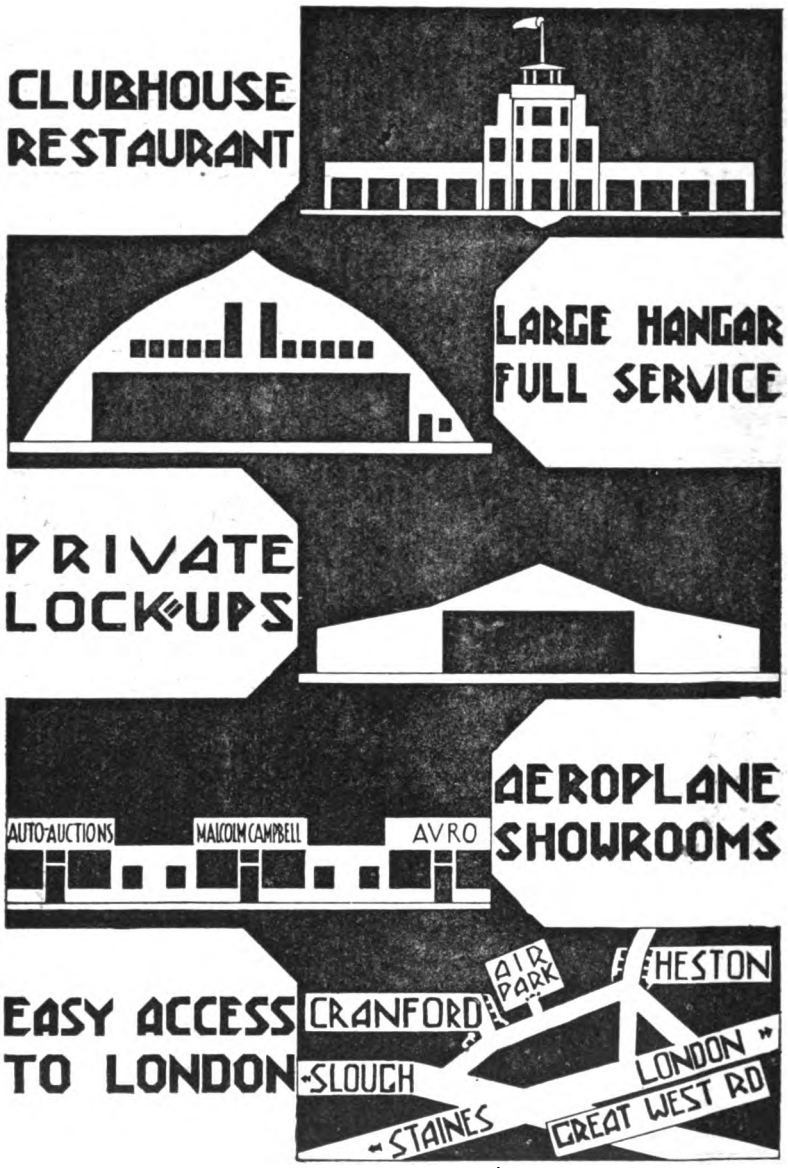

AT

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HOMEWARD BOUND.—Warrant Officer dal Molin after his tests. —(" *Aeroplane* " *photograph.*)

AT CALSHOT.

By C. M. McALERY.

The tumult and the shouting died with the departure of the Royal Aero Club officials from Calshot at 13.00 hours on Friday, Sept. 6. The three blue and silver Supermarines and the three scarlet Macchis, conscious of their duty done and tests well passed, lay at their moorings rising and falling gently on the swell of passing craft. The population adjourned to lunch, and Calshot was itself again.

The navigability trials ended in the following order and times: No. 2 Supermarine-Rolls-Royce S.6 (Flg. Off. Waghorn), 09.41 hours; No. 4 Macchi 52 bis (Warrant Officer dal Molin), 10.00 hours; No. 5 Supermarine-Napier S.5 (Flt. Lt. Greig), 10.20 hours; No. 7 Macchi 67 (Tenente Cadringher), 11.51 hours; No. 8 Supermarine-Rolls-Royce S.6 (Flg. Off. Atcherley), 11.12 hours; No. 10 Macchi 67 (Tenente Monti), 10.57 hours.

During the six hours that the machines were moored out for the Watertightness test, each member of the selected team went up for a last look at the course. Mr. Waghorn went first, and when he alighted again Flt. Lt. Greig took the same Flycatcher over the course. In the meantime, Mr. Atcherley took up a second Flycatcher, and after flying round the course, he treated the spectators at Calshot and on the ships in the vicinity to a delightful and hair-raising display of aerobatics. He looped and rolled and spun the Flycatcher in masterly style, and finished up the display by diving down and flying between two liners, the *Montcalm* and the *Olympic*, which were passing each other just off Calshot Spit at the time—which must have larned them to be liners.

The visiting aircraft moored out off Calshot during the day included the Italian Savoia flying-boat, a Junkers seaplane, and two R.A.F. flying-boats from Cattewater. The Dornier Do.*x* had intended to be present, but such poor moorings were offered to her to see the race that she sulkily refused to be present. The rumour that the Prince of Wales was flying in the Saro Cutty-Sark was not confirmed, although she was seen cruising about in and over Southampton Water on the following Sunday.

Distinguished visitors at Calshot during the day included Marshal of the Royal Air Force Sir Hugh Trenchard and Lady Trenchard, Lord Thomson, Mr. Ramsay MacDonald and Miss MacDonald, the French high-speed team, who would have been competitors if their machines had been ready, and the officers of an Italian destroyer lying off Cowes.

One of the Gloster-Napier machines was brought out of her shed and the engine was run up, but things were not satisfactory, and she was taken in again.

When the Watertightness tests were completed the competitors were towed in and put to bed for the night. The rest of the evening was spent in gossip, the consumption of long drinks, and other harmless occupations. Certain evil-minded people got an enormous amount of amusement out of the discomfiture of some of the Italian visitors, caused by the inaccurate translation of one of the notices on the camp into Italian.

Accommodation round Calshot was rather strained, and a member of the staff of THE AEROPLANE who slept in a greenhouse and was annoyed in the early morning by bumblebees, was haunted by a nightmare of being chased round Heaven by a Macchi made of tomatoes mounted on cucumber floats.

THE GREAT DAY.

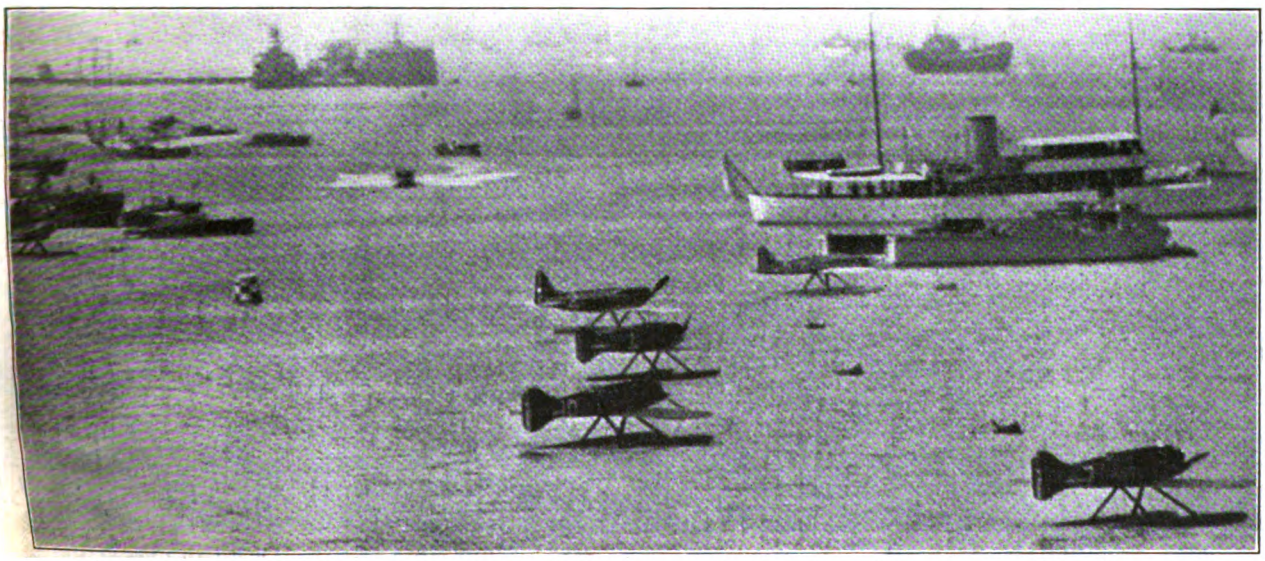
Most of the morning of the contest was taken up in getting the machines onto their pontoons and towing them to the starting base.

The Italian machines had been run up overnight, and without any delay whatever they were shoved down the runway, taken in tow, and all three neatly packed onto one pontoon. The Supermarines were run up in turn on the station before being towed out and put each on to its own pontoon. The pilots sat around, wisely taking no interest in the machines, and trying hard to dodge the attentions of the Press photographers.

The real excitement was watching the operations and manœuvres of the Southampton Harbour Board officials, who have a jetty and hut at Calshot. The duty of these officials was to attempt to prevent passing ships from washing the aircraft off the slips and floats. They had a flag flying which indicated in international code that all passing ships must reduce speed

Many of these ships, through ignorance or cussedness, turned a blind eye, with the result that the Harbour Board officials, who are the self-appointed father and mother of all Schneider aircraft, worked themselves into a perfect frenzy of international indignation. Semaphore flags wagged unceasingly saying all sorts of rude things in their own code, and when even that failed, the voice of the highest official was raised in a mighty roar of wrath. One bellow which must have been heard from Gilkicker to Cowes said: *Prince of Wales*—reduce speed!!!" A rush to witness the result of this exhibition of *lèse-majesté* saw the Cowes ferry, packed with trippers, humbly reducing speed.

While most of the Press representatives and other spectators were having lunch, the British team slipped away to the starting base in a lighter, followed shortly afterwards



THE LAST TEST.—The two teams moored out for six hours on Friday. —(" *Aeroplane* " *photograph.*)

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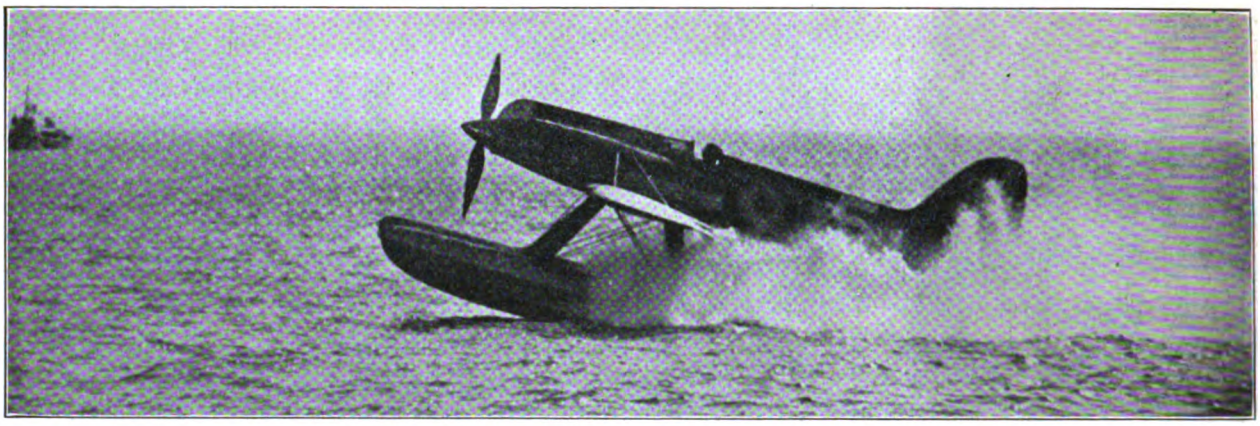


DOWN!—Flt. Lt. D'Arcy Greig alighting.—(*"Aeroplane" photograph.*)

by the Italian team. Thus those who were ready with advice and bouquets were neatly thwarted.

The starting base could be seen quite clearly from Calshot marked by the Naval mine-sweeper *Medea,* which was acting as a wireless communication ship during the contest. Although the competitors took off away from Calshot, they could be seen the whole time they were on the water, and for several seconds after they got in the air, with the naked eye from any point at Calshot. In the air we could see them coming over Gilkicker, down the course to Cowes, round the Cowes turning-point, and away to Ryde again.

Enormous amusement was afforded to the spectators by the R.A.F. patrol-boats, which were keeping the course clear. Tugs, herring-boats, and assorted craft controlled by holiday-makers, tried to get into what appeared to be a nice, clear, lonely patch of water, only to be chased off by infuriated Air Force speed-boats which raced up, described the ancestry of the occupants of the offending craft through a megaphone, and circled round them until they practically sank themselves with shame.

All the plutocrats on S.S. *Orford* and Ryde Pier missed the take-off of the machines, which was some of the most exciting part of the day's racing. Each competitor had a quarter of an hour to get over the starting line at Ryde after the firing of the gun at the starting-base. They all got away without any delay. The veteran Supermarine-Napier S.5 took off with the shortest run, and the old Macchi took very little more. All the others seemed to the anxious watchers as if they would never unstick. As a matter of fact, they each took about 32 seconds—but it seemed years.

THE CONTEST FROM CALSHOT.

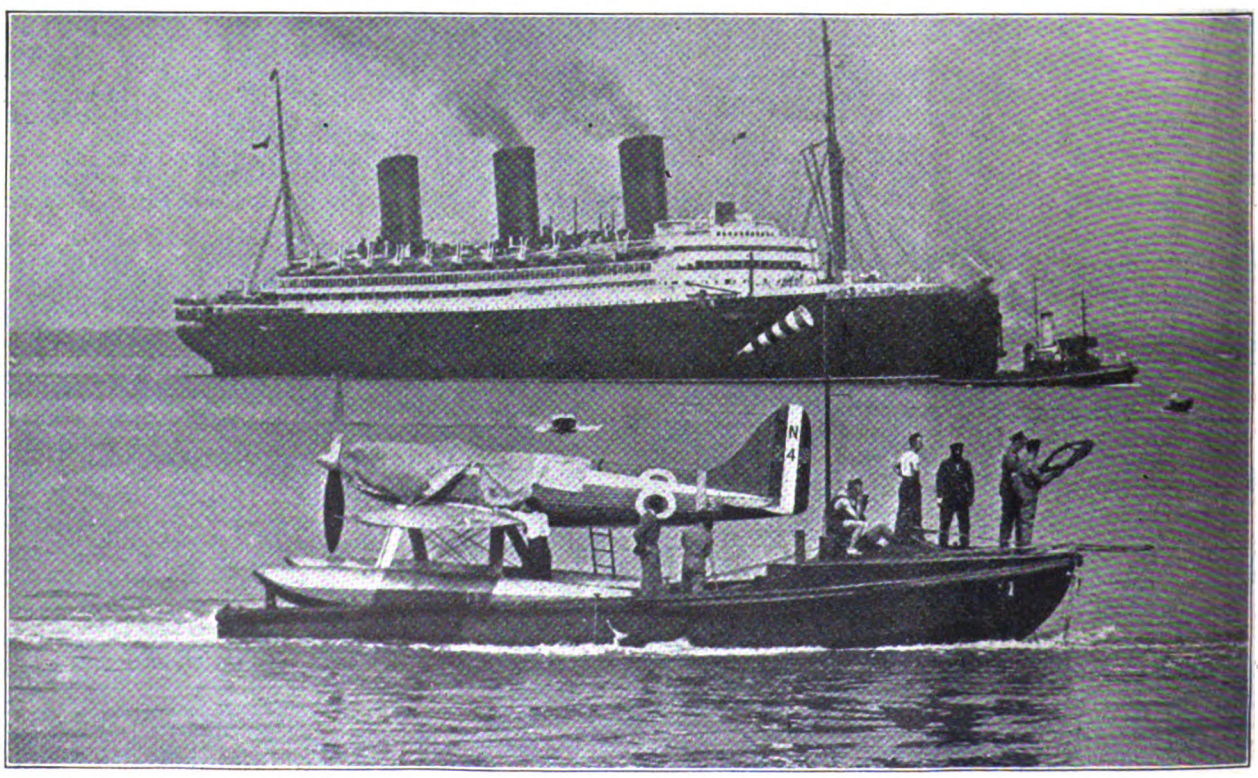
Mr. Waghorn, the first away, flew a beautiful course. His cornering at the Cowes turn was perfect, and he did not seem to lose a second. A good many people at Calshot miscounted the laps, as he did himself, and moans of anguish went up when he was seen to leave the course and alight between Cowes and Ryde. He had forgotten to break the paper over one hole of his lap-counter, and was on his eighth lap when he ran out of petrol and came down. He was still unconscious of his mistake when he was picked up by the towing-boat, and had to be told that he had finished the course.

Warrant Officer dal Molin, in the old Macchi, was next away, and there was a thrilling moment when Mr. Waghorn overtook and passed him on the Cowes-Ryde leg of the course

Flt. Lt. Greig, on the old S.5, followed, and went round the course like a well-tried piece of machinery. His lap-times were so consistent that he must have flown a perfect course with his engine practically full out the whole way. He circled over Calshot twice before alighting, and then put the machine down alongside its tender.

Tenente Cadringher overshot the Cowes turn by so wide a margin that he must have lost a lot of time on his first and only completed lap. The second time round he left the course and came down. He made a good landing, in spite of the fact that he was almost overcome by the fumes from the exhaust.

By the time that the gun went for Mr. Atcherley's start, the wind had freshened, and he met a considerable swell, with the result that the machine porpoised badly at the beginning of her run. But he got her under control again and took off beautifully. Everybody expected him to beat Mr. Waghorn's time, because Mr. Waghorn had instructions



THE GREAT DAY.—Mr. Atcherley's machine leaving Calshot, with the "Berengaria" outward bound.
(*"Aeroplane" photograph.*)

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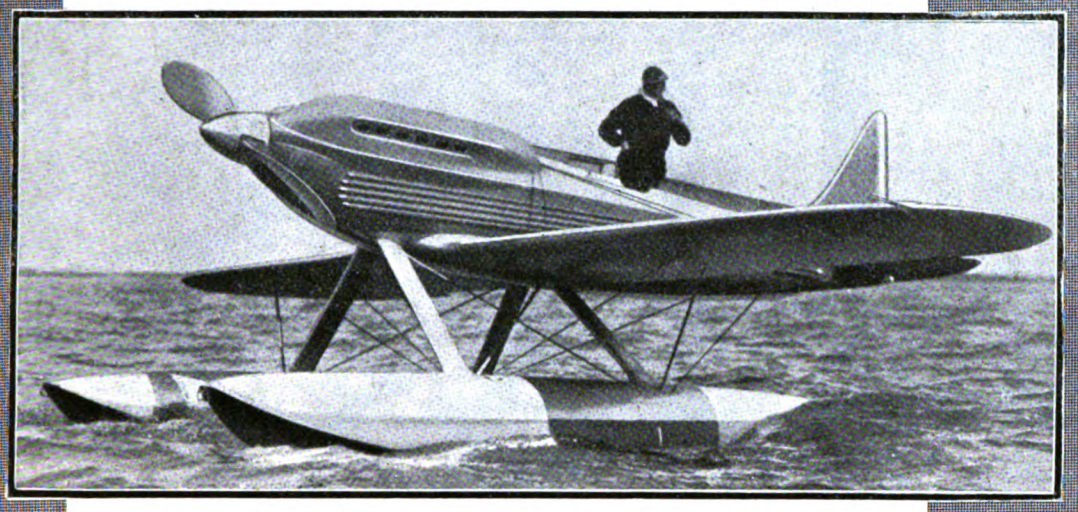

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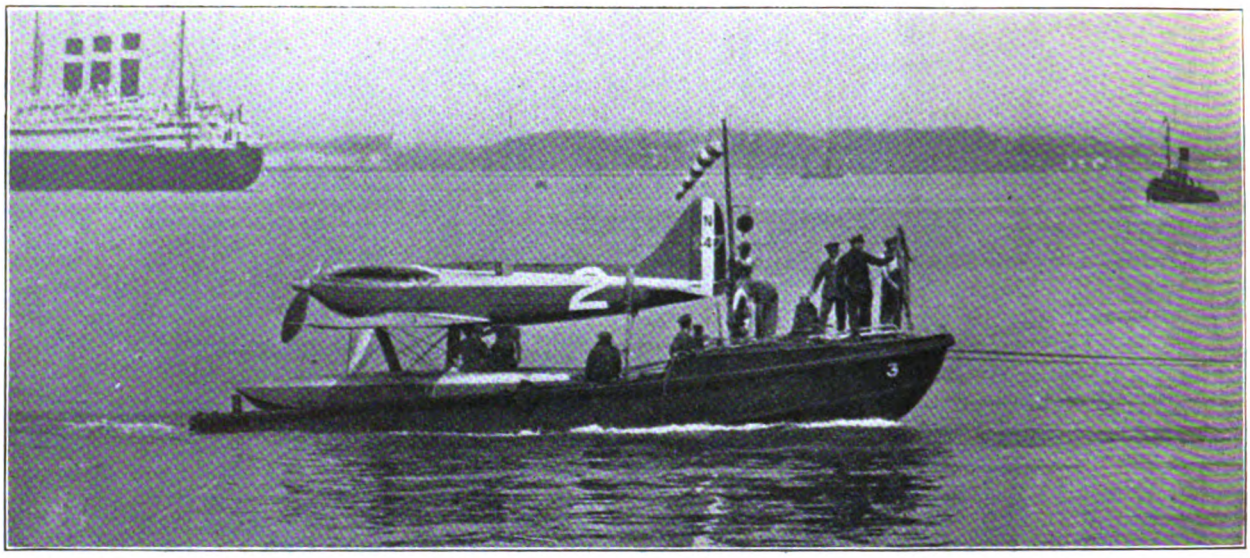


ON THE WAY.—Mr. Waghorn's machine leaving Calshot, with the "Belgenland" going up to Southampton.
("Aeroplane" photograph.)

to nurse his engine to make sure of completing the course. Having seen Mr. Waghorn safely over the course, Mr. Atcherley could let his go practically all out, and, therefore, when the broadcast announcement gave the first lap as at 302 m.p.h., everybody knew that something was wrong. What actually happened was that he had lost his goggles and mistaken one of the turning-points. He was still racing round the course when the news came through that he had been disqualified.

The last man away was Tenente Monti, in the second Macchi 67. After doing one lap of the course at 301 m.p.h., he failed to appear over Gilkicker. After a few minutes of anxiety the news came through that he was down off Hayling Island with a broken oil-pipe. Tenente Monti was rather badly scalded on his arms and legs, and directly he was landed he was rushed up to the Station Sick Quarters in the ambulance. He was so far recovered the following day that, to everybody's delight, he was cheerfully playing the drum in the volunteer dance-band in the Mess.

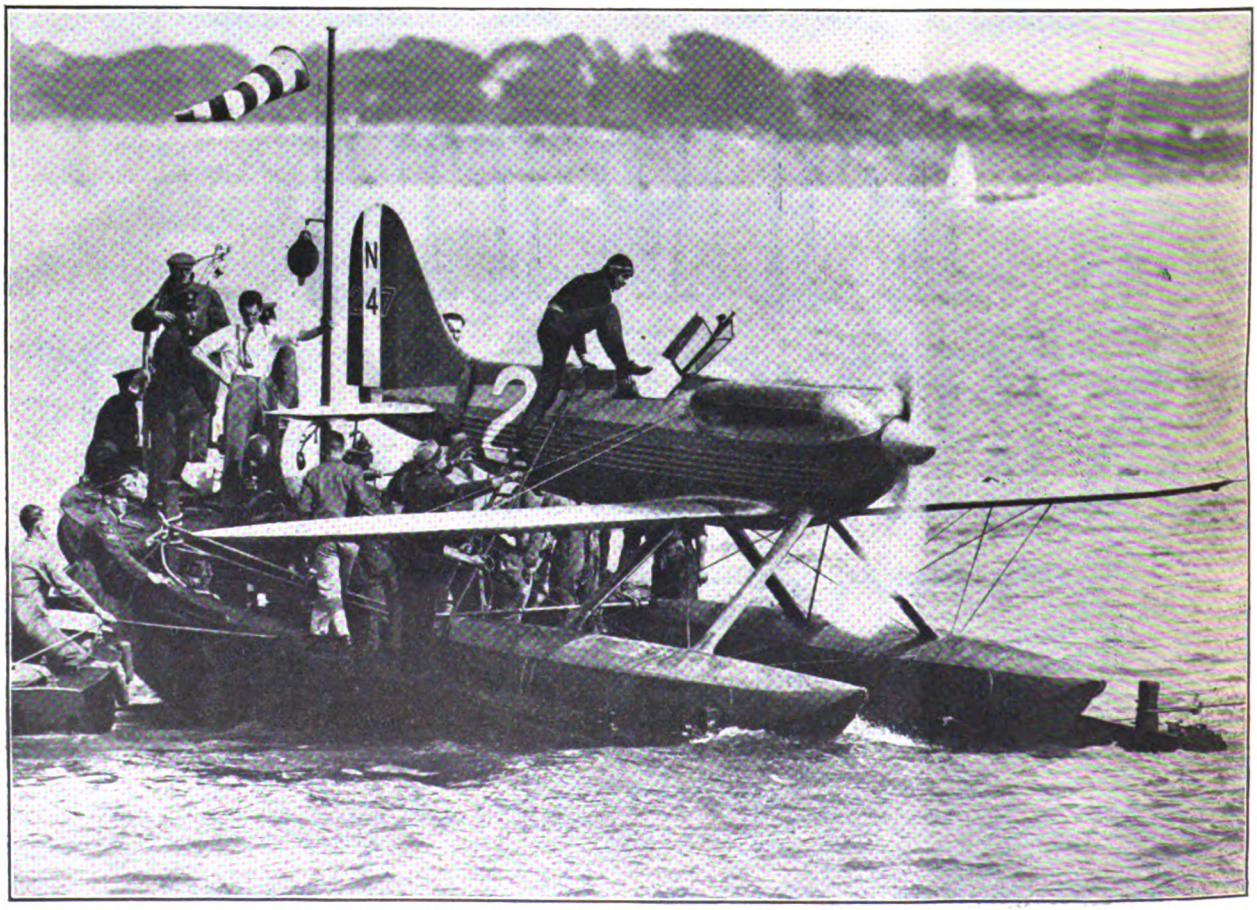
THE RETURN OF THE CONQUERORS.

The British team were only just ashore when H.R.H. the Prince of Wales arrived in a motor-boat and jumped on to the pier to congratulate them. He talked to Sq.-Ldr. Orlebar and the rest of the team for a few minutes, and then went away again.

His departure let loose the hordes of Press photographers and movietone operators who followed the team about and surrounded them every time they stopped. The scene was best described by an aircraftman who was overheard to say: "Just as if they were waiting for rats to come out of a hole."

Shortly after the teams had landed, Squadron Leader Orlebar granted an interview to the assembled representatives of the Press, an act of courtesy for which one hopes they were duly grateful.

Sq. Ldr. Orlebar said that he believed the Press wanted to know what the pilots said to him after the race was over. After the usual congratulations they had all said how grateful they were for the work that had been done for them by the three companies concerned in the manufacture of the machines, the Supermarine Company, the Rolls-Royce Company, and the Napier Company. They fully realised



THE ROAD TO VICTORY.—Mr. Waghorn going aboard.

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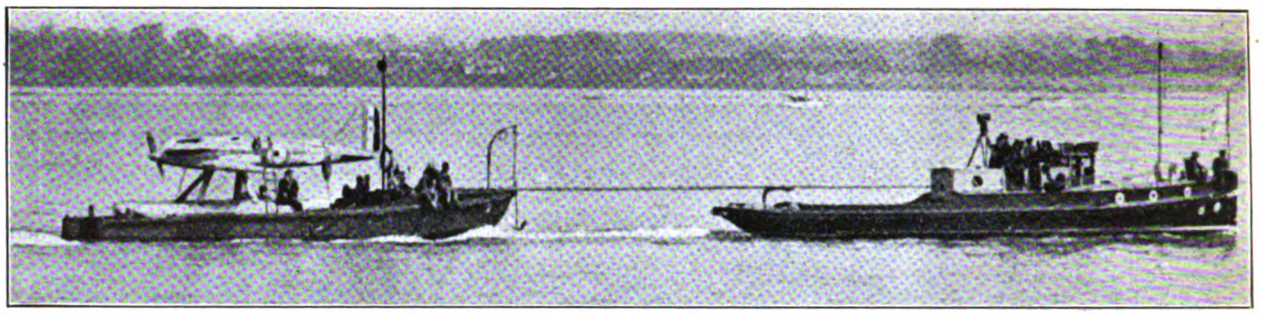


THE VETERAN.—The Supermarine-Napier S.5 on her way to the start.—(*"Aeroplane" photograph.*)

that these people had worked day and night to get the machines ready.

The pilots had included in their thanks the N.C.O.'s and men of their own Flight, who had been working with the firms' employees since they came to Calshot, and had also, for the past eight months, kept the practice machines in working order—this last no child's play.

With regard to the individual experiences of the three pilots who had flown in the race, Mr. Waghorn's machine had taken off and lapped perfectly. The engine had run extremely well. The course had been excellently marked. The pilots had, naturally, felt very hot, but the ventilators which had been fitted the previous night on the combined suggestion of Waghorn and Atcherley had proved most effective in diminishing the discomfort of flying these machines on such a hot day.

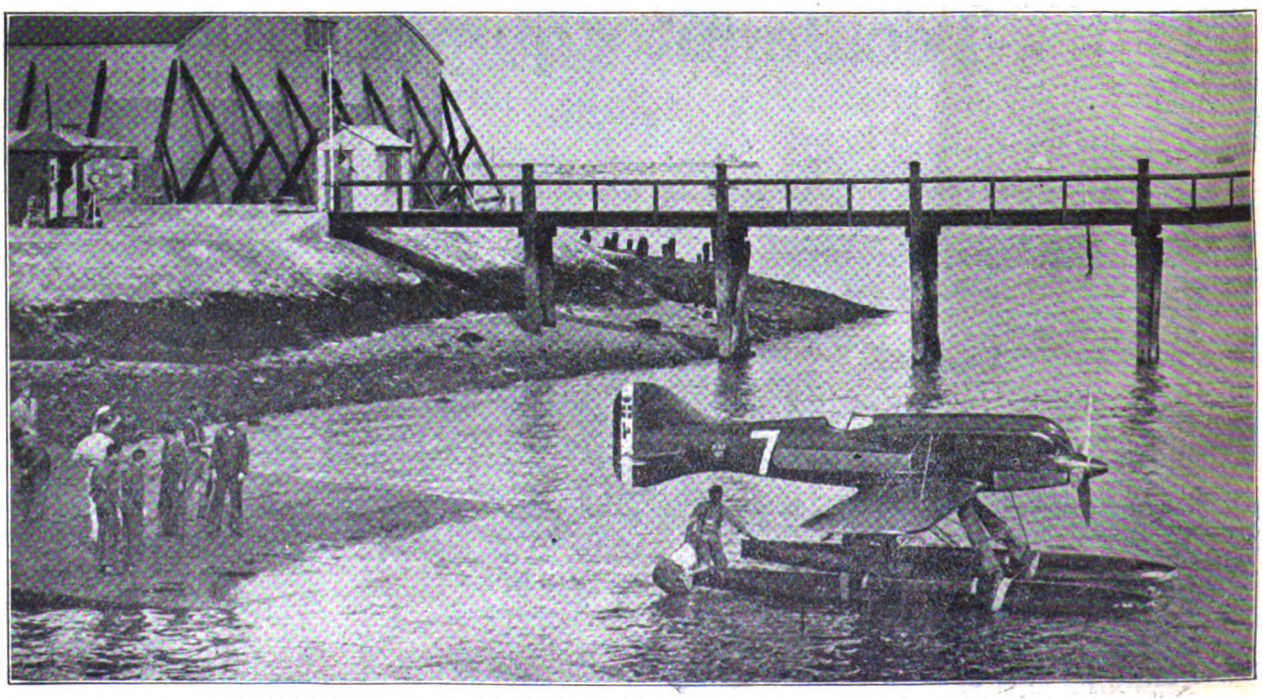
All three pilots had used a lap-indicator consisting of a board with eight holes in it with paper pasted behind each hole. The pilots had to break the paper over one hole as they crossed the starting line, and over the other holes at the start of each lap. All three pilots had broken the one marked "Finish." [Subdued hum of congratulation from the Press.]

Waghorn had not been absolutely certain that he had done his seventh lap, and did three-quarters of another lap when he ran out of petrol. He had landed perfectly satisfactorily on the leg of the course between Cowes and Ryde.

Flt. Lt. Greig's machine had behaved beautifully—in which connection it was interesting to note that this was the first time that Greig had taken it off with full load. The S.5 was now well over two years old, and yet it had lapped at just over Flt. Lt. Webster's speed at Venice, which had been 282.11. Another point of interest had been the remarkable consistency of Greig's lap times, which had only varied from 283.73 to 281.16 the whole way. The rev-counter drive had broken on this machine, and Greig had lost the cotton-wool out of his right ear, and was consequently somewhat deaf.

Mr. Atcherley had been disqualified for missing one of the turns. He (Sq. Ldr. Orlebar) had lodged a protest. Dur-

THE NAVY'S VIEW.—An alighting, photographed by a press-man from H.M.S. "Medea."



PUSHED OFF.—Lt. Cadringher's machine going out.—(*"Aeroplane" photograph.*)

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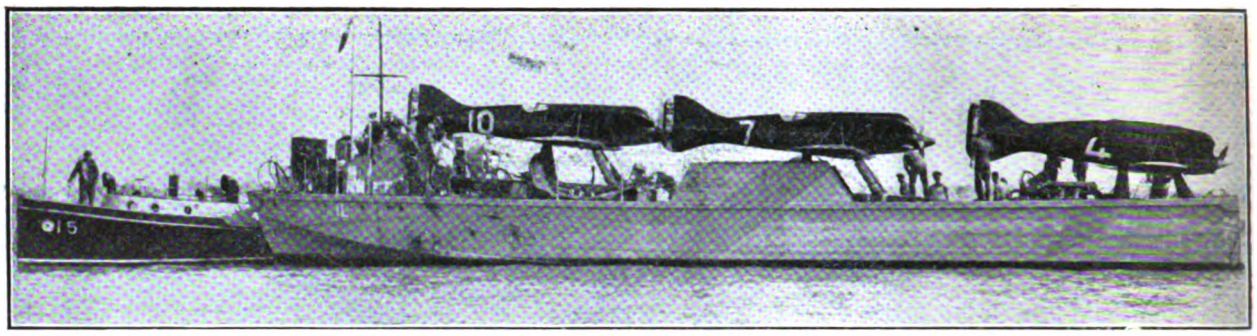

THE ITALIAN TEAM.—The two Macchi 67s and the Macchi 52 on their lighter.

ing the first lap Atcherley's goggles had got oiled up and he had pushed them up and then looked out to see where he was, and lost them. Each pilot wore a second pair round his neck, but before Atcherley could put them on he had passed the turn.

Atcherley's machine had hit a little rough water just after opening out and had porpoised slightly, but had recovered. He had landed in front of the pontoons, as previously arranged.

Sq. Ldr. Orlebar then invited the Press representatives to ask questions, and, with the mercilessness of their kind, which takes no regard to the obvious tiredness and boredom of its victoms, they did so. Replying to these, Sq. Ldr. Orlebar said that none of the pilots had experienced any "black-out" on the turns (owing to centrifugal force taking the blood from their brains).

Atcherley had been disqualified for not rounding the turn at Bembridge. If the disqualification was not upheld, he would be placed second in the contest.

He could not tell the Press exactly what the Prince of Wales had said to the pilots, but he had discussed the race and the machines and had said that it was a jolly good show. [When asked by Sq. Ldr. Orlebar in a penetrating roar what the Prince of Wales had said to him, Flt. Lt. Greig said that he hadn't the faintest idea.]

Waghorn had established a new record for the 100 kilometres on his second and third laps, when he had averaged 330.32 m.p.h. This record had then been broken by Atcherley, who had averaged 331.75 m.p.h. on his sixth and seventh laps.

Finally Sq. Ldr. Orlebar said that as Captain of the Team he would like to record his appreciation of the work of the Team, of the firms who had made the machines and the engines, and of the whole personnel of this great Flight.

AT THE SHARPEST BEND.

BY THURSTAN JAMES.

A party of enthusiasts, among whom was this humble chronicler, left London in the very small hours of Saturday morning for the first stage of the journey to Cowes. After a long period of stoicism the party found itself on board a motor-boat and cruising round the Solent.

Cowes Roads must have been one of the prettiest pictures in the world that morning—with the clear sky, the brilliant sun, and ever-changing water all conspiring to make the yachts, launches, and even barges, look their very best. Of all the contraptions made by man, ships and boats, even speed-boats, approach nearest to having a soul of their own, and that must be why a collection of craft swinging at their moorings in brilliant sun makes such a perfect picture.

Just before the Contest the S.S. *Ranchi* swung into position to the west of the turning pylon off Cowes. As the anchors rattled down, a multitude of flags were broken from the rigging as the ship was dressed. All the boats in Cowes Roads were similarly decorated, and the multi-

A ROYAL GREETING.—H.R.H. the Prince of Wales, with Sq. Ldr. Orlebar and Mr. Atcherley,—Lt.-Col. Moore-Brabazon in the background.

ALL SET!—Five of the six machines on their lighters ready to start.

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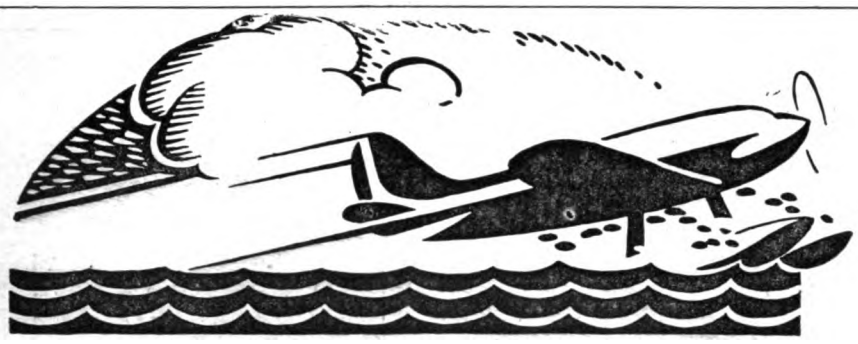

Britain again wins the Schneider Trophy ON

Won by
Flying Officer H. R. D. Waghorn
at a speed of 328.63 m.p.h.

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The 100 h.p. Gipsy Amphibian Moth.

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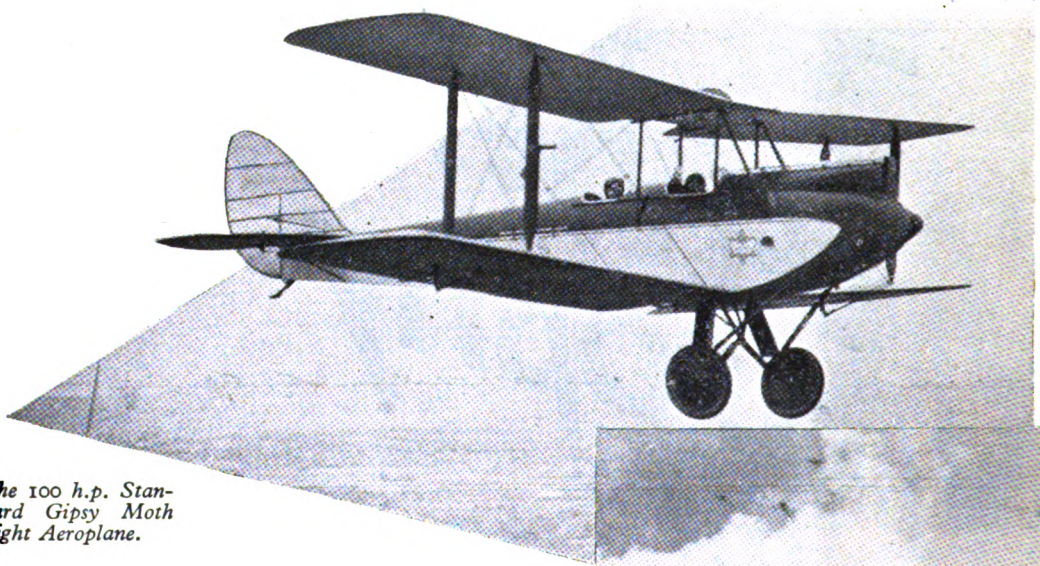
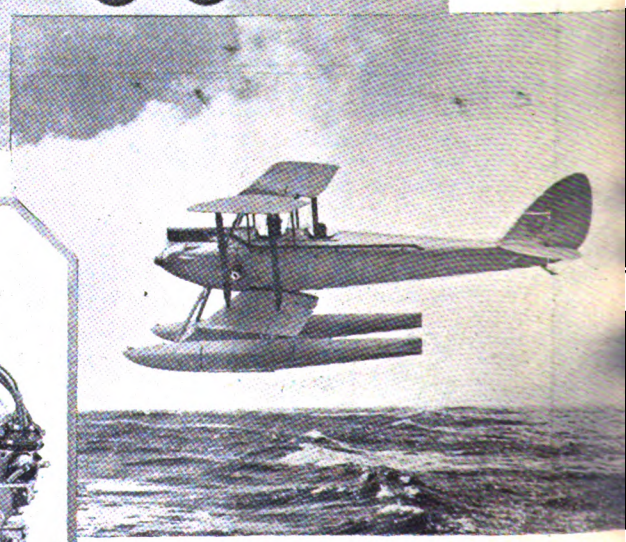
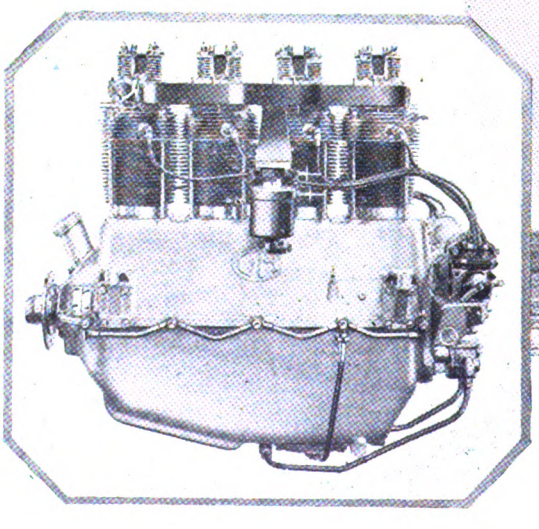


The 100 h.p. Standard Gipsy Moth Light Aeroplane.

Below: The 100 Gipsy Moth Se plane.





A side elevation of the 100 h.p. Gipsy Light Aero Engine.

THE DE HAVILLAND AIRCRAFT CO., LIMITED
Stag Lane Aerodrome, Edgware, Middlesex
Telegrams Havilland-'Phone-London
Telephone: Edgware 0171

THE DE HAVILLAND OF CANADA, LIM
Sterling Tower, 372 B
Toronto 2, Cana
Telegrams: M

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VITH THE WORLD'S ELIABLE LIGHT AERO ENGINE

Y Moth of whatever type—either Amphibian, Land , Seaplane or Coupé—is powered with a Gipsy Engine. ngine, known and used as it is in both Hemispheres, d to be a world's record breaker in every degree — in climb and in reliability. As evidence of the latter the achieved one of the most remarkable performances in tory. On December 29th, 1928 a Standard Gipsy s sealed officially and housed in a Moth, and since that s been running consistently with the total flying time

Y HOURS Untouched

n equivalent distance of nearly 50,000 miles. The seals mpossible to carry out any adjustments or to make any nts. Nothing has been touched with the exception adjustment to a magneto, and still the engine is running —a magnificent demonstration of unfailing Gipsy .

MMEDIATE DELIVERIES FULLY GUARANTEED

GIPSY

100 H.P.

HT AERO ENGINE

The 100 h.p. Gipsy Moth Coupé.

THE DE HAVILLAND AIRCRAFT PTY., LIMITED
Whiteman Street,
South Melbourne, Australia
Telegrams: Moth, Melbourne

MOTH AIRCRAFT CORPORATION,
Lowell, Mass., U.S.A.

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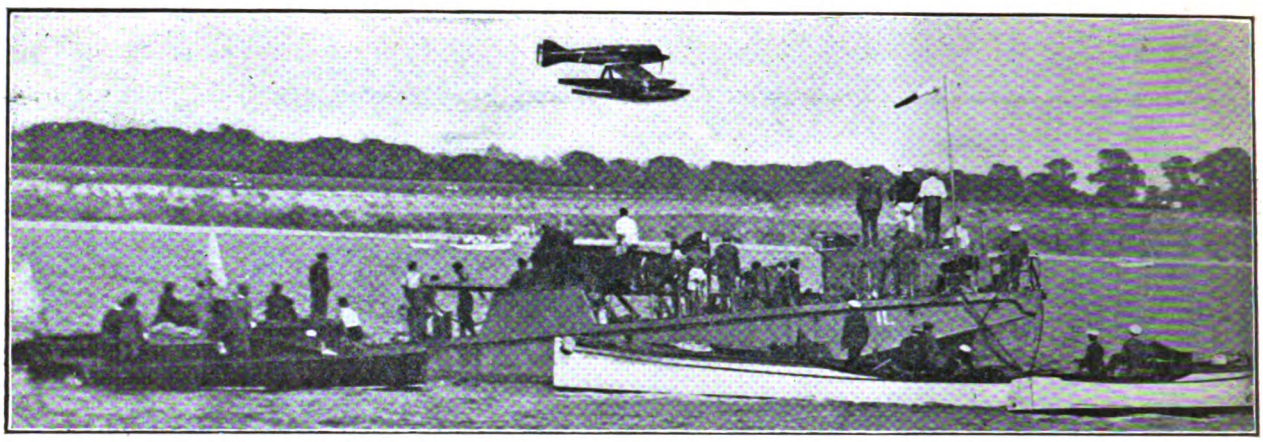


AWAY!—Lt. Cadringher starting in the Contest.

coloured scraps of bunting added even more colour to an already vivid picture.

Up the Medina by the sheds of Saunders-Roe, Ltd., were the only sea-going visiting aircraft visible, a Dornier-Wal and a Junkers F.13 on floats.

The chronicler's party cruised round and about, had a look at the *Argus*, and decided they had never seen a ship with so many stove-pipes and chimneys before. They wondered whether everybody had a private stove or geyser-bath.

The *Iron Duke* seemed well and cheerful, the crew were noticed to be smiling, so it was presumed that effect of the rebuke administered by *The Daily Express* and by others in authority over us had worn off.

By this time the official hour for complete immobility was drawing nigh, so a course was set for the Gurnard Anchorage. This anchorage, it must be explained, is off West Cowes, and offered the closest anchorage to the sharpest bend in the Contest, namely, the turn around the markship off West Cowes. After avoiding large numbers of speed-boats and other dangerous craft, the mooring place was reached and the anchor dropped.

In the middle of lunch, a patrol-boat arrived, and the sub-sub-sub-midshipmite (this must have been his rank, because of his subsequent misbehaviour) insisted on our boat being moved. This was a great pity, because it induced a positive passion in our craft for shifting from one spot to another, and also because the midshipmite carefully refrained from moving a larger craft with some of his girl-friends aboard. Luckily the chronicler has a personal providence who was no doubt responsible for the midshipmite's subsequent eclipse.

When the tumult and the shouting had died and the Captains and the Midshipmite had departed, it was nearly two o'clock, and one believed that the starting gun was heard. But it may have been our crew saying what it felt about patrol-boats.

A dark object was seen moving along the yellow shore by Lee-on-Solent, and before an acrimonious discussion as to whether or no it was Flg. Off. Waghorn had resolved into blows, the speck lifted and, climbing at incredible speed, shot away for Ryde.

Then there was a hush as everyone gazed over towards the *Argus* and waited for the first black smudge that should be the machine. There it was, past the *Argus*, past the *Iron Duke*, across the open water, and here one bent down for the camera. Getting up, one looked for the machine, and was startled not to see it, though the roar got louder and louder. Of course, sound travels slowly by comparison now-a-days, and one has to look miles ahead of the noise.

Mr. Waghorn on No. 2, the first Supermarine Rolls-Royce S.6, started his turn before he got to the mark-ship, did a climbing turn, and dived down upon the Gurnard anchorage, straightened out, and streaked away down to Ryde. He left behind a roar that faded away, leaving an impression of incredible engine-power.

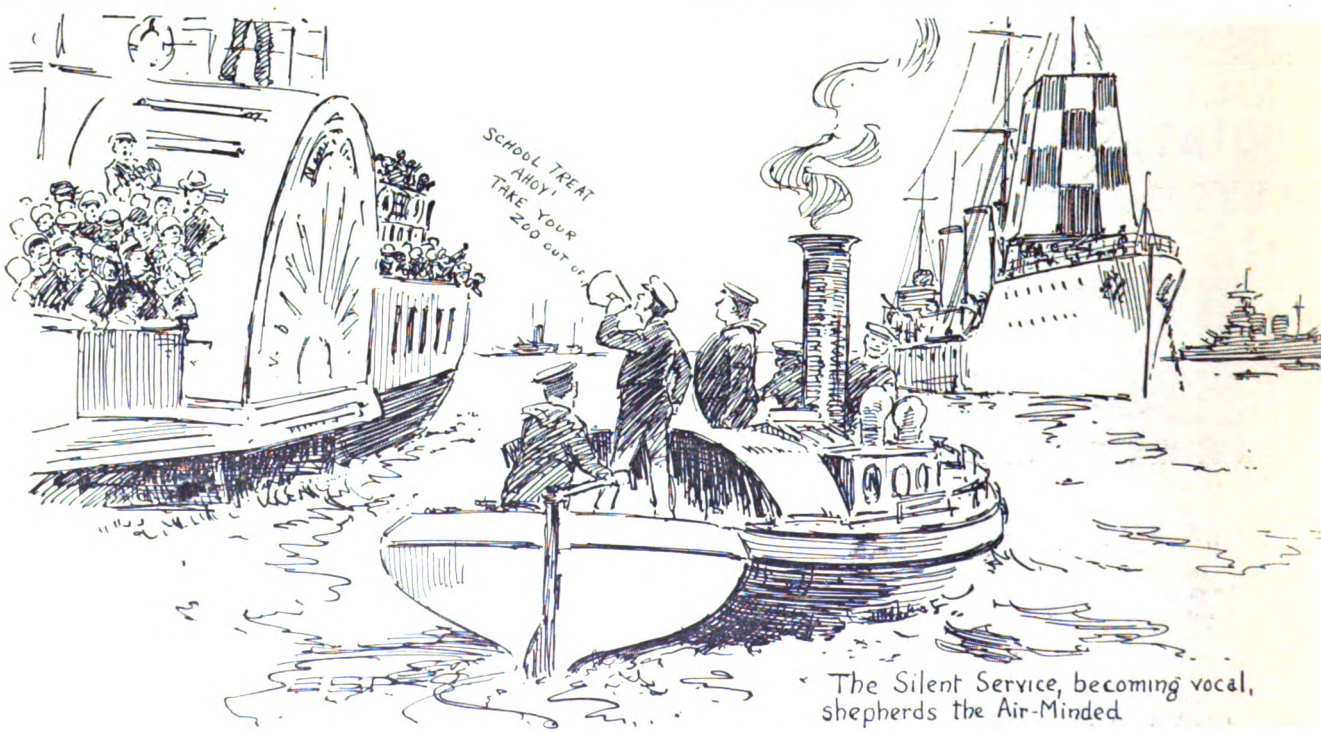
Mr. Waghorn's next turn was wider and right over-head. Seen from beneath, the S.6 looks short, much shorter than it does in side elevation. This must be due to the long floats dwarfing the fuselage and wing-span.

The third turn was tighter and nearer the water.

Owing to, shall we say, a hitch in the organisation, there was no wireless aboard our craft, and we did not know that Mr. Waghorn was shattering records with every lap. But twenty minutes had now elapsed, and a red streak could be seen along the Lee Shore (no pun here). This was Warrant Officer dal Molin on the Macchi 52 bis.

Mr. Waghorn again came round, and so accustomed had we become to the fantastic speed that we looked forward to the arrival of the Macchi, though we know it to be miles an hour slower.

Mr. Waghorn's fifth turn and Sgr. dal Molin's first made



The Silent Service, becoming vocal, shepherds the Air-Minded

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the best moment of the day at the Cowes' bend. The Italian flew fast and low along the water, behind and above came the S.6. They rounded the bend together, one above and one below. They straightened out and were past, the silver and blue S.6 pulling inside to clear the scarlet Macchi, and there they were, past Old Castle Point and out of sight.

Mr. Waghorn was soon back again on his sixth turn, followed some while after by the Macchi on its second turn. This old Macchi was certainly the quietest machine in the race.

Mr. Waghorn dived past on his last lap, and we wondered at the amazing regularity with which he appeared, cornered and flashed past.

The Macchi 52 bis did its third turn, and then its fourth flying low and making consistently tight turns.

At this moment our crew discovered the motor-boat to be dragging its anchor fast, and attempts to start the engine caused such a diversion that the take-off of Flt. Lt. D'Arcy Greig passed unnoticed. He soon appeared in the S.5, and we all noticed the different engine-sound and much lower speed. His turn was near the water and of small radius.

Then Mr. Waghorn appeared with the engine off and the machine coming down. The S.6 appeared to have adopted the habits of the autogiro or slotted Moth, for it was obviously the slowest of all slow aeroplanes. This must have been relativity, because the S.6 stalls somewhere about 80 m.p.h., though that is a very low figure for such a fast machine.

The fifth appearance of Sgr. dal Molin was the signal for a spot more trouble with our anchor, but we managed to notice his passing. Apropos of anchors, one should point out that the tide swept over the Gurnard anchorage as a river about to fall over a cliff like Niagara.

The S.5 completed its second turn, followed by Sgr. dal Molin on his sixth, then the S.5 on its third, and finally the Macchi 52 bis on its seventh and last.

Coming down the water, and silhouetted against the yellow shore, we now saw Lt. Cadringher on the new Macchi 67. He took off and, flying high, crossed Flt. Lt. D'Arcy Greig on the S.5.

Flt. Lt. Greig then arrived, and completed the turn with his usual and unvaried close turn. The engine popped three or four times, and then continued its steady roar. We noticed that, with the exception of the final and seventh turn, the engine in the S.5 gave several pops or misses every time the machine rounded the bend. This machine was the only one in which we noticed this phenomenon.

Lt. Cadringher then arrived on his Macchi 67. This machine could be traced travelling low and fast all the way from Southsea, but it was evident that there was going to be trouble, and there was. The Macchi did not appear to bank until it had passed the mark-boat, and then it seemed to skid with one wing down. Slowly the craft came round and passed between us and the shore. We all thought a crash amongst the masts of the shipping was imminent. Besides the roar of the engine, there was an angry menacing scream not noticed on any of the other craft.

The Macchi tore across the estuary, lifted just in time to clear the hill above Old Castle Point, and dived down out of view. Somewhat relieved, we turned our attention seawards.

Much shouting then arose, and the patrol-boat in charge of the midshipmite was seen to be very much in distress and quite out of control. This patrol boat, whose number shall be kept a close secret, drifted down with appalling velocity onto a perfectly good racing yacht of large dimensions and hit it with a loud crash, tore it from its moorings, and the two craft drifted away.

The yacht's crew worked quickly, got clear, and hoisted sufficient sail for steerage way.

Meanwhile the hapless patrol craft had drifted clear and was engaged in breaking up somebody else's property.

Some while afterwards this patrol-boat, complete with a gaping hole in its bows, was towed ignominiously away from the scene of its misdemeanours.

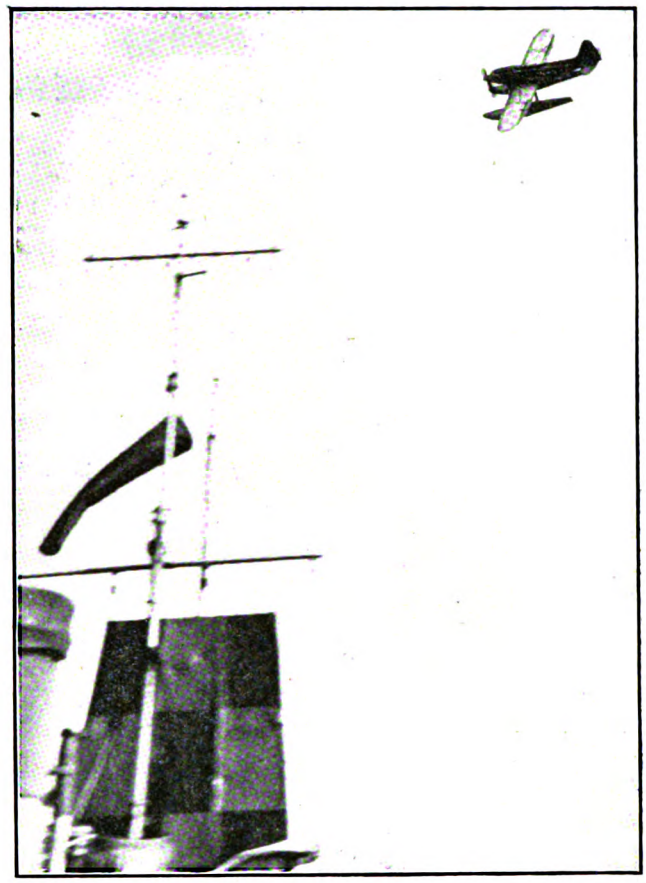
By this time Lt. Cadringher had come round again in another wide turn, and was seen to be making a forced landing down towards Ryde.

The S.5 completed her sixth turn and then her seventh, thus disappearing from this history.

We saw Flg. Off. Atcherley take-off in the second S.6, and soon he appeared for his first turn, which he made rather widely. Shortly he was back to do his second, and then we saw Lt. Monti diving down on the starting line.

Our final excitement was the arrival of Lt. Monti and Mr. Atcherley at the point together, or very nearly so. The Supermarine came round fairly high and wide, while the scarlet-gleaming Macchi came round extremely low and in a very tight bend. As they raced past with the Italian in front we thought the Macchi appeared the faster.

Now the time had come for a change of anchorage, so the motor-boat slipped away to where a loud-speaker was audible. And from its stentorian throat we heard of Mr. Waghorn's amazing times and the forced descent of Lt. Monti.



ROUND WE GO!—Mr. Atcherley at the West Cowes turn.

We sat in the sun and watched Mr. Atcherley completing the course, and heard of his ever-increasing speeds. We heard with dismay of his subsequent disqualification, and then settled down to tea.

Later on the Junkers F.13 taxied nonchantly seawards, took off beyond the Roads, circled Cowes, and flew off. This machine appeared to be very manageable, and taxied through the shipping with no trouble whatever.

"ORFORD" IMPRESSIONS.

BY LEONARD BRIDGMAN.

At 07.30 hrs. on Friday, Sept. 6, one proceeded to Waterloo to take passage in the first special train to connect with the special Schneider "Cruise" organised by the Royal Aero Club and the Orient Steam Navigation Co. Ltd.

With the opulence of the Aircraft Industry and the growing number of wealthy people now taking an interest in aviation one expected a full train. Apparently the Southern Railway was of the same opinion,—but we were wrong. A nice long train composed of first-class corridor stock with two coaches fitted up with breakfast tables left Waterloo at 08.58 hours practically empty. Breakfast in an absolutely empty coach, which was thus running light on its springs, was of the sporting type, and the task of making connection between coffee cup and lips was only equalled by the difficulty of preventing the bacon and egg from leaping into one's lap.

After an otherwise uneventful journey one transferred to the tender at Southampton Docks to be conveyed to the S.S. *Orford* lying off Ryde. An Autogiro, whirling along at several thousand feet, passed over the tender just before it reached Calshot. At the latter place there were moored-out a Savoia S.55 twin-hulled flying-boat, two Southampton flying-boats, the two Supermarine Rolls-Royce S.6s, the Supermarine-Napier S.5 and two Macchi monoplanes. The last five, which were on their mooring-out tests, were carefully guarded by patrol boats. A hand-signalled warning from one of these boats resulted in the tender being slowed down while passing these craft.

On the slipway could be seen the tandem-engined Savoia racing monoplane and approaching the station, in the neighbourhood of Calshot Spit light, was the third Macchi monoplane being towed from the scene of the Navigability Tests to undergo its six hours' mooring test.

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But enough of uninteresting detail and let us hasten to the *Orford*. She is a ship of 20,000 tons, has innumerable floors, or decks, interconnected with an elevator, two yellow funnels, which, owing to the fact that there are no low bridges between here and Australia, do not fold down, and a ventilating system in the dining saloon which could be guaranteed to transform a hot dish into a cold one in less time than it took to procure the services of a steward to re-direct the blast of cold air in another direction.

Once on board newcomers and those already there got jammed in the corridors trying to hurry to their cabins, unpack and be the first to appear on deck in whatever their idea of shipboard dress-wear happens to be.

One-way traffic and white lines would have been of considerable help, as would have been signposts and a few A.A. guides. The penetration of the rabbit warren-like interior of a ship is always confusing to land-lubbers, and the sporting of yachting caps provides very little help.

The remainder of Friday was given over to "shaking down" as they say on ships, although this phrase is intended to imply anything the reader may like.

The anchorages inside the course seemed particularly empty on the day previous to the contest. In the warship anchorage were three Italian ships, the cruisers *Pisa* and *Francisco Ferruccio*, and the square-rigged training ship *Cristofero Colombo*, the Chilean submarine *O'Brien* and a few British ships, including H.M.S. *Furious*, a light cruiser and a destroyer.

Among the liners in the vicinity of the *Orford* were the *Orontes*, a sister-ship of the *Orford*, the *Arandora Star*, of the Blue Star Line, and the *Araquaya*, of the Royal Mail Steam Packet Company. All these ships were on special two- or three-day cruises for the Schneider Trophy Contest.

Very little flying was done after the actual completion of the navigability tests. During Friday afternoon two Fly-catchers flew round the course, and later in the day the tandem-engined twin-hulled Savoia S-55 flying-boat also went round.

At about 20.00 hours a further tender-load of passengers arrived alongside and this completed the passenger complement of the ship with the exception of the load of day trippers or "emigrants" due to arrive on Saturday morning.

Saturday morning broke dull and cloudy with a fresh breeze, but even before breakfast the sky had cleared. All ships at their anchorages were dressed in accordance with the official request, but the Solent in the region of the *Orford* still seemed comparaitvely empty. H.M.S. *Argus* which had been lying off Portsmouth had now moved to her mooring near the western turning point, and H.M.S. *Centurion*, the wirelessly-controlled gunnery-training ship, had changed her wave-length and disappeared off the scene.

In the distance could be seen H.M.S. *Iron Duke* and H.M.S. *Ark Royal*, the former off Cowes and the latter nearer the Hampshire coast. An interesting but quite irrelevant point noticed with regard to the aircraft carriers *Argus* and *Furious*, both of which discharge their smoke aft below the flying deck, is that the after portions of the ships are painted black. This, one presumes, is a specimen of Naval economy to obviate the necessity of trying to keep the grey paint grey in an uneven battle with the ravages of soot and smoke.

As the morning wore on a considerable number of small boats took up their positions on the land side of the course off Ryde and through glasses large numbers of people and motor-cars could be seen massing along the Hampshire shore-line but the special stands appeared to be very sparsely populated.

A certain amount of fear and trepidation was felt as to the effect of bringing on a large number of day visitors to the points of vantage on the various decks of the *Orford*, but by the time the tender had disgorged its load of "emigrants" this fear was completely dispelled.

Incidentally, before the tender was alongside the order went forth that all cabins should be locked—an intimation of the opinion held by the Orient Line of the integrity of the Aero Club's visitors.

An early lunch enabled everyone to be on deck in plenty

THE LAND OF THE FREE.—Southsea Beach during the Contest.

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of time to choose a suitable place from which to view the contest, but generally it was considered that a fixed location was undesirable. It was possible to see both the long legs of the course from the ship, and therefore most people chose to wander from side to side of the wide decks as the race progressed, with an occasional halt midway at one of the several loud-speakers to hear the broadcast from Ryde Pier giving the lap times and speeds.

Almost exactly at 14.00 hrs. the first starting gun was heard from Calshot and immediately afterwards a wisp of smoke was seen far away off Cowes. It gradually lengthened, and a tiny dot was seen at its head which grew with amazing rapidity into the Supermarine S.6 flown by Flg. Off. Waghorn. It shot across Ryde Pier and was gone away into the distance in less time than it takes to write this down. The race had started.

Excitement was intense. What would be the speed of he S.6 on its first lap? Would all the rumoured speeds be borne out in actual practice, and what would the new Macchi 67 monoplanes with their 1,700-1,800 h.p. Isotta-Fraschini engines do when their time came to start?

The S.6 could be heard coming along the Hampshire Coast and one endeavoured to pick it up. It was only after looking considerably ahead of where the sound appeared to come from that it could be seen speeding along low down under Gosport and past Lee-on-Solent.

By the time one had followed it as far as one could towards the Cowes turning point and crossed the deck to the Isle of Wight side it could be heard coming down the straight for Ryde on the completion of its first lap.

Very soon after his passing the speed was announced as 324 m.p.h.—43 m.p.h. faster than the winning speed of 1927 and 6 m.p.h. faster than the World's straightaway Speed Record.

The interest in the contest varied over a very large range. Some, in fact the majority, were engrossed in the race and kept their programmes fully up-to-date with the lap times and speeds as they were broadcast. But there were a few who slept through it and long before it was over there were others who could not resist the attractions of the Smoking Room and Lounge and the liquid refreshment dispensed therein.

The majority of people assembled on the top deck in the full glare of the sun. Here the view was obstructed by the boat-davits, and boat-falls, and, aft, by the netting of the tennis courts.

Below, on "B" deck there was more room, although by no stretch of imagination could the boat deck be said to be crowded. Here also there was shelter from the glaring sun which was right in the eyes of the spectators, there were no davits and there were two loud speakers which gave considerably clearer results than those above. On "C" deck there were not more than half-a-dozen people at the most crowded time.

The second machine away, a Macchi 52, flown by Signor dal Molin, looked perceptibly slower than the Supermarine S.6, but it also was the quietest machine in the contest, which perhaps heightened the illusion. This pilot, the only Italian to finish, flew low and put up a splendid demonstration of consistent piloting.

The third machine, the Supermarine S.5, flown by Flt. Lt. D'Arcy Greig, also flew a steady and an extraordinarily consistent course.

The fourth machine, the first of the new Macchi 67 monoplanes flown by Lieut. Cadringher, which only lasted one lap, was disappointing in its performance. It looked very fast and emitted a most ear-splitting roaring whine, but its lap speed of 284 m.p.h. was obviously not a true demonstration of its capabilities, a fact which was borne out when Lieut. Monti did one lap on a sister machine at 301 m.p.h. Lieut. Cadringher was troubled with fumes from the exhausts of the middle cylinder-block. These being on the left side not only fogged the left side of the windscreen in straight flight but also entered the cockpit when the machine turned.

As the Italian pilots were seated lower in the machines and had lower windscreens than the British, Lieut. Cadringher must have been very nearly blind when approaching the turning points, unless he flew wide. And on top of this he was being overcome by fumes and was flying the machine only for the second time, the first having been the navigability trials on the previous day. An exceedingly stout effort and one that deserved a better showing.

Flg. Off. Atcherley was the next away on the second Supermarine S.6, and his machine looked as fast as the first. Some people sensing that Mr. Atcherley, otherwise "Batchy," the "Tomboy," "Grock of the Air," etc. (*vide* the Daily Press), was going to fly all-out, declared that he was much faster than Mr. Waghorn. His first lap speed of 302 m.ph. therefore came as an astounding shock, but hope was

THE LAND OF THE FEE.—Ryde Pier and its Reserved Enclosure. The "Orford" in the background and Mr. Waghorn passing the finishing line.

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revived when his subsequent lap speeds rose to the 330 m.p.h. order.

The last machine away was the second Macchi 67, flown by Lieut. Monti. This machine did look faster than that of Lieut. Cadringher and its sound was different. The noise of Lieut. Cadringher's machine was likened to "a hundred lunatic laundresses tearing up an acre of calico on board the 'Flying Scotsman' in the middle of a thunderstorm." So far as Lieut. Monti's machine was concerned one might perhaps leave out the thunderstorm.

After completing one lap at 301 m.p.h. Lieut. Monti was reported to have landed safely off Hayling Island with a burst oil-pipe, and this left the contest a certainty for Great Britain. Very satisfying, but at the same time disappointing, in that there was not more serious competition.

Thereafter people drifted about with a self-conscious smug look on their faces and said, "Jolly good show," in the same time-honoured fashion that Englishmen follow when labouring under the weight of victory.

[*Here the narrative will be discontinued for a few lines to represent the lapse of several hours given over to the inbibulation of the cup of victory.*]

For those not invited to the official banquet an early dinner was provided. At about 20.30 hrs. the dining saloon was cleared of unwelcome clients, and these social outcasts repaired to the after hatch, on which rested the Schneider Trophy, in readiness to witness the presentation ceremony, which it was announced would take place at 21.15 hrs.

The timetable was not strictly adhered to, but as a consolation for those waiting an excellent firework display at Ryde was witnessed under ideal conditions—that is, over water.

At 20.30 hrs. to a gun signal both the *Orford* and *Orontes* were illuminated in outline by electric bulbs and by floodlights and presented a pretty spectacle.

All three Italian war vessels were also illuminated, and the hull, masts and yardarms of the *Cristofero Colombo* were completely outlined.

While waiting for the arrival of the chosen guests an attempt was made to remove the unchosen ones from the vicinity of the presentation enclosure, but with no effect. At about 20.30 hrs. the banqueteers arrived in the enclosure, and Sir Philip Sassoon, Lord Thomson, Mr. Ramsay MacDonald, General Balbo and the British team assembled on the improvised platform. A short wait for the Italian team gave no result, so someone was sent in search for them.

Ultimately the Italian officers arrived, but great difficulty was experienced in getting the two modest Italian non-commissioned officers to mount the platform. Amusement was caused by the diminutive Serjt. Agello, who refused to take a chair while Sq. Ldr. Orlebar was standing. Sq. Ldr. Orlebar tried to equalise matters by sitting on one arm of the chair, but Serjt. Agello refused to sit down until signalled to by an Italian officer. Thereafter Sq. Ldr. Orlebar put his arm round Serjt. Agello's shoulders, as a true gesture of Anglo-Italian friendship.

The speeches, which were many and short, are dealt with elsewhere, so will be ignored here.

After the break-up of the presentation ceremony all adjourned to celebrate, and once again the curtain should be lowered to represent on this occasion not only a lapse of time but for some people a different kind of lapse.

The sight of famous aircraft designers wearing funny hats and playing silly instruments makes one believe that after all everyone is human, and that the chasing of X's can at times be varied by the hunting of grotesque reptiles of varied hues.

Music by the R.A.F. band provided an excuse for dancing up till 01.00 hrs., the bar was officially timed to close at 02.00 hrs., but there was no restriction as to the time people might go to bed, or to the amount of good cheer that might be dispensed in private cabins. All ended very cheerfully, but several heads throbbed on the following morning.

So far as the Schneider Trophy Contest was concerned, all was over. The *Orford* was once planned to cruise round the Isle of Wight on Sunday, but there was no doubt that the Orient Line desired to rid itself of its passengers as soon as possible. On Sunday morning at 11.30 hours, to much rattling of ship's bells, the *Orford* left its moorings and steamed down towards the Needles, with the intention, as everyone was led to believe, of cruising round the Isle of Wight.

On passing the Needles, however, the ship was turned completely round, and a course set for Hamble. The ship arrived there about 15.30 hrs.

On arrival at Southampton Docks a couple of hours later the railway sheds were locked, the train was in a siding and there were no porters available except for a few stevedores temporarily unemployed. After a wait of an hour the train

THE LAND OF THE SEA.—Dal Molin turning the Bembridge Mark, as seen from Seaview, I. of W.

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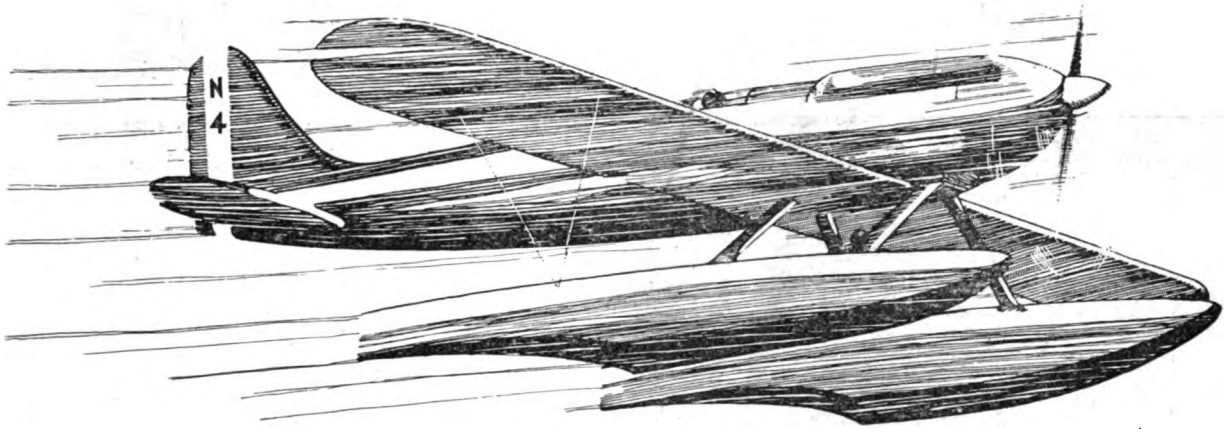
THE HIGHEST SPEED.....



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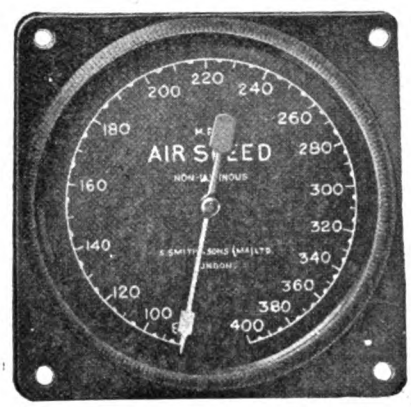
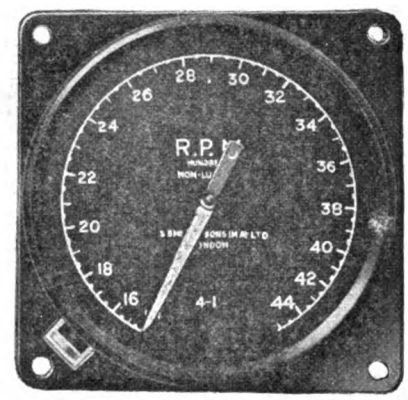


AIR SPEED INDICATOR
Type Av. 546.
Dial diam., 3 9/16 in. Weight, 11 ounces.



REVOLUTION INDICATOR.
Type Av. 508.
Dial diam., 3 9/16 in. Weight, 28 ounces.

328
M.P.H.

The machines in the Schneider Trophy Contest were fitted with

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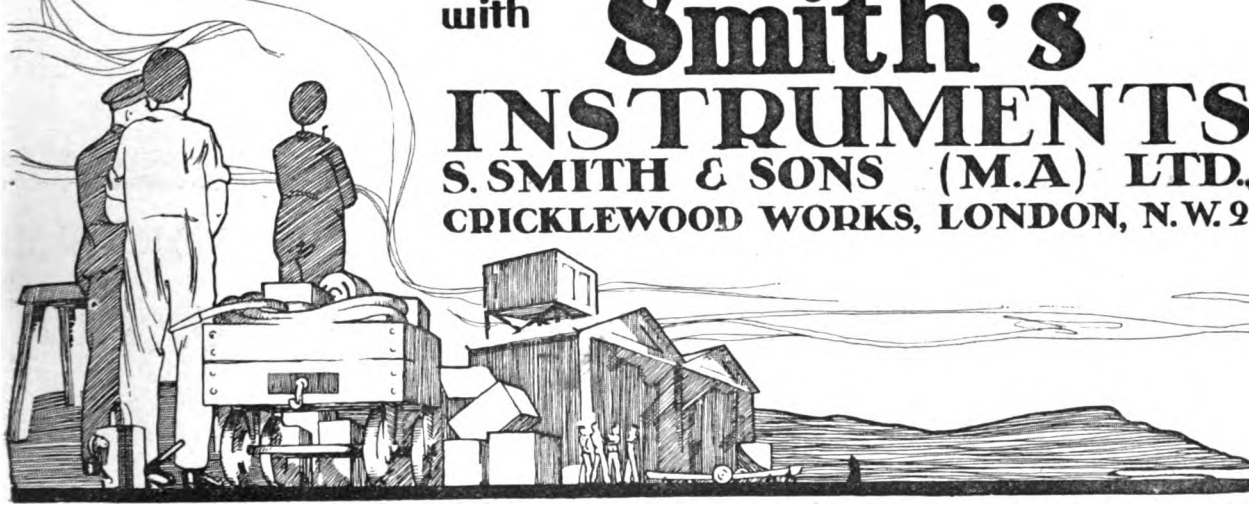

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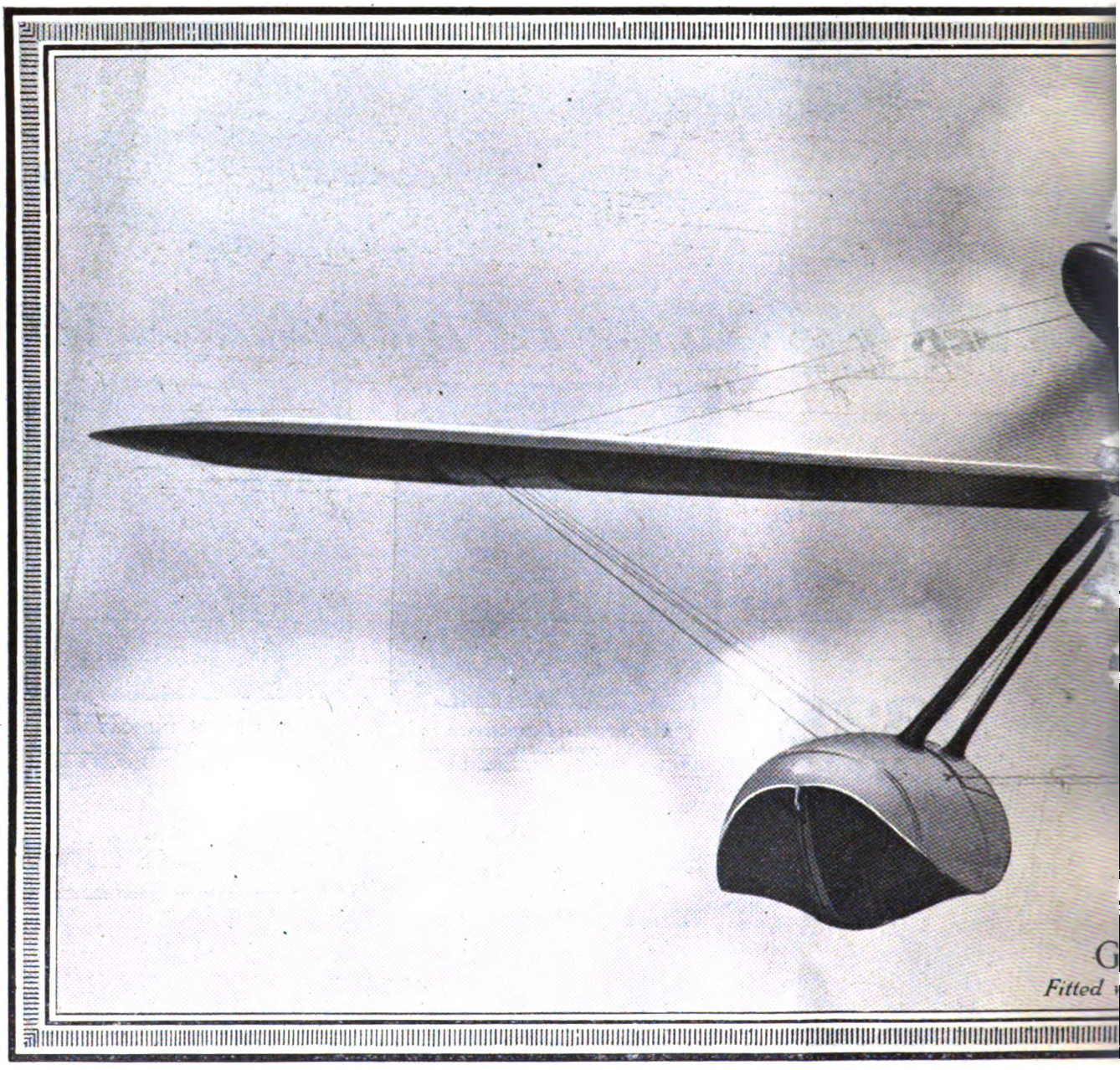

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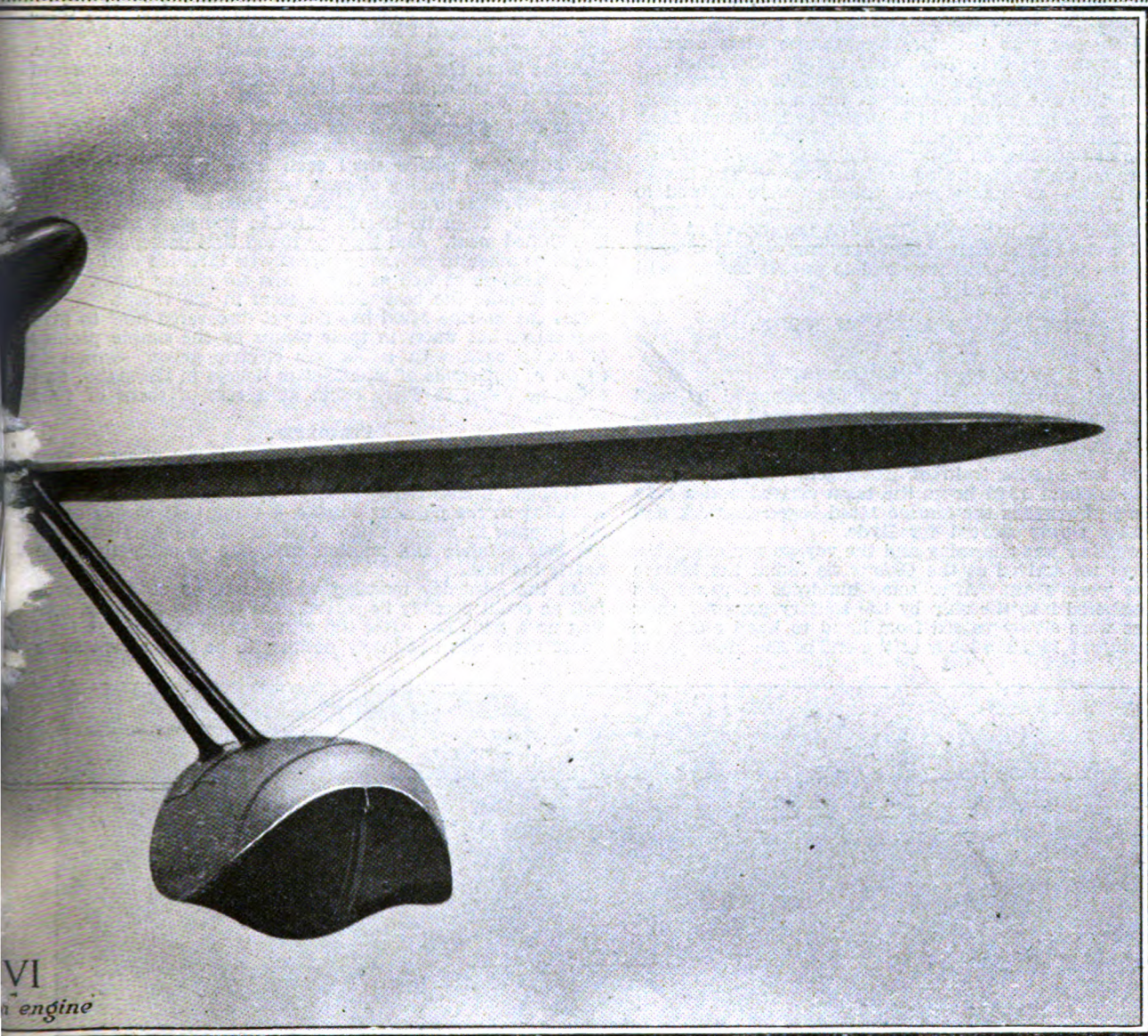

"It is abundantly clear that the Gloster Aircraft Company have made a nearer approach to that perfect shape of which every designer dreams than has ever been achieved before. This perfection extends to the workmanship."
The Times.

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"The Golden Racer is the most beautiful airplane ever built, and she is as airworthy as she is beautiful. Her golden colour, her magnificent lines, her strength, and the vivid impression she gives of speed, have won the the admiration of all who have seen her."
Evening Standard.

"The whole machine gives the impression of true speed, and there is little doubt that this impression will be borne out in practice."
The Aeroplane.

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steamed out and eventually arrived at Waterloo at about 19.45 hrs.

One has had experience of ships ranging from those guaranteed to run 20 yards on one winding to Transatlantic liners, but the Orient Schneider Trophy two-day "Pleasure Cruise" was a new experience. Meals were not noted for their generosity of helpings, one felt that one's presence on the ship was by way of a favour on the part of the ship's officials, and when the race was over their one object was to get the passengers off as soon as possible. And all this for a sum which insofar as one was personally concerned would have transported oneself the best part of the way to Canada, with considerably more comfort and attention.

In voicing this complaint, let it be known that one is registering no grouse against the Royal Aero Club—in fact, one is grateful to that august body for providing one with the opportunity of sampling an Orient Line cruise.

It is true that the Orient Line does not habitually dock at Southampton, and therefore had to use what existing facilities there were that were not in use by other lines.

The fact that there were legitimate grounds for complaint is disclosed by the letter of apology, which has presumably been sent to all passengers in the *Orford* by the Orient Line.

[To which one may add that the "emigrants," who left Waterloo at 07.05 hrs. on Saturday found that no breakfast-cars were on the train, and no food was available at Southampton Docks,—so they starved till they were allowed to board the *Orford* at 11.40 hrs.—when a meagre buffet-lunch was provided at 3s. per head.—They left the *Orford* at 18.00 hrs. and arrived at Waterloo about 24.00 hrs.,—again without food on the journey.—And they had to pay £2 2s. per head for the day trip.—C. G. G.]

THE MARINE MIND AT WORK.

By C. G. G.

Once Aboard The "Orford."

Our naval manœuvres being over one returned by road from Calshot to Southampton and there waited for conveyance to the *Orford* in the tender timed to leave at 17.00 hours. At 17.30 hours the Southern Railway had still not delivered the special train of passengers for the *Orford*. Somewhere about 18.00 hours the train arrived and a very long time afterwards the Marine Mind began to work and the tender slowly started for Ryde.

The weather was charming and the voyage was enjoyable. But when we arrived at the *Orford* we found the Marine Mind at work again. After some hundreds of passengers had clambered into the ship by the solitary gangway their suitcases were slowly passed from hand to hand along the same gangway into the lobby at the end of the dining room where a number of people were already having dinner. The belated tender had arrived somewhere about the time when the second instalment of dinner ought to have been served.

Half an hour or so later the baggage had been sorted out to the various owners and by about 20.30 hours there was a chance of looking for some dinner. Then one found that the Marine idea of staff-work had been operating. People who had arrived on the tender after the first sitting at dinner had begun found that they had been allotted seats for the first sitting at 19.00 hours.—And who wants to dine at 19.00 hours anyway, except at sea when one is ready to eat at any time?

Ultimately we managed to get a dinner which might have been value for eighteenpence in Soho, but must have seemed very poor value to some of our foreign visitors who were paying about £10 a day for their accommodation. One likes chip potatoes, but one does not like chip partridge. Nor does one like an alleged Pêche Melba made with tinned peaches and cornflower ice, flavoured apparently with aniline dye. And the Wine List of the *Orford* was a curiosity, because of its amazing omissions,—not being much of a wine drinker oneself it did not matter vitally.

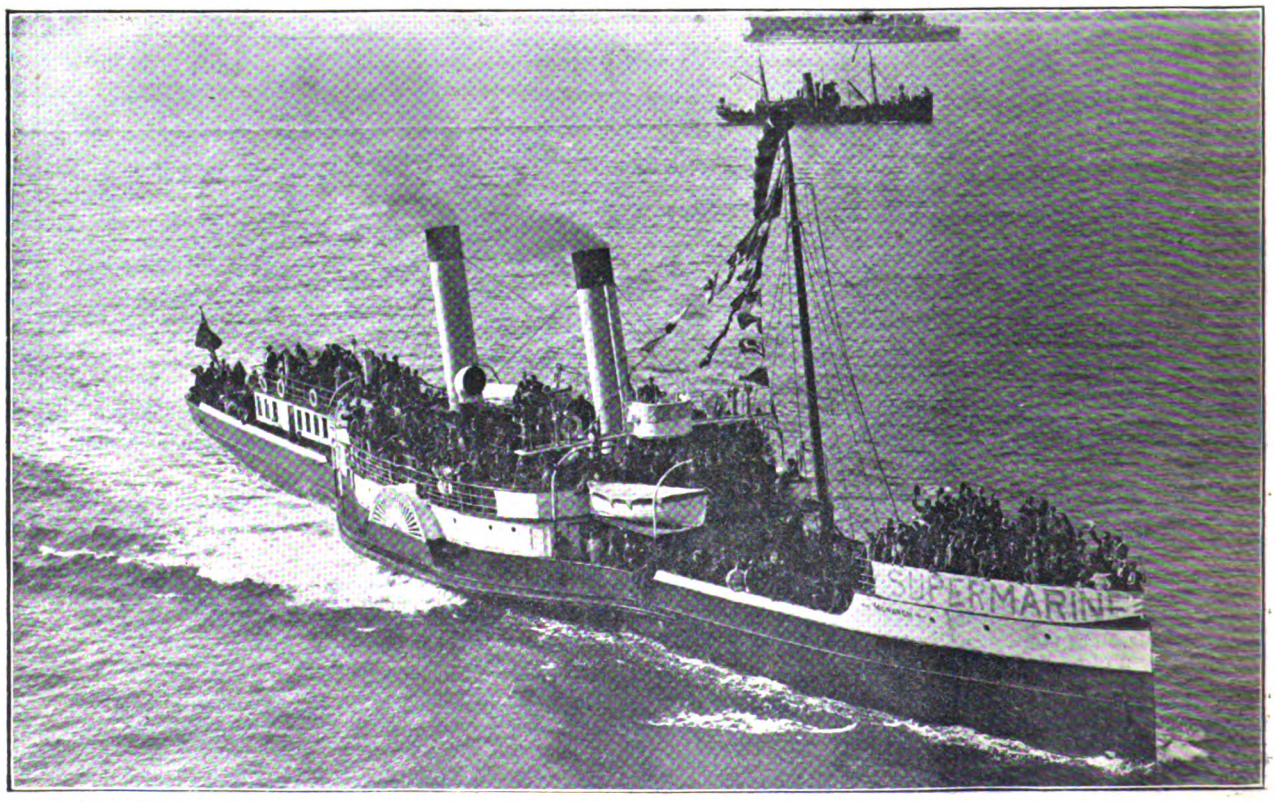
The *Orford* herself is a fine modern ship. The cabins are of the Bibby type which arranges quite cleverly that even the innermost cabins shall each have a port hole. Mr. Bibby began by making oil-cake for cattle. Then apparently he bought cattle to eat his oil-cake. Then he started canning his cattle. Then he bought ships to transport his canned and chilled meat. And then he found that passenger traffic might be made to pay, so apparently he invented cool cabins for passengers as well as cold rooms for chilled meat. The result is quite the best cabin system in the World.

But the Marine Mind has not yet discovered how to give passengers hot water in their cabins by the simple process of fitting each with a Junkers electric geyser,—which is found in thousands of middle-class houses in Germany, and could be fitted in every cabin at a cost of three or four pounds.

Personnel.

The personnel in the *Orford* was curiously uneven. One had the best cabin steward one has met and one was awakened unnecessarily early by bath-room stewards whistling in the corridor outside, a thing that simply could not happen in some ships. One of the table-waiters was the best possible and another who was so sulky that one nearly hit him.

On the Saturday morning we all had as good a breakfast as could possibly be served. On Sunday morning, getting up a trifle late after the party, we found that at 10.30 hours there was absolutely nothing to be had except some



SUPER-MARINE.—The pleasure party arranged by the Design Department of the Supermarine Works, paying a triumphal visit to the "Orford," after their victory.

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obsolescent cold ham, indifferent eggs and soggy toast. We were not among the most luxurious passengers, but even at such an absurdly low price as four guineas a day one does expect decent attention, and one does suggest to the Orient Line that 10.30 a.m. is not too late for breakfast on a Sunday morning.

The truth of the matter seems to be that the chief catering official in the *Orford* is so used to having a kind of grown-up school treat of World-tourists who humbly obey his orders as to when they may eat and when they may not that he thought he had the same kind of clientèle last week-end. He ought to go and do a few weeks' service in the Cunard on the Atlantic run for his education. In the *Mauretania* one never found the slightest trouble in getting anything one wanted at any time of the day.

On Tuesday morning last the passengers in the *Orford* received an apology from the Orient Line for the delay in getting them away from Southampton Dock. One can assure the Orient Line that the delay for which they apologised was of little account compared with other things for which they did not apologise.

Somehow the whole arrangement reminded one strongly of those great Irish houses in which the architecture, decorations, and general equipment, are equal to the finest things of their kind in the World and all the outer accessories and a good many of the internal arrangements would be laughable if they were not tragic. Some years ago Rudyard Kipling wrote what he thought about the P. & O. Line, in describing his journey to Egypt. He might confer a benefit on the Orient people by doing much the same to them. But one doubts whether even the power of Kipling can have any serious influence on the Marine Mind.

THE CONTEST.

The actual Contest for the Schneider Trophy as seen from the *Orford* was extraordinarily dull. The human eye and mind very easily becomes accustomed to the sight of a machine streaking along at about 300 miles an hour, and after the thrill of the first roar of the Supermarine S.6, and the thought that this great international contest had really begun, there was really little to be said about it.

At first people did rush from one side of the ship to the other as the machines passed on their Eastward and Westward journeys. But they soon lost even that much interest. There was one passenger who grumbled terribly because the competition began at 14.00 hours. He said that he always had lunch at half-past one and that after lunch he always had a little nap and waked at three. And he could not understand why the race began so early. He was assured that the start could not be postponed to oblige him, so he had his lunch at half-past one and he slept peacefully till long after three in the saloon.

All the news of the Contest was very well delivered by the loud speakers, and there was practically no excitement at all.

Mr. Atcherley's disqualification naturally caused a great deal of disappointment. Seen from the *Orford*, he seemed to pass properly to the right of the mark-boat at Bembridge and then swerve further to the right, and then turn left beyond it.

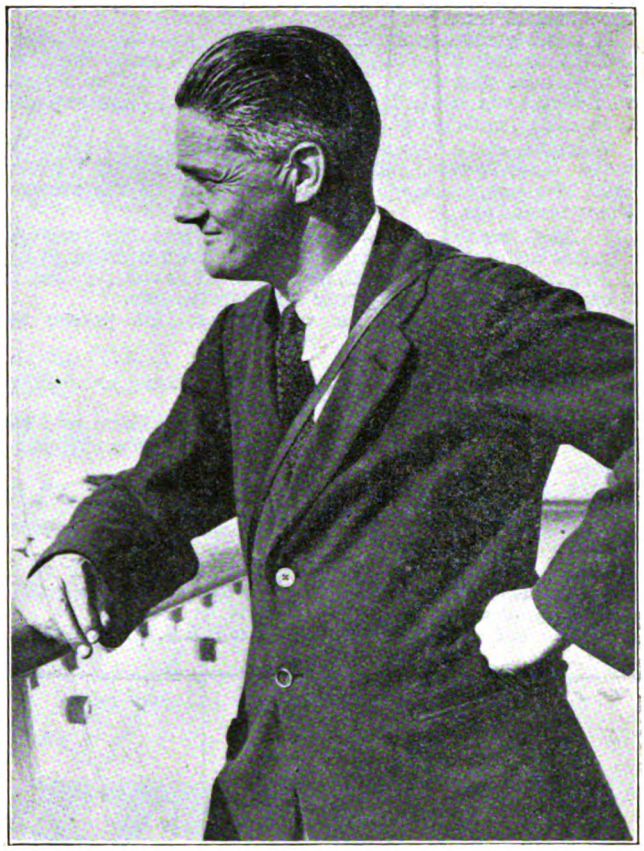
Apparently what he did was to pass almost over the mark boat, but ever so little to the left of it—and so got himself disqualified. Apparently he realised that he was on the wrong line and turned out to the right,—hoping that he was still in time to clear it. But by that time he was too late.

The result was that owing to his swerve to the right he actually covered a much longer course than he would have done if he had been on his true course. And yet, of course, he had to be disqualified for it. The cause of his trouble was the loss of his goggles, as described by Mrs. McAlery.

The only other incident of any kind was the passing of the first Macchi 67. It left a trail of thick smoke behind it, and on reaching the turning-point at Bembridge did the typical Italian turn, which is done by throwing the machine up into the air, cart-wheeling it onto the left wing and then diving it onto the course again. A very wasteful but highly spectacular method. This, as done with the trail of smoke, caused somebody to ask whether this was a race or a demonstration of sky-writing.

Everybody admired the extraordinary regularity of Flt. Lt. Greig's lap times. A comparison of the score board at Ryde, with that at Venice two years ago, which THE AEROPLANE is able to publish thanks to a loan of the photograph from Flt. Lt. Webster (who happened to have it in his pocket on the *Orford*) shows that Flt. Lt. Greig was very nearly as regular as Flt. Lt. Webster.

The interesting point about this machine is that the machine which Flt. Lt. Greig was flying was actually that which Flt. Lt. Worsley flew at Venice in 1927, but it had had



LE GRAND PENSEUR—OF TO-DAY.—Sir William Morris, of Morris Motors Ltd., on the "Orford."—The man who may give us the 100 h.p., 100 lb., £100 aero-engine.

put into it, instead of its ungeared Lion, one of the geared Lions which was built as a spare for the Contest at Venice.

We were all very sorry when the Italian machines came down, but after all General Balbo had said on the subject we were not surprised. The ear-splitting scream of the Macchis was rather impressive. Whether it comes from their three-bladed airscrews or from their superchargers nobody seemed to know. But it would have drowned even a Fairey Fox.

The extraordinary accuracy with which the capacity of our machines had been gauged was shown when Mr. Waghorn came down on his eighth lap, having run completely out of petrol. As described elsewhere, he was under the impression that he had only done six laps when he had in fact done seven, and he ran out of petrol when well within sight of Ryde in the eighth lap. Which means that for a seven-lap race the machines were only carrying enough petrol for seven laps and three-quarters.

One slight satisfaction that we had in the *Orford* was learning that there was any quantity of room on Ryde Pier, and that apartments could be had in the Isle of Wight at the last moment at very low prices,—so much for the Island pirates, whether Jutes or Jews.

Apparently the Southern Railway had very much underestimated the gullibility of the public in trying to get them to pay three guineas for a trip from London to Ryde and back with a seat on the Pier. If they had been content to charge 25s. or 30s. they might have filled the place.

And undoubtedly Ryde Pier was the best point from which to see the Contest, for on the Hampshire coast, as on the ships, the onlookers had the sun in their eyes, whereas on Ryde Pier the light was exactly right and the machines passed very much closer.

And that is about all there is to be said on the subject. For the benefit of those who really want a description of the Contest one appends a few extracts from *The Sunday Express*, written by a Mr. Denis Dunn. Frankly, THE AEROPLANE cannot compete in descriptive writing. And the Staff collectively takes off its hats to what Mr. Denis Dunn.

The boom of the starting gun—a roar—a glittering, flashing bullet hurtling through space—a flash—and gone!

That is the story of how Britain retained the Schneider Trophy yesterday, when two million people saw three British and three Italian airplane pilots laugh at death in

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an attempt to cover seven 31-mile laps over the Solent in the quickest time.

It was a great day for Britain.

That air epic of to-day will never be adequately described. While these dare-devils of the air crashed past us I heard women scream hysterically, saw them faint—and saw men turn their heads away.

Waghorn made two million hearts palpitate as they have never done before. His turns were splendidly reckless. Men who had travelled thousands of miles in the air stood there breathless.

"That strain will tear the wings from the fuselage," yelled an excited official. Once he missed a flight of seagulls by a few inches Once he turned so sharply that his exhaust smoke cut an acute angle in the sky.

What was the race for the two million people who watched?

This:—

A battery had opened fire in the sky! They are coming! The dainty deadliness of them.

Something silver hurtles by, and loud speakers and half the world shriek: "Waghorn, Supermarine. Waghorn, Supermarine."

The silver something became a dancing dot on the horizon, while the unbelievable noise of the engines battered at our ear-drums, and we realised that there was an heroic lunatic in the dancing dot.

"Viva Dal Molin." Every Italian opened his lungs as the stout old Macchi—blood-red and fearful—catapulted past, to become another of those devilish dots.

"He is our deadliest rival," said an R.A.F. officer, levelling his glasses. "That old Macchi, with her new engine, can beat anything we can do, for, don't forget, Waghorn's S.6, the Rolls-Royce, is a 'paper' engine, and we really know very little about it."

"Aye ——" his words were drowned by a loud speaker.

"D'Arcy Greig," it bellowed. Although crammed in his little cockpit, Greig would have smiled to hear the cheers that met him as he flashed over the line. So they passed. It is a dread anthem to speed, a sacrifice to "idol m.p.h."

"Cadringher," shrieked the speaker. Again a scream in a cloud banged by. That yelling flash of spotted lightning was built in nineteen days, and the gambler in the cockpit was testing it fully for the first time.

"Atcherley," cried the speaker. "Atcherley is playing pitch and toss with his life."

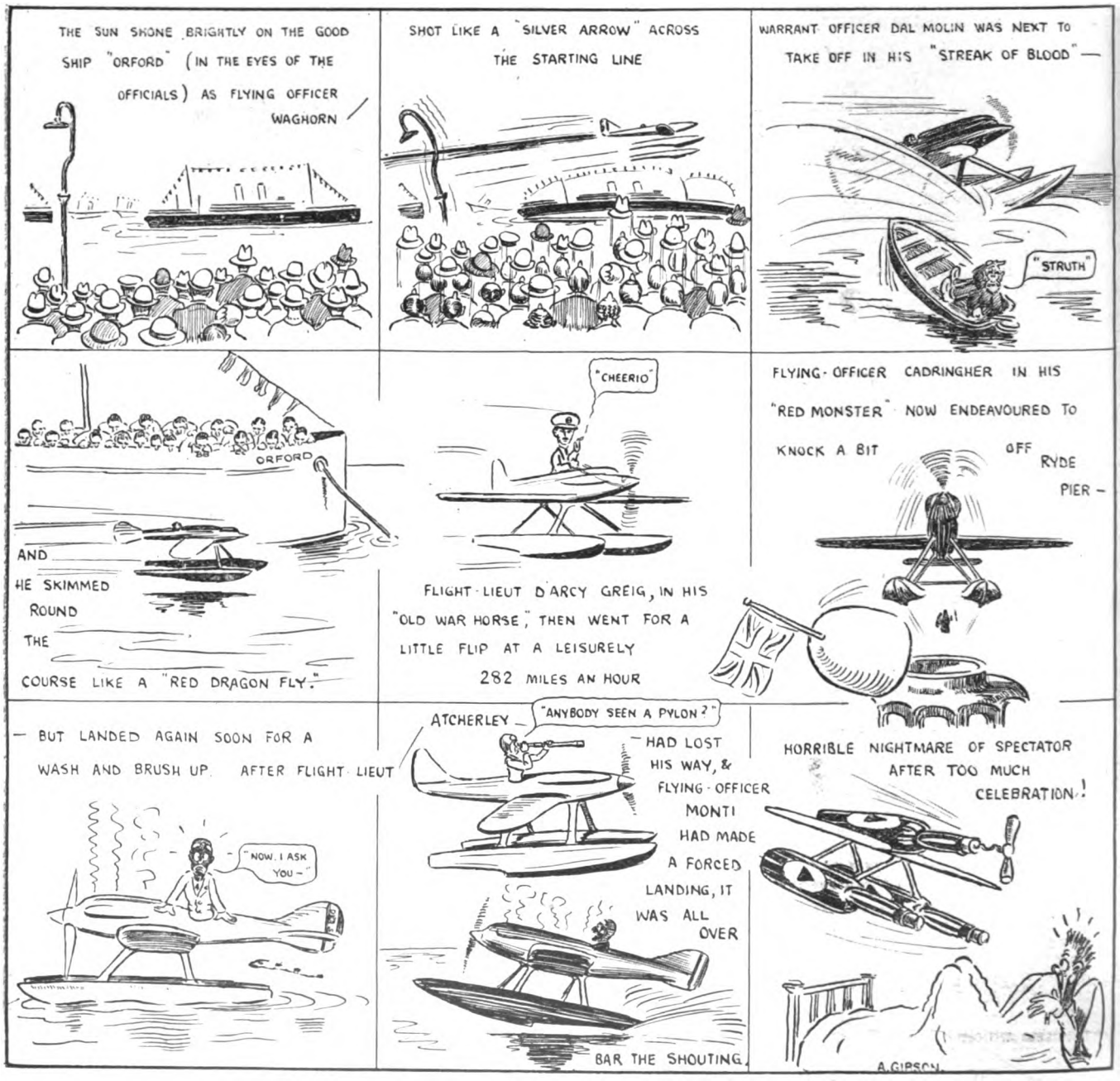
"Monti," howled the wireless. "Zoom"—he passed while our hands had only begun to wave. "This speed is Satanic," whispered a white-faced official. He clutched my coat and screwed up the clothes in his hand, curious little tremors ran through the spectators' faces as the terrific roar of the engine caught them square in the ear-drum.

They were white and afraid, but loving it like people on a scenic railway on the brink of a dive.

A gun fired. It was over.

An hysterical woman screamed—shrilly screamed—at steady intervals, but the others drowned her. Cheers crackled round the coast. Hats flew up like gargantuan confetti; women giggled—some cried. It echoed over from Portsmouth, and we in Ryde sent it back across the Solent.

Minutes of terrific cheering, and then the mosaic of white sails broke up on the Solent, and curious seagulls ducked



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and chattered where six men a few moments ago had battled with fate.

"Waghorn! Waghorn! Atcherley! Atcherley!" they screamed along thirty one miles.

But few of them knew of the little drama enacted when the winner hit the water after his great feat. Waghorn, the new speed king, was

Continued on Page Thirteen.

[But not in THE AEROPLANE.—C. G. G.]

THE CLOSING SCENES.

CEREMONIAL.

The closing ceremony of the whole affair was a banquet given in the steamship *Orford* by the Royal Aero Club to the competing teams and a number of assorted distinguished visitors, besides several undistinguished. Considering that this banquet was an overload on the supply staff of the *Orford*, it was surprisingly well done.

Here one may remark that the reason why those who went to the banquet were asked officially not to dress was that the official guests included a number of distinguished diplomatic and Service representatives of Foreign nations who had been asked by the Government Hospitality Branch to see the race from H.M. Aircraft Carrier *Argus*. These guests having come down from Town for the day, naturally could not be expected to bring evening dress with them. So the people who were living in the *Orford* also retained their day clothes, so as not to put them out of countenance. The thought was a kindly one of the Committee of the Aero Club. But they might have stated their reasons when sending out their notices.

The whole arrangement produced the curious effect that while the ordinary members of the Aero Club and the various hangers-on of Aviation who only take an interest in the game on great occasions were doing themselves well in the first-class saloon in evening dress, the Great Ones of the Aeronautical World were feeding in the third-class saloon in any old clothes they happened to be wearing during the day—for the third-class saloon was the only apartment on the ship big enough to hold the assembled notabilities.

THOSE PRESENT.

The guests of honour at the Banquet, besides the competing teams, were:—Marshal of the Royal Air Force Sir Hugh Trenchard and Lady Trenchard, Air Chief Marshal Sir John Salmond and the Hon. Lady Salmond, Admiral Sir Roger Keyes, the Rt. Hon. Sir Samuel Hoare and the Lady Maud Hoare, Brig.-Gen. the Rt. Hon. the Lord Thomson (Secretary of State for Air), His Excellency General Italo Balbo, Herr Brandenburg (German Controller of Aviation), M. L. Hirschauer (The Aéro-Club de France), the Rt. Hon. J. Ramsay MacDonald and Miss MacDonald, and Mr. F. Montague (Under-Secretary of State for Air).

Among those also present were:—

Sir Alan Anderson, Major K. M. Beaumont, Lt.-Col. de Bernardi (winner in 1926), Mr. H. C. Biard (winner in 1922), Group Capt. A. W. Bigsworth, Lt.-Col. B. F. Bitossi, M. L. Blériot, Group Capt. R. J. Bone, Air Cmdre. F. W. Bowhill, Sq. Ldr. A. R. Boyle, Lt.-Col. J. T. C. Moore-Brabazon, Air Vice-Marshal Sir Sefton Brancker, Group Capt. Breese, Mr. Griffith Brewer, Lt.-Col. W. A. Bristow, Sir Harry Brittain, Mr. H. S. Broad, Major J. S. Buchanan, Mr. C. Ll. Bullock, Mr. N. Burroughes, Mr. J. C. Cantrill, Air Cmdre. J. A. Chamier, Capt. L. W. Charley, Mr. C. L. Colebrook, Lt.-Col. M. O. Darby, Mr. F. G. T. Dawson, Capt. G. de Havilland, Rear Admiral L. Donaldson, Mr. C. R. Fairey, Lt.-Col. L. F. R. Fell, Group Capt. A. Fletcher, Mr. H. P. Folland, Mr. Lester D. Gardner, Mr. Alan Goodfellow, Lord Gorell, Lt.-Gen. A. Grocco, Sq. Ldr. R. A. de H. Haig, Jonkheer Van den Berch Van Heemstede, Sq. Ldr. W. Helmore, Air Marshal Sir John Higgins, Air Cmdre. T. C. R. Higgins, M. L. Hirschauer, Capt. von Hoeppner, Air Cmdre. F. V. Holt, Wing Cdr. B. L. Huskisson, Mr. J. J. Ide, Mr. F. H. Jones, Air Vice-Marshal C. L. Lambe, Capt. A. G. Lamplugh, Col. F. Lindsay Lloyd, Air Vice-Marshal C. A. H. Longcroft, Mr. David Longden, Mr. John Lord, Mr. H. W. W. McAnally, Lt.-Col. Sir Francis McClean, Mr. I. H. McClure, Sir Robert McClean, Sq. Ldr. R. L. G. Marix, Maj. R. H. Mayo, Mr. R. J. Mitchell, Mr. R. H. S. Mealing, Group Capt. E. R. C. Nanson, Lt.-Col. Mervyn O'Gorman, Mr. F. Handley Page, Mr. Hubert Scott Paine, Major R. E. Penny, Mr. C. Howard Pixton (winner in 1914), Flt. Lt. R. L. Ragg, Mr. F. E. N. St. Barbe, Lieut. de Vaisseau A. Sala, Air Cmdre. C. R. Samson, Sir Henry Segrave, Col. the Master of Sempill, Mr. A. F. Sidgreaves, Wing Cdr. S. W. Smith, Mr. T. O. M. Sopwith, Mr. T. S. Sprigg, Maj. O. Stewart, Mr. O. J. Tapper, Lieut.-Cdr. W. D. Thomas, Mr. H. T. Vane, Wing Cdr. W. Welsh, Capt. G. S. Wilkinson, Capt. C. B. Wilson, Flt. Lt. Webster (winner 1927), Mr. H. E. Wimperis.

After all had well eaten and drunken, Sir Philip Sassoon as Chairman of the Royal Aero Club announced that the Schneider Trophy would be handed over to the British Team on the after deck.

Sir Sefton Brancker then arose and said: "Will you all please keep your seats till those at the tables to my right and left" (meaning the high and distinguished official guests) "can get up." Fortunately they were all able to do so, in spite of the excellence of the wines, and within a few minutes not only the plain-clothes banqueting party but the much more respectable-seeming people from the upper decks and the first-class saloon were assembled round the after well-deck—which one believes is the proper nautical phrase—where was a platform backed by flags of all nations with the Schneider Trophy in the middle, and chairs round about for the teams and the Highest of all Officials. The platform and the Trophy were flood-lighted, and the whole effect was rather pleasing.

SIR PHILIP SASSOON, opening the proceedings, sympathised with the Italians in the hard luck which had befallen them, and congratulated them on their splendid sportsmanship in coming to England to compete. He expressed particular sympathy with the Italian Nation in the death of Captain Motta. He then congratulated the British team on their team work and on their individual skill, and also those who were responsible for the design and construction of these remarkable engines of steel and fabric.

He said that Squadron Leader Orlebar, the Team Captain, Flying Officer Waghorn the actual winner, and the aircraftmen who had handled the machines and worked hard, equally with the skilled engineers and mechanics of the constructing firms, all deserved the best thanks of the British Nation for justifying the confidence placed in them and securing this victory over worthy opponents.

THE PLATFORM PARTY.—From left to right: Sergt. Agello, Mr. Ramsay MacDonald, Sq. Ldr. Orlebar, Lord Thomson, Flg. Off. Waghorn, the Italian interpreter, Sir Philip Sassoon, Col. Mervyn O'Gorman, Warrant Officer dal Molin, Flt. Lt. Greig, Lieut. Cadringher, Fig. Off. Atcherley, General Balbo, and Lieut.-Col. Bernasconi.

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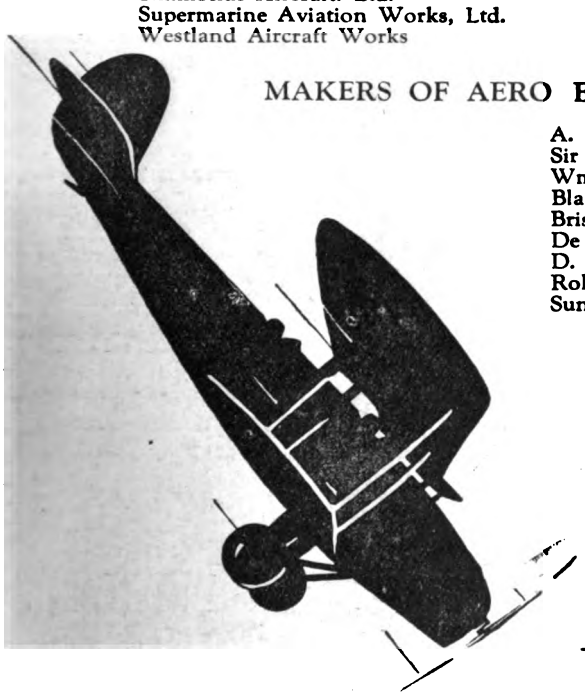

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He reminded his hearers that till that day an Italian engine and aeroplane held the World's Record for speed, and he said he was not certain that the machines now in the workshops of Italy might not soon give us another achievement to surpass.

He said that the justification for risking lives in these competitions, and in the outlay of money involved, lay not only in the scientific and technical progress which was produced in building these crafts, but in the friendly chivalry which was caused and the lasting friendships which were produced between the competing nations.

Sir Philip ended by saying that this year's victory was a remarkably achievement, and if, in future, Italy should win the Trophy, she would receive no greater applause than that from the British Empire.

GENERAL ITALO BALBO, speaking through a remarkably clever interpreter, said how grateful he was to his dear friend Sassoon for his kindly words about Captain Motta. Nobody more than aviators themselves could appreciate the words pronounced. He thanked the British aviators for their kind sympathy and assured us that none felt more deeply the loss of our wonderful Kinkead than did the Italian aviators.

Referring to the event of the day, he said that Italy had obtained the results which they expected and they had now finished playing their part as sportsmen. To-morrow their work as competitors would begin.

But before beginning, he would like to congratulate the winners. The English had won a great prize, and the world looked on the winning pilot as a master. He hoped that we should meet again—with other nations also competing to make the winning more difficult. He extended his hearty congratulations to the winner.

LORD THOMSON, as Secretary of State for Air, read a telegram from His Majesty the King, conveying hearty congratulations to Flying-Officer Waghorn and the Royal Air Force. Lord Thomson congratulated the Italian pilots on their high courage and skill.

SIR PHILIP SASSOON, calling on the winner for a few words, said that we must suppose that Flying Officer Waghorn had won the Trophy, though he looked so composed and clean that he hardly seemed to have come out of the cock-pit of an aeroplane.

FLYING OFFICER WAGHORN said that really he had nothing much to say, he had had no difficulties during the contest, and everything had been plain sailing. He expressed his gratitude to the Italian team for competing, and to the meteorological experts for assuring fine weather.

LIEUT.-COL. MERVYN O'GORMAN, thanking Sir Philip Sassoon for his part as Chairman of the Royal Aero Club, said that by acquiring him as Chairman the Aero Club had received a very charming fillip.

THE PRIME MINISTER, MR. RAMSAY MACDONALD, rising in response to loud demands for a speech, said that he was there as a guest and that such demands were most improper. He said that in such a contest as this we were always sure to see a splendid demonstration of true sportsmanship. The victor held his friendly competitors in profound respect.

He then pledged the British nation to a continuation of the contest by assuring Italy that "*we are going to do our level best to win again.*"

He said how profoundly thankful he was that no accident had happened.

He added that now he considered himself an aviator, and had been wondering whether Flying Officer Waghorn would not give him enough instruction to enable him to get his certificate. Becoming serious again, he congratulated Mr. Waghorn on his fine courage, and wished the best of luck to our Italian friends in their future efforts.

SQUADRON LEADER ORLEBAR, also rising under protest in answer to appeals, thanked everybody for the kind things said about the team. He referred especially to Flying Officer Moon, the engineer in charge (Voice from the background: "Shine up, Moon!"), and those members of the team who were not on the platform. He mentioned particularly the Non-Commissioned Officers and Airmen who had kept them going. He also said how much he appreciated the sporting action of the Italian team in coming over.

LIEUT.-COL. BERNASCONI, the Captain of the Italian team, offered thanks for the courtesy which his people had received from the British team, and the help that had been given to them. They had come to England to show their goodwill; some day they hoped to do better. He congratulated the English team on their victory.

ANTI-CLIMAX.

So ended one of the greatest events in the history of International Aviation. Everything thereafter was more or less an anti-climax. But some of it was very funny. The Government guests and the teams were taken off the *Orford* by tenders into the darkness, and, one hopes, arrived safely at their intended destinations in Town, in yacht, or what not. And those who remained on board celebrated the event with solemn dance, in more or less approved fashion. The R.A.F. band played the dance music quite as if it enjoyed it, and seemed to forget that it generally plays military marches. But one cannot understand why it thinks that it can play dance-music under normal conditions.

After the ball was over, the celebrations continued till an early hour.

Some of us who stayed up late will hold in memory a kind of mental photograph of a distinguished Squadron Leader endeavouring to balance half a dozen soda-water

THE MINISTERIAL PLEDGE.—Mr. Ramsay MacDonald promising that we would do our best to win again.

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The highest speed
ever attained by man —

328·63

miles per hour.

SCHNEIDER TROPHY WON

by

SUPERMARINE ROLLS-ROYCE S.6

PILOT

Flying Officer H. R. D. WAGHORN,

USING

LODGE PLUGS.

LODGE PLUGS LTD., RUGBY.

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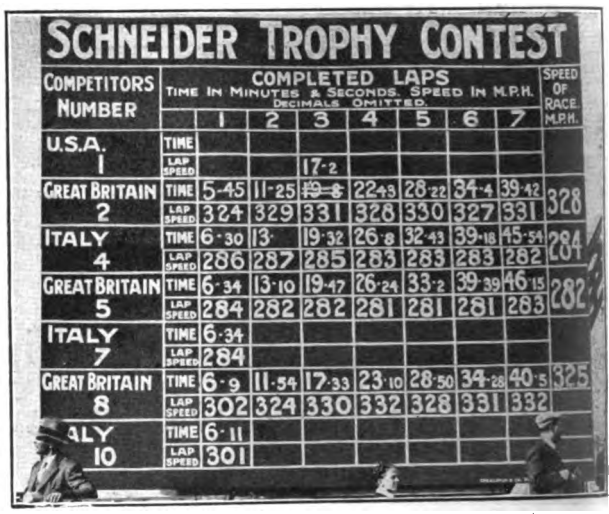
THE TIMES OF 1927.—The score-board on the Lido. There is interest in comparing the regularity of Flt. Lt. Webster's times with those of Flt. Lt. Greig in an exactly similar Supermarine-Napier S.5.



THE LAP TIMES.—The official score-board on Ryde Pier.

bottles one on top of the other till they wobbled like a snake trying to stand on end, while another distinguished Squadron Leader, who has served much in the East, paraded round him, with bows and waving of arms, chanting Oriental incantations fitting to a snake-charmer. And there is a story of one gentleman who passed out completely and woke in the dim dawn to find himself laid out, with flowers along his sides and a bunch of lilies in his crossed hands, and wondering whether he was dead or alive.

Next morning, by way of clearing the cobwebs, we were taken for a charming trip up past the Needles and back. We were all quite happy, because we thought we were going straight up to Southampton. But we anchored just off Calshot.

Then a kind of a cross between a tender and a tug came alongside and the passengers were herded into it. There was standing-room only for most of us, though some people found lying accommodation on the covers of some boats. There we sat, or stood, or lay, grilling in the heat for an hour and a half, while the baggage was slowly handed from the ship to the tender. The Marine Mind has not apparently risen as yet to the idea of a luggage-chute on the lines of a moving staircase, even though farmers, who are supposed to be the most stupid of land-living humanity, have been using elevators on a similar principle for hay and straw for about fifty years.

After that we took something over half an hour to get up to Southampton Dock, where the Marine Mind again became manifest. Only one gangway was put up to the tender and down it the passengers passed in about 20 minutes. Then three or four stevedores proceeded in a leisurely way to put the luggage ashore. Most of the shifting was done by the passengers themselves, who squeezed past the stevedores up the gangway and helped themselves out of the heap of baggage on the deck.

All this took about another half an hour. And, be it remembered, the baggage was nearly all suitcases. So what would happen with a load of passengers accompanied by heavy baggage for a long sea voyage, heaven alone knows.

Having thus acquired our light luggage, some of us got away to taxis and cars, thinking that we had then done with the sea-faring people. But before we could get out of the Docks we had to cross the Railway, and we found the road blocked for a further five or ten minutes by the Southern Railway's special train for the *Orford* passengers, which could not get down to the Dock to pick them up because nobody had thought of opening the shutters which give access from the quay to the railway platform.

Southampton Docks belong to the Southern Railway, but they are run in such close conjunction with the shipping people that apparently they also have acquired the Marine Mind. And the Marine Mind, as so often demonstrated, has absolutely no appreciation of the meaning of Time. It may set its ships on fire, or burst its boilers, or run them onto rocks trying to beat some place-to-place record for the sake of publicity, but, apart from that, Time has positively no meaning. And so long as it brings its passengers to their destination it seems to think that it has done everything that can be expected of it. And that is why air-transport is some day going to kill sea-transport.

Anyhow, at last the train moved out of the way and we were able to get out of the Dock gates onto normal roads and back into normal living. For which relief much thanks.

—C. G. G.

THE SCHNEIDER TROPHY BY WIRELESS.

By L. W. Norton.

1.50 p.m. on Saturday last was probably a time that was looked forward to by thousands of people who, like myself, were unable to see the actual Schneider Trophy Contest itself, but were relying on the much abused B.B.C. for their share in the thrill which the other thousands were to get round about the Solent.

Lunch was hastily swallowed and fingers were itching to leave knives and forks for those little black knobs that wireless fans love to twiddle till the small hours of the morning. But with 1.50 p.m. arrived the tragedy! A high-tension battery whose condition resembled the railway bun, in that it had very little *current*, was doing its utmost to ruin reception.

Not to be outdone, the trusty Austin 7 standing at the doorway was started up, and taken off with a speed that would probably have frightened early Trophy holders, and a race followed through traffic to a friend's house, known to possess the very latest thing in sets.

Apparently nothing had been missed, as Mr. Waghorn was still in the air causing awful vibrations to the various screened-grids and valves each time he hurtled past the microphone.

Our hearts thumped as we caught the excitement of the two announcers and their cry of alarm as one Italian gentleman dived low down as if to give us a "close up" of his engine—the reading of countless official chits, all with higher speeds for our machines, punctuated with terrific bursts of noise from another competitor crossing the line—was most realistic.

One feared for the safety of these men as one heard that two had force-landed, and for once in a way one appreciated the efforts of those at the other end of the land-line, and hoped that they would be preserved from the fate which one confesses one has often wished would overtake so called professors after their particularly dry talks.

Next came Mr. Atcherley's wonderful flight to keep our interest up, and the note of his powerful engine brought a look of dismay to the owner of the aforementioned super-set, who informed us that he had paid 12s. 6d. for those valves and made to switch off at the critical period when we were waiting for the speed of Mr. Atcherley's last lap. Much to our relief we heard that the noise was the shattering of the lap record, and that our friend's valves still dull-emitted!

Thus were we able to follow the progress of the race through the able descriptions of Sq. Ldr. W. Helmore and Flt. Lt. R. L. Ragg, and one takes this opportunity of thanking these two gentlemen for talking to us at a time when they probably would rather have sat and stared in amazement at those record breaking aviators.

THE PUBLICITY VIEW.

By Geoffrey Dorman.

The following firms supplied various necessities to the Supermarine S.6 monoplane and Rolls-Royce "R" engine and thus ensured the victory:—

The airscrew was a Fairey-Reed and this, as Mr. Fairey points out, should get the most credit because, being in the very forefront of the machine, it came in first before any of the rest.

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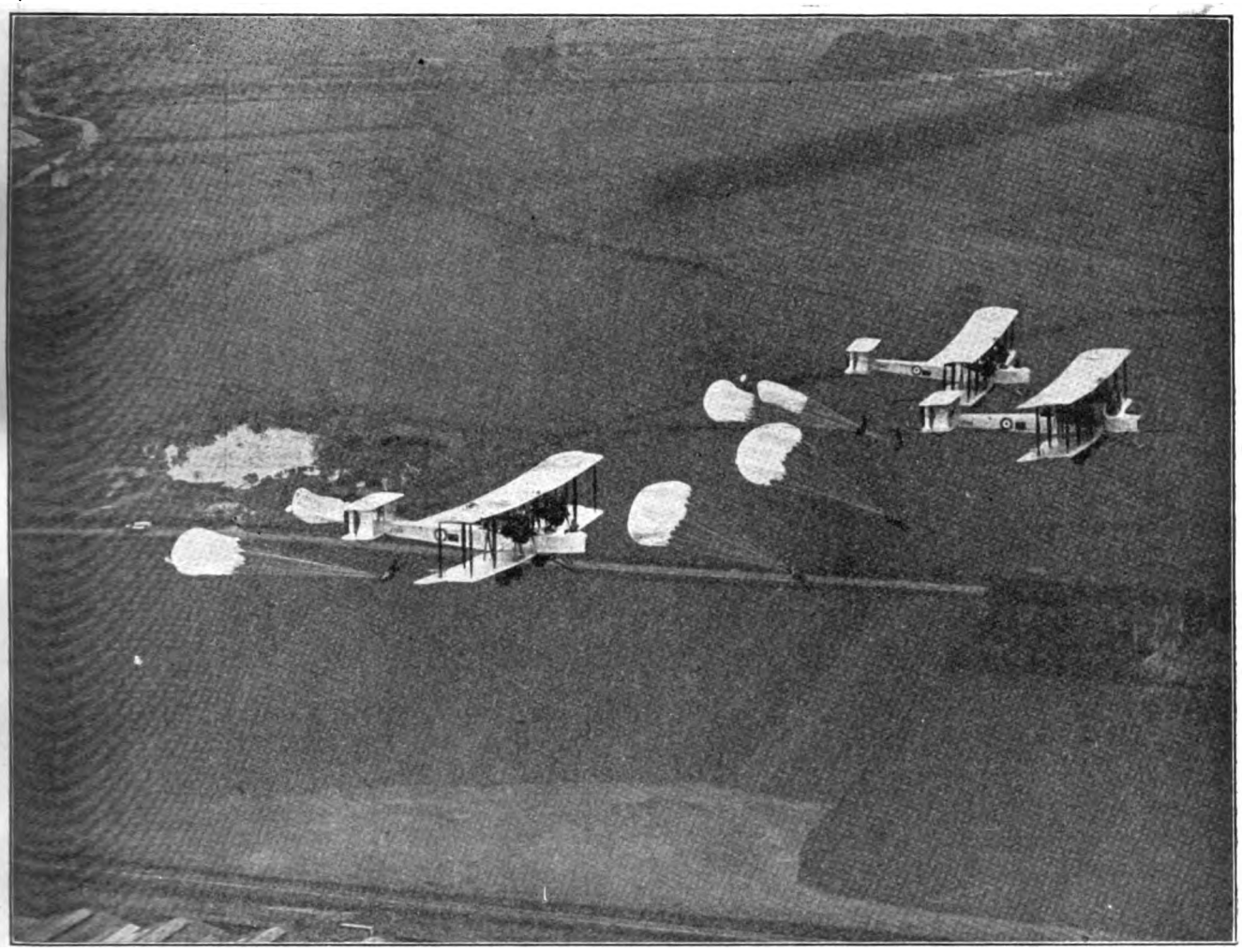

SAFETY. – **Actual photograph taken from an accompanying plane of six members of the Royal Air Force jumping simultaneously with IRVIN Air Chutes from Vickers Virginia bombers.**

Jump—

----Zip!

IT'S OPEN.—You're safe! Your fall stops You rest in mid air. And then relax.

You glide smoothly, easily groundward, sharing the long-proven confidence of certain safety that Irvin Air Chutes have bred all over the world, in the minds of men who fly—and sometimes jump.

Scores and scores know what a life saver this is, from their own wide experiences in the air.

Already more than 200 aviators have been saved by use of their Irvin Air Chutes when naught else could possibly have brought them safely down.

Among these are aviators in the Air Forces of Great Britain, Japan, Sweden, Denmark, Poland and the Argentine Republic, as well as scores in the United States.

A number indeed have been saved in commercial operations.

Many of the emergencies were of the most extreme nature, and in every case the Irvin Air Chute functioned perfectly.

After thorough investigation and rigid comparative tests, many Governments have adopted the Irvin Air Chute as the standard life-saving equipment for their Air Forces.

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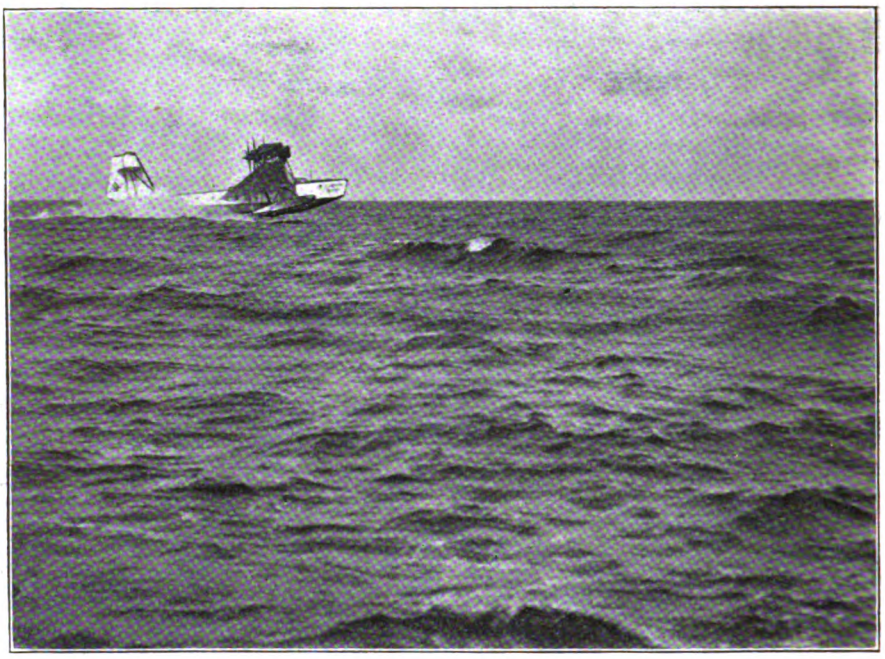

SEAWORTHINESS TEST OF "ROHRBACH-ROMAR."

SEAWORTHINESS !

Seaworthiness will always be one of the most difficult conditions to be met by flying-boat constructors.

For quite a couple of years the Aircraft Industry has been unable to guarantee their Customers any reasonable figures of seaworthiness for flying-boats.

The Rohrbach Metall-Flugzeugbau G.m.b.H. was the first firm, ever since the construction of flying-boats was started by the industry all over the world, to guarantee, for the three "Rohrbach-Romar" ships then under construction seaworthiness in a sea up to force 5 (Beaufort).

On December 12th and 13th, 1928, the "Rohrbach-Romar" underwent her seaworthiness trials, under supervision and to the entire satisfaction of the "Deutsche Versuchsanstalt für Luftfahrt and Deutsche Lufthansa A.G.," who satisfied themselves of the excellent manœuvrability of the ship in rough waves.

ROHRBACH METALL-FLUGZEUGBAU, G.m.b.H.,
BERLIN, N. 65.

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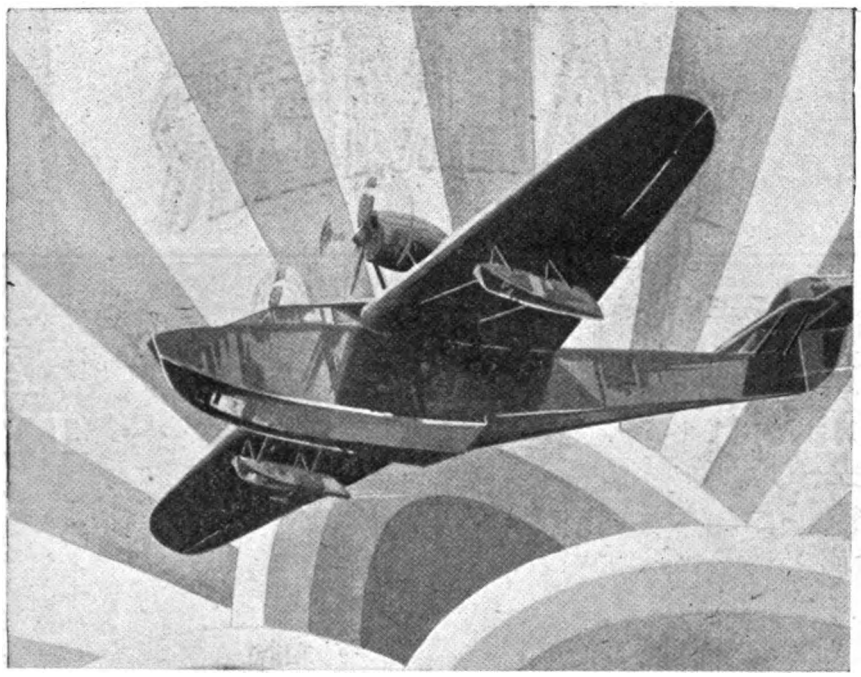

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in the design and production of aircraft, in addition to a century's work in marine construction, is the foundation upon which rests the new and modern organisation of Saunders-Roe.

Since the pioneering days of flying there have been Saunders seaplanes; and the name of Roe, associated as it is with the design of Britain's earliest aeroplanes, becomes, as it were, the final symbol to complete the hall-mark of proficiency in aeronautical research and design.

The flying-boats, seaplanes, and amphibians produced by the house of Saunders-Roe are backed by a combination of experiences, ideas, and achievements, together unique and outstanding in the sphere of aeronautical engineering. This vast constructional and servicing organisation is ready and well able to meet the world's demands for airworthy and seaworthy British marine aircraft.

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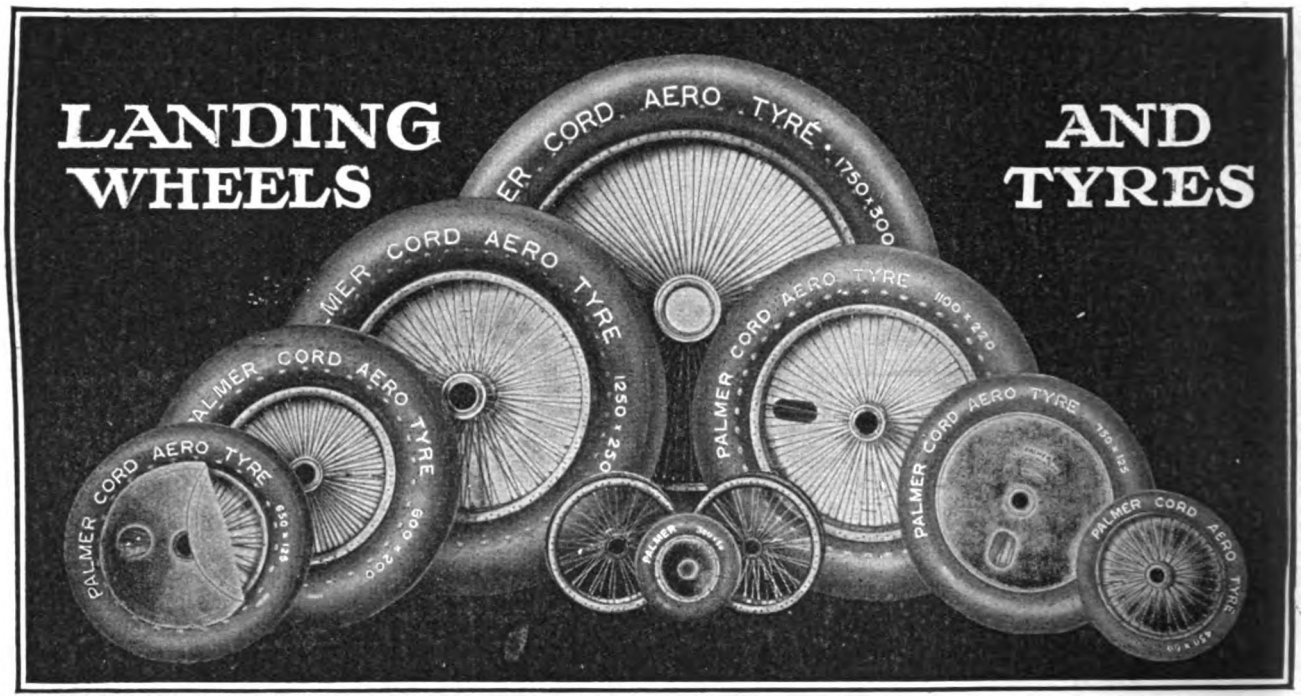

STANDARD SIZES.

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
"	195	130.	38.09	Central
300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
"	172	130.	38.09	Central
575×60	21	160.	28.	Central
"	180	150.	38.09	104/46
"	186	120.	34.92	Central
"	190	150.	38.09	Central
600×75	21	160.	28.	Central
"	180	150.	38.09	104/46
"	186	120.	34.92	Central
"	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
"	79	178.	44.45	Central
"	100	178.	38.09	132/46
"	101	178.	31.75	132/46
"	196	178.	55.	Central
600×100	188	120.	34.92	Central
"	304	150.	38.09	104/46
"	333	120.	34.92	Central
700×100	77	178.	44.45	132/46
"	92	185.	55.	135/50
"	95	185.	55.	Central
"	99	178.	38.89	132/46

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700×100	112	150.	38.09	Central
"	176	178.	44.45	Central
"	179	178.	55.	132/46
650×125	119	178.	55.	132/46
"	147	178.	55.	Central
"	188	120.	34.92	Central
"	336	178.	44.45	132/46
750×125	77	178.	44.45	132/46
"	92	185.	55.	135/50
"	95	185.	55.	Central
"	99	178.	38.89	132/46
"	112	150.	38.09	Central
"	176	178.	44.45	Central
"	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
"	162*	185.	55.	Central
"	163*	185.	66.67	135/50
"	169†	185.	55.	135/50
"	177	185.	55.	135/50
"	183	185.	55.	Central
"	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
"	174	250.	80.	Central
"	182	185.	55.	Central
"	187	220.	66.67	Central
"	201	185.	60.32	125/60

Tyre Size	Wheel No	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000×150	210	185.	60.32	Central
1000×180	148	220.	80.	Central
"	149	185.	55.	Central
"	155	220.	66.67	Central
"	166	185.	55.	125/60
900×200	107	185.	55.	Central
"	108	185.	55.	125/60
"	128	220.	66.67	Central
"	137	250.	80.	Central
"	157	185.	80.	Central
"	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
"	136	250.	80.	Central
975×225	192	185.	60.32	Central
"	194	185.	55.	125/60
1100×250	364	220.	60.32	Central
1250×250	314	250.	80.	Central
"	154	304.8	101.6	Central
1500×300	305	304.8	152.4	Central
"	306	304.8	101.6	Central
1525×325	197	304.8	101.6	Central
1750×300	139	400.	152.4	Central
"	191	350.	150.3	Central
1750×350	193	400.	125.	Central
2000×450	363	500.	152.4	Central

*Wheels Nos. 161, 162, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings. Grease gun equipment is now a standard fitting on all wheels. (A/SL)

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The fuel used was an Ethyl mixture of Pratts' supplied by the Anglo-American Oil Company.

The instruments, of course, were supplied by Smiths Aeronautical Instruments, which is the new branch of S. Smith and Sons (M.A.) Ltd., which has been formed as a separate entity under the guidance of Mr. J. E. Chorlton to supply the aeronautical community.

Lodge Plugs were used. This is the first time since the War that this famous firm has made a serious attempt to be represented in an air race, and one congratulates them on their instant success.

So far as one can gather no one appears to have made the carburetter. It was a miracle and just happened. Anyhow it never popped a pop.

The magnetos were made by the famous firm of British Thomson Houston Co. Ltd., which have made nearly all the magnetos for successful British aircraft since the War.

The dope was supplied by Cellon Ltd., who thus continue to keep unbroken their record of having doped all British Schneider winners. They doped many of the passengers on the *Orford* as well.

The general mess-up on leaving the *Orford* was made by the Orient Line and the Southern Railway between them and the subsequent remarks made by the unfortunate passengers are unprintable.

The broadcasting of the race was made by Sq. Ldr. Helmore who occasionally allowed Flt. Lt. Ragg to say a word (but very occasionally).

The course was made by the Schneider Trophy Committee, but having seen them in action one realises that they probably could not help it.

The mistake of anchoring the *Orford* so far off the course that the machines could only be seen in the distance was made by the Orient Line with the cordial co-operation of the Admiralty and the King's Harbour Master. [Plus the Marine Mind.—ED.]

The wet paint on the mast on which Mr. Joe Taylor of B.P. sat to hear the speeches was probably made by Mr.

SNAPSHOTS ON THE "ORFORD."—Left top,—The rush to see the first machine pass. Top right,—Col. and Mrs. Sempill, and M. Blériot, on the bridge. Middle,—Mr. North of Boulton and Paul's and Mr. Pierson of Vickers'. Middle right,—The Belgian technical representative (left) and Herr von Hoeppner of the Aero Club of Germany. Bottom left,—Capt. Lamplugh of the British Aviation Insurance Group, and Major and Mrs. Beaumont, of Imperial Airways. Bottom right,—Col. Warwick Wright and Mr. Harold Perrin.

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Dick Ashley Hall and John Hall and Son (Bristol and London) Ltd. He *would* do that sort of thing. Anyway he left his dog at home.

The refreshments supplied at Capt. Charles Wilson's party on Saturday night were made by Messrs. Bollinger, Bass, Haig and other great patriots. No one was sufficiently interested the next morning to care who would supply the coffins.

All that beautiful crockery from the *Orford* which throughout the three days found its way to the bed of the Solent, and will make bathing at Ryde so perilous in the next few years, looked as though it was supplied by somewhere in Bond Street.

The pen with which this has been written was supplied by the office and has now come to an end.—G. D.

THE FLYING SQUAD COMPETES.

Eight foreigners, believed to be members of an international gang were arrested among the crowds of spectators at Portsmouth on Sept. 7 and on Sept. 9 were sentenced to three months' imprisonment each as suspected persons, and recommended for deportation. Two were Belgians, one a Spaniard, and five Italians.

In London two Italians were arrested on a charge of loitering for the supposed purpose of picking pockets on the night of Sept. 7 outside the London Hippodrome.

They were remanded on Sept. 9 at the Bow Street police court pending inquiries Both had come from Italy to see the Schneider Trophy Contest and had arrived back at Waterloo a quarter of an hour before they were arrested.

THE WEEK'S BEAUTIFUL THOUGHT.

The following letter from a woman reader has been sent to *The Daily Express*:—

Sir,—I wonder how many women wish, like myself, that some of the brains and energy that are brought to bear on perfecting speed machines and other horrors of modern progress might be diverted to solving the problem of, say, the extinction of the common house-fly?

(Mrs.) P. E. COPE.

A PORTSMOUTH BANQUET.

On Sept. 9 the Lord Mayor of Portsmouth, Councillor J. E. Smith, entertained at a civic banquet at the Portsmouth Guildhall the officers and men of the Italian Naval Squadron and the British and Italian pilots in the Schneider Trophy Contest.

The Lord Mayor presided, and among his guests were the Italian Ambassador, Admiral Rota, commanding the Italian Squadron, Colonel Bernasconi, Admiral Sir Roger Keyes, Commander-in-Chief, Portsmouth, Rear Admiral L. A. B. Donaldson, Rear Admiral Dunbar-Nasmyth, V.C., Air Commodore T. C. R. Higgins, etc. The Lady Mayoress entertained a large party of ladies who afterwards gathered in the balconies to listen to the speeches.

THE LORD MAYOR proposing the toast of "The Royal Italian Navy" welcomed Admiral Rota and the other representatives of the Italian Squadron and also the Italian and British aviators who flew in the Schneider Trophy Contest. He said that he was especially glad to welcome two of the Italian pilots who had competed in the Contest. The spirit of sportsmanship they had shown in circumstances of great difficulty had won for them the admiration of all. While naturally thrilled by the triumph of the British team we were stirred by the Italians' heroic fight against immense odds and sympathised with their bad luck.

THE ITALIAN AMBASSADOR, responding, expressed his admiration of the splendid performance of the British team and renewed his congratulations to the R.A.F., Flg. Off. Waghorn and his colleagues, to the Supermarine Company and to the Rolls-Royce Company. He said that the Italian team came over prepared to be beaten after a succession of misfortunes, but added that he personally insisted that they should come. In this he had an easy task as he felt, as everybody in Italy felt, that it would be a test of friendship and sportsmanship to give to the contest the chance of a competition. In such a contest it is not only the victory that counted. It is also a glory to have been able to try to reach this victory. As the British Prime Minister said at the presentation ceremony on the previous Saturday, he reiterated that Italy will do its best, as Great Britain will do, to win the next contest.

ADMIRAL ROTA, replying for his squadron, thanked the Lord Mayor for the splendid hospitality which had been shown them by the City of Portsmouth. Referring to the Schneider Trophy Contest, the Admiral said that what struck him most was the liking of the British people for a struggle of any kind. The Italians would begin their activities for the Schneider Trophy by copying the wonderful qualities of the British victors and trying to follow them. They intended to compete for the trophy again at an early date.

CAPT. W. P. HALL, M.P., proposed "The Italian and British Air Services." Air Commodore Higgins replied for the R.A.F. and Col. Bernasconi for the Regia Aeronautica.

At the invitation of the Lord Mayor Flg. Off. Waghorn also made a brief speech.

THE LAST WINNER.—Flt. Lt. Webster, Winner in 1927, watching from the "Orford" the smashing of his records.

THE WORLD'S SPEED RECORD.

On Sept. 10 the Royal Air Force succeeded in beating handsomely the World's Speed Record held by Major de Bernardi at 318 m.p.h.

The two pilots chosen to make the attempts were Sq. Ldr. Orlebar, the Officer Commanding the High Speed Flight, and Flt. Lt. Stainforth, the reserve pilot for the Schneider Trophy Team. The former flew the Supermarine-Rolls Royce S.6 and the latter the Gloster-Napier VI.

Flt. Lt. Stainforth made the first attempt and covered the 5-kilometre course five times. His best four laps were as follows: 351.3 m.p.h., 328.3 m.p.h., 336.2 m.p.h., and 329.3 m.p.h., making an average speed of 336.3 m.p.h.

Sq. Ldr. Orlebar made four flights over the course and his speeds were:—368.8 m.p.h., 345.3 m.p.h., 365.5 m.p.h., and 343.7 m.p.h.—making an average of 355.8 m.p.h.

Bad visibility made accurate flying difficult, and fresh attempts were to be made later in the day.

The Supermarine S.6 was being fitted with a new airscrew, when the message reported above was telephoned by THE AEROPLANE's representative at Calshot.

PERADVENTURE.

Dead Past, nor a dumb Hereafter, let no man vex in vain;
Only our loosing laughter keep for our changeless gain;
Star-gift, and the life-sweet looted; the loves and the roses' musk
(And hidden the hopes unfruited in the day-forgiving dusk).
Be the reckoning all as the rueing, foredone where the Moment stands,
For this is our Noon of Doing, and nothing shall stay our hands.
And the losing or winning never, nor hap of the judgment won,
Shall count in our stark endeavour, but only the race we run.

G. DE H.-S.

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THE ROYAL AIR FORCE.

The London Gazette.

September 3.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—Plt. Off. R. C. Warner is promoted to the rank of Flg. Off. (June 30).

Wing Cdr. H. Blackburn, M.C., A.F.C., is placed on the retired list (Aug. 29).

Lt. J. F. M. Robertson, R.N., Flg. Off., R.A.F., ceases to be attached to the R.A.F. on return to Naval duty (Aug. 16).

ACCOUNTANT BRANCH.—Sq. Ldr. E. W. Gregory, M.C., is placed on the half-pay list, Scale A., Aug. 31, to Nov. 4, 1929, inclusive.

MEDICAL BRANCH.—The following Flg. Offs. are granted perm. comns. in this rank (Sept. 4):—G. H. J. Williams; J. C. Neely, B.A.; J. Kemp, M.B. Flg. Off. J. M. Ritchie, M.B., is promoted to the rank of Flt. Lt. (Sept. 1). Flg. Off. A. C. Lysaght resigns his S.S. comn. (Sept. 3).

CHAPLAINS' BRANCH.—The following Chaplains are promoted to the relative rank of Wing Commander:—The Rev. M. H. Edwards, O.B.E., B.A.; the Rev. C. A. B. Allen, M.A. (Aug. 6); the Rev. G. H. Collier, M.A. (Aug. 12).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—The following Plt. Off. on probation of the Special Reserve are confirmed in rank:—P. F. Canning (June 8); G. D. S. Horsfall (July 2). The following Flg. Offs. relinquish their commissions on completion of service:—W. J. McDonough (Feb. 22); J. Spooner (Aug. 27). Flt. Lt. H. M. Ireland, D.F.C., relinquishes his commission on completion of service, and is permitted to retain his rank (Aug. 5). Flg. Off. H. Tulloch relinquishes his commission on account of ill-health, and is permitted to retain his rank (Sept. 4). The commission of Plt. Off. on probation R. P. Donnelly is terminated on cessation of duty (April 21).

MEDICAL BRANCH.—Flt. Lt. J. D. Driberg is granted a commission in Class D.D. (Aug. 20). Sq. Ldr. H. Harvey relinquishes his comn. on completion of service, and is permitted to retain his rank (Aug. 1).

AUXILIARY AIR FORCE.

MEDICAL BRANCH.—No. 601 COUNTY OF LONDON (BOMBER) SQUADRON.—Flt. Lt. J. D. Driberg resigns his commission on appointment to the Reserve of Air Force Officers (Aug. 20); Flt. Lt. E. D. W. Reid is transferred from General Duties Branch (Aug. 21).

Flight Cadetships and Scholarships.

The Air Ministry announces that Aircraft Apprentices N. C. S. Rutter, S. C. Widdows, and C. W. Williams, from No. 1 School of Technical Training (Apprentices), Halton, and Aircraft Apprentices A. D. Messenger and F. C. Daubney, from the Electrical and Wireless School, Flowerdown, have been selected for cadetships at the R.A.F. College, Cranwell, on the result of the examinations held on completion of their three years' training as aircraft apprentices.

"Sir Charles Wakefield" Scholarships valued at £75 each have been awarded to Flight Cadet J. R. MacDonald on the result of the recent competitive examination for entry into the R.A.F. College, and to Flight Cadet N. C. S. Rutter. T "Hyde-Thomson Memorial Prize," valued at about £2 has been awarded to Flight-Cadet A. D. Messenger.

No. 13 (Army Co-operation) Squadron.

The Headquarters of No. 13 (Army Co-operation) Squa ron, which has been temporarily located at Odiham, clos on Aug. 17, and re-opened at the R.A.F. Station, Andov on Aug. 19.

Central Flying School Categories.

The following officers and airman pilots have been categorised, as follows, from the dates against their name

A.2 TO A.1.—Fl.-Off. the Earl of Bandon, Aug. 15; 973 F Sjt. McCleery, W. R., Aug. 15; 352302 Sjt. Bonar, E. V Aug. 15.

B. TO A.2.—Fl.-Lt. F. W. Long, Aug. 23; Fl.-Off. G. Walker, Aug. 15; 318362 Sjt. Jurdon, J. E., Aug. 15.

The Late Flight Lieutenant Kinkead.

Air Vice-Marshal F. R. Scarlett, C.B., D.S.O., who w Chairman of the Kinkead Memorial Committee, has ceived a letter from Mrs. Kinkead, the mother of the la Flight-Lieutenant S. M. Kinkead, D.S.O., D.S.C., D.F.C expressing her deep appreciation and regretting that s is unable to thank individually all those who subscribed the Memorial, and asking him to convey her thanks to al

A New Member for the Caterpillar Club.

Flt. Lt. W. E. Purdin, who is attached to the School Photography at Farnborough, was forced to jump from l single-seat machine on Sept. 5. Flt. Lt. Purdin land safely by parachute, the machine crashing on some op common land.

The R.A.F. Swimming Association.

The R.A.F. Swimming Championships will be held at George's Baths, Buckingham Palace Road, next Friday, Se 13, at 7.45. The events will include the final of the int Unit water-polo championship between Digby and Mansf an invitation relay race between some of the leading Lond Clubs and a display of swimming by the Hammersmi Ladies' Swimming Club. The prices of admission are 2s. and 1s.

THE DEATH OF A PIONEER.

The Times of Sept. 6 reports that a Latvian military aer plane crashed on Sept. 5, killing two pilots, one of whor M. Skaubit, was the first Latvian to hold a pilot's licence.

AIR DEFENCE.—The Air Officer Commanding in Chief, Air Defence of Great Britain (Air Marshal Sir Edward Ellington, K.C.B., C.M.G., C.B.E.), with the Officers of No. 601 (County of London) (Bomber) Squadron, Auxiliary Air Force, in camp at Lympne, August, 1929. Back row (left to right): Flg. Off. R. F. MacLatchy, M.D., R.A.F.; Plt. Off. B. S. Thynne; Plt. Off. I. A. Murray; Plt. Off. P. Du Cane; Flg. Off. R. Bellville; Plt. Off. Ward; Flg. Off. J. S. Schreiber; Flg. Off. G. J. C. Mahony, R.A.F.; Flg. Off. A. G. Haward. (Seated): Flg. Off. H. N. St. U. Norman; Flg. Off. W. F. Langdon, R.A.F.; Flt. Lt. E. D. W. Reid; Flt. Lt. H. N. Thornton, R.A.F. (Officer Commanding); Air Marshal Sir Edward Ellington, R.A.F.; Flt. Lt. S. B. Collett; Air Commodore E. L. Gerrard (Commanding No. 1 Air Defence Group, R.A.F.); Flg. Off. J. J. Parkes; Flg. Off. R. G. Shaw, D.F.C. (Seated on the ground): Plt. Off. W. E. Windham; Plt. Off. T. L. E. B. Guinness; Plt. Off. N. R. W. Seely; Plt. Off. E. A. Huntingdon-Whitely.

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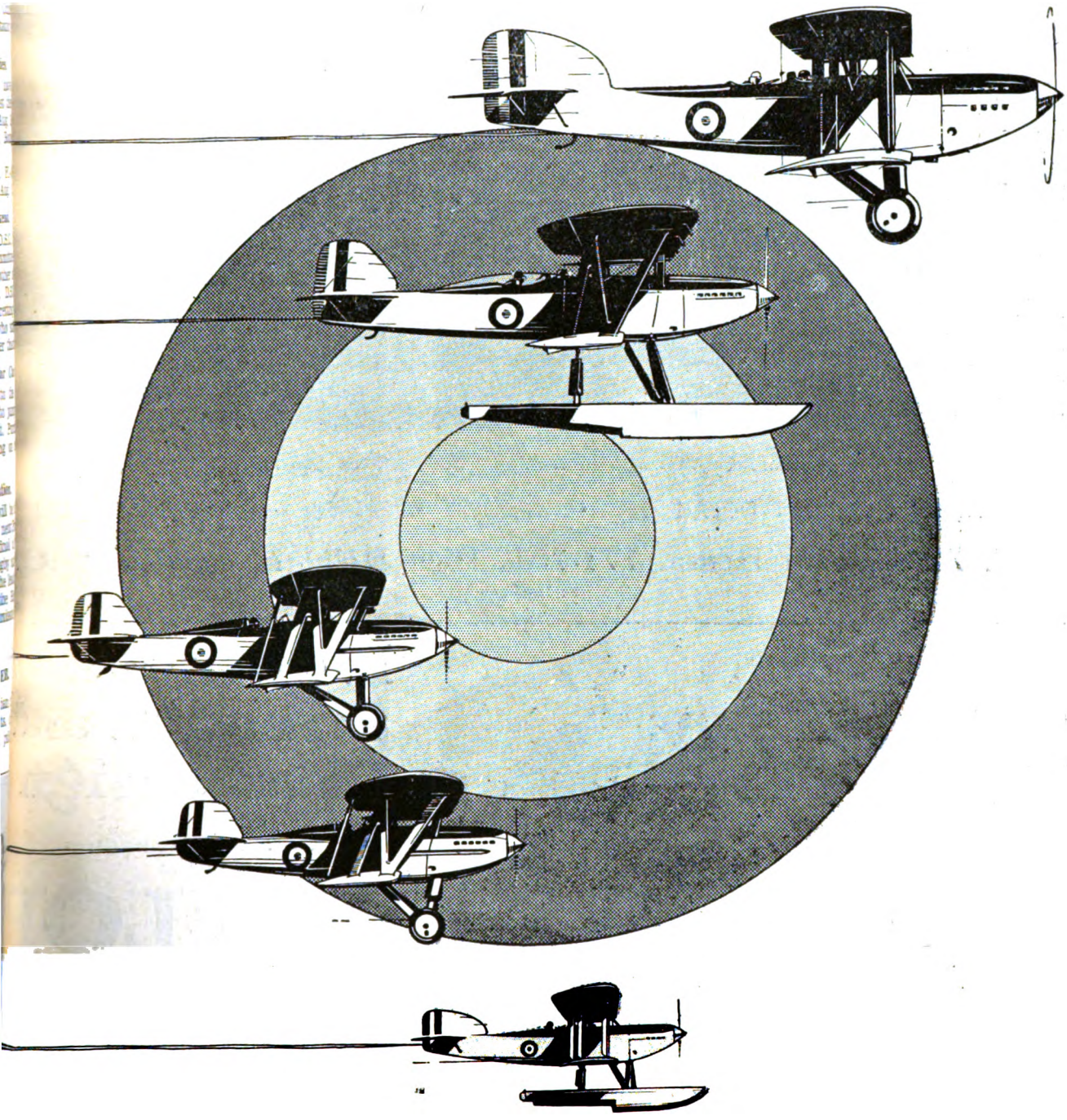

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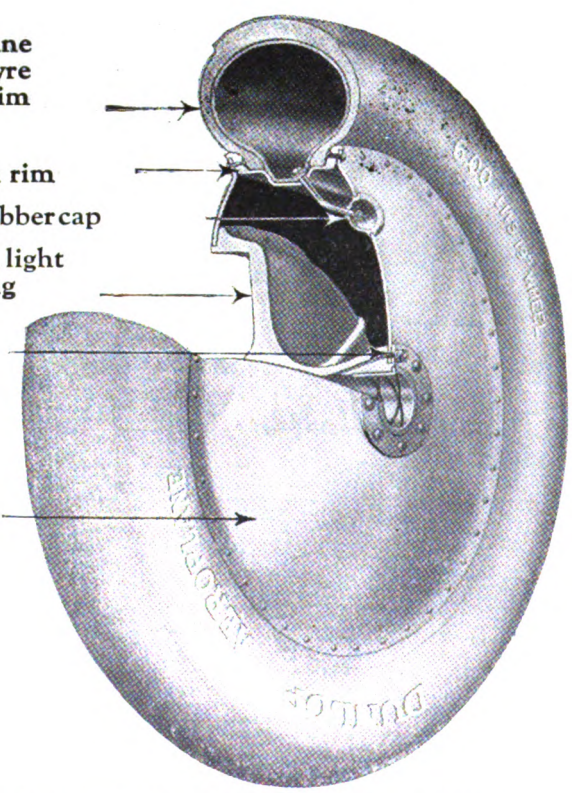

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

THE CLACTON DISPLAY.

The third Air Display organised by the Brooklands School of Flying was held at their Clacton Aerodrome on Aug. 28.

Beginning at 11.00 hrs., a huge crowd, which overflowed all the enclosures and eventually surrounded the aerodrome, were thoroughly entertained throughout the day by a continuation of events following closely on each other.

The proceedings were opened by the Chairman of the Clacton Council (Councillor J. E. Ball, J.P.), who severed a ribbon tethering Capt. E. A. Jones's Avro, releasing it to lead a formation flight over the sea-front and town. Two Siskin machines then appeared overhead and whetted the crowd's appetite by giving a display of loops and slow rolls.

Sir Horace Plunkett, Bart., a member of the Senate of the Irish Free State, flew over from Brooklands accompanied by Capt. H. D. Davis, A.F.C., the Managing Director of the School. And other visiting pilots included Mr. Mok, a Chinese graduate of the Brooklands School. Mr. George Murray, who gave a splendid display of aerobatics; Messrs. Broad and T. Rose (of Pratts), Miss Winifred Spooner, Mr. Nieuwenhuizen and Mr. Hanstock. Mr. G. De Havilland, Junior, also paid a flying visit.

Bombing exhibitions were given by Capt. Davis, Capt. Jones and Mr. Murray, and several direct hits were made on a car and motor-cycle combination.

Mr. Broad then gave a splendid display of aerobatics in his usual expert manner, and Mr. John Tranum made a wonderful parachute jump into the middle of the aerodrome from Capt. Davis' Moth, in spite of a badly damaged ankle, sustained in a motor-cycle accident two days previously. The crowd thoroughly appreciated his sportsmanship in jumping despite this disability and gave him the reception he deserved when taken round the enclosures.

On the whole the Display was highly successful in every respect and is certain to be followed by others.

It will be remembered that the first Display was held at Brooklands and the second at Maidenhead.

THE LAST CIVIL MEETING AT FILTON.

The Bristol and Wessex Aeroplane Club will be holding an aerial Garden Party at Filton on Sunday, Sept. 22, to celebrate their successful tenure before moving during the coming winter to take over the new municipal aerodrome on the south side of the town.

Filton is now a Royal Air Force station and it is hoped that many who have visited the club in the past will come once more. All visitors will be assured of a hearty welcome and will be the guests of the club during the day.

There will be a bombing competition and various displays, including the Autogiro. Mr. H. S. Broad has also promised to give a show.

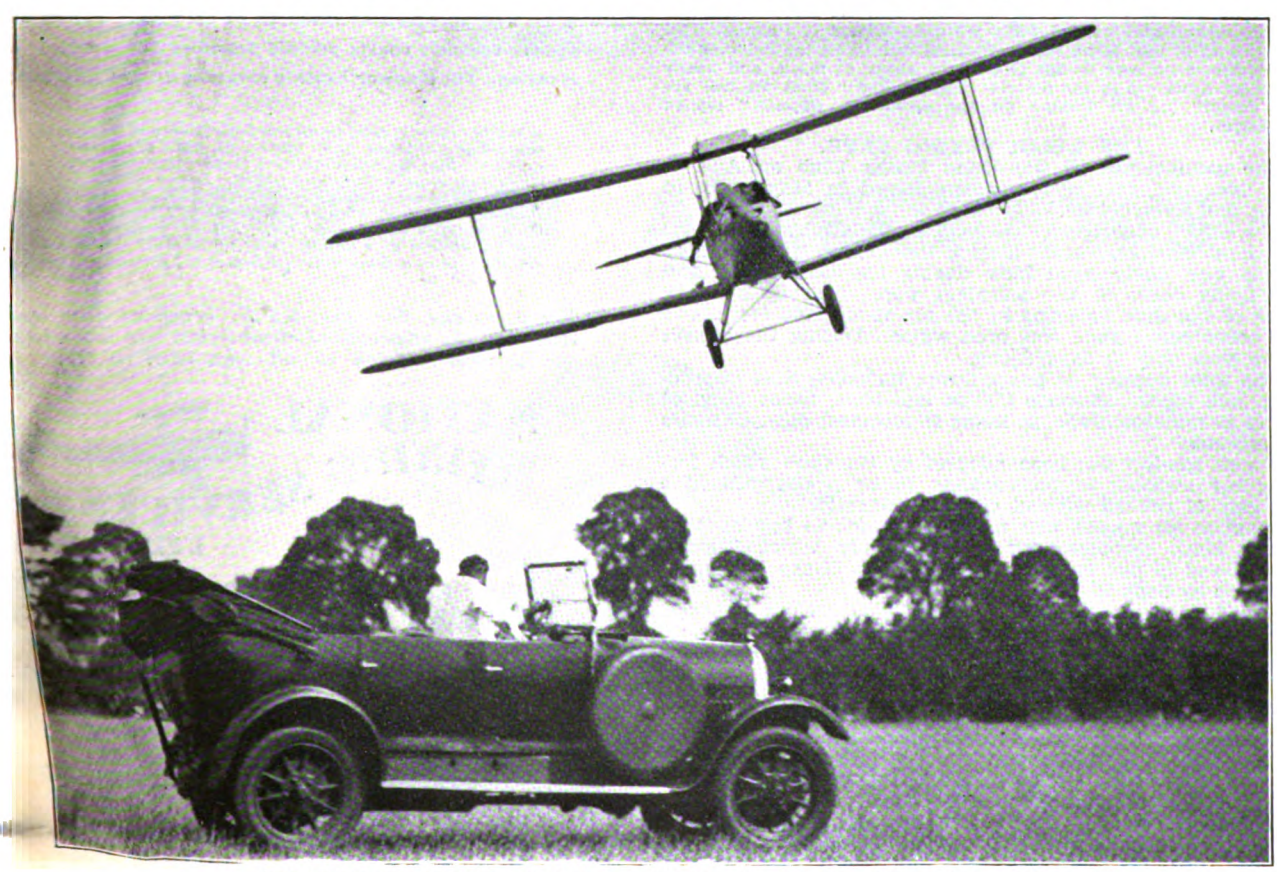
All entries for the competition will be made on the aerodrome.

TEACHING OUR ARYAN BROTHERS TO FLY.

The following has been extracted from the letter of a correspondent who is a member of a flying club in the East.

Almost all the Indians at the Flying Club were n.b.g. and I have seen Blank the Instructor come in and after struggling for words for a few seconds inveigh against some pupil for twenty minutes without repeating himself. Our particular pet was a Babu whom we will call after Mr. Kipling's hero, Huree Chunder Mookerjee, and those of us who were privileged to be present will never forget the last morning he turned up at that aerodrome. He had done about twelve hours' dual at another Club and about ten hours at this one (and walked about the town all day wearing flying goggles and a flying topi with the 'phones hanging down in front—a really good advertisement for the Club!).

On this particular morning the wind was coming bang across the tarmac towards the hangar. Blank and Mookerjee climbed in, the former looked at me and raised his eyes to Heaven and told the other to take off. Mookerjee started off in the right direction about as slowly as the plane would taxi and had a good look at the circle and went round it,—to make sure it was all right presumably,—and then slowly went on till he came to the high trees on the far side of the flying ground. Blank, sitting in the front cockpit just behind the engine—very nice when the sun is 140° in the open—said nothing,



CUTTING IT CLOSE.—A Moth at Clacton in the Bombing Competition.

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AT CLACTON.—Sir Horace Plunket and Capt. Davis of the Brooklands School.

so he turned round and came back again. When he was *twenty yards* from the hangar he opened out suddenly and tried to take off, *down wind*. How Blank pulled her down and round I do not know.

Well, for a quarter of an hour he taxied round, occasionally opening out and doing a ten yards hop down or across wind. Finally Blank got fed up and took the plane up into the air. When he got about 100 feet up he gave over control again, and Mookerjee, under the impression that he had got a Westland Wizard or summat, tried to climb at 60 deg. When Mookerjee tried to land he hurtled over the aerodrome—bang over it—200 feet up at about 60 m.p.h. and nearly hit some scrub out in the desert. Blank asked "What the hell are you doing?" "I am looking for the aerodrome, Captain," replied Mookerjee.

THE DELHI FLYING CLUB.

The membership of the Delhi Flying Club on Aug. 1, 1929, was 189. Five new members joined in May, eight in June, and five in July.

The effect of the hot weather on the Club's operations has been distinctly bad. During the greater part of May a hot and dusty wind blew during the afternoons, and the flying hours in the mornings were spoilt by a heavy bank of hot dust hovering in the air about 1,000 feet above the aerodrome June was even worse. During the month there were only 13 days' flying.

The total number of hours flown, including dual instruction, solo flights, pleasure flights, and tests, were: May, 44 hours 30 minutes; June, 20 hours 25 minutes; July, 49 hours 50 minutes.

A new bye-law has been adopted by the Club which forbids any member or non-member to fly a Club machine for gain or reward without express authority.

In May, an appeal was made for funds to buy another Gipsy Moth aeroplane for the Club. Sir Victor Sassoon has offered to pay one-quarter of the cost if the balance is collected by Sept. 30.

The Hon. Secretary of the Delhi Flying Club is Major C. M. Grant Govan, the Instructor is Mr. Alan I. Riley, A.F.C., who is understood to have been formerly test pilot for the Westland Aircraft Works, and Vickers, Ltd., and the Ground Engineer is Mr. Clifford.

SIR CHARLES THE MUNIFICENT.

Sir Charles Wakefield, whose beneficence in the interests of Aviation is World-famous, recently offered a D.H. Moth to be competed for by the principal Indian Flying Clubs.

This machine has been won by the Bombay Flying Club who have sent Sir Charles the following cablegram:—

"The Chairman and members of the Bombay Flying Club having won the gift of the Moth aeroplane, express their grateful thanks for your munificent award for the furtherance of civil aviation in India."

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Not only is Hanworth one of the largest air parks in the country, but as a Country Club it is unexcelled. The Club itself provides first-class residential accommodation; lounges, dressing and drawing rooms, writing room, ballroom and an excellent standard of catering. Tennis and squash racquets courts provide facilities for outdoor recreation. The Hanworth estate covers an area of 230 acres.

A limited number of members are now being enrolled at the following rates: Flying Members, 5 gns. entrance fee, and 5 gns. annual subscription. Non-flying Members, 3 gns. in each case. For 1929, two-thirds of the annual subscription is rebated. Serving Officers of H.M. Regular Forces are admitted without entrance fee. Membership of Hanworth Club confers honorary membership of all other N.F.S. Clubs, and free use of every N.F.S. station. Private flying for qualified members costs as little as £1.1.0 an hour (3½d. a mile). Residential terms at Hanworth range from 5½ to 7 guineas per week.

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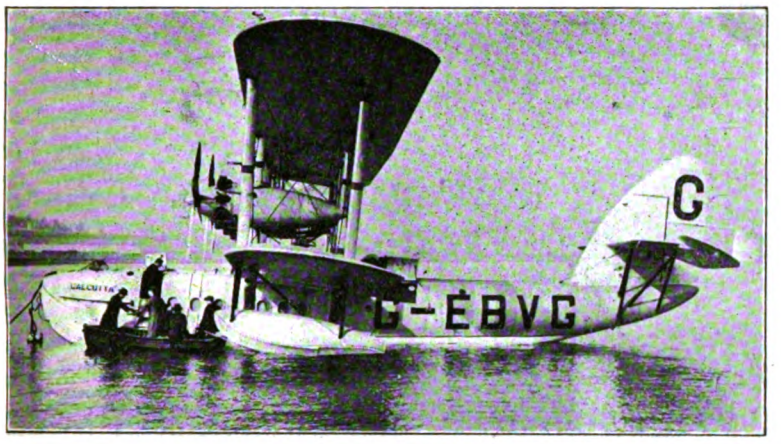

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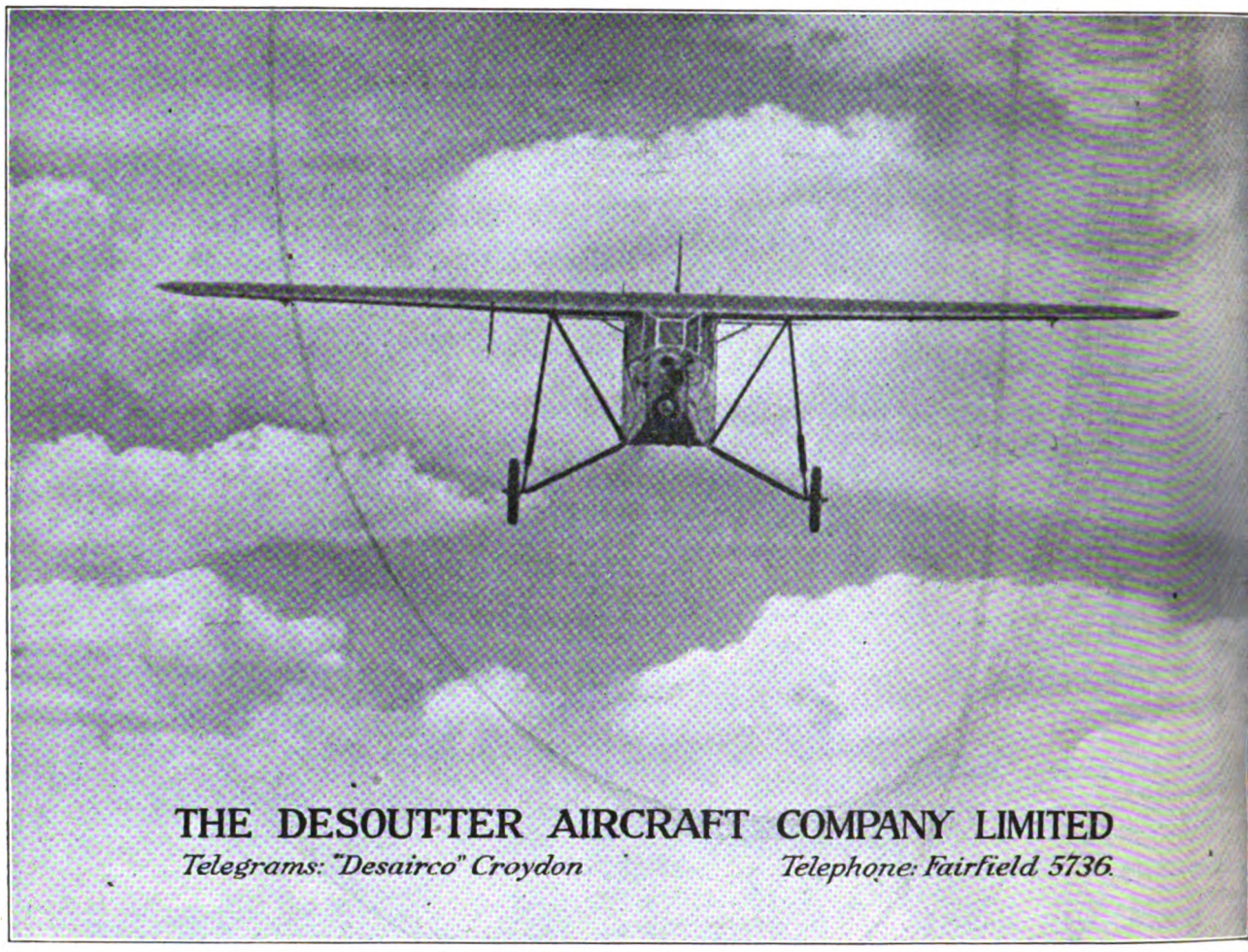

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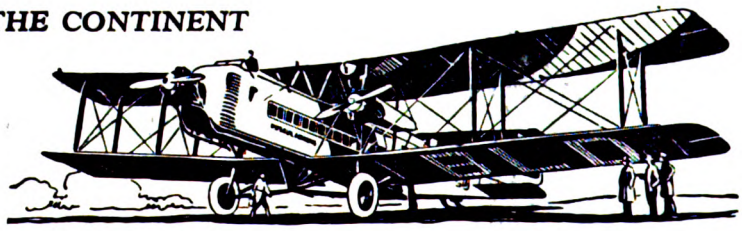

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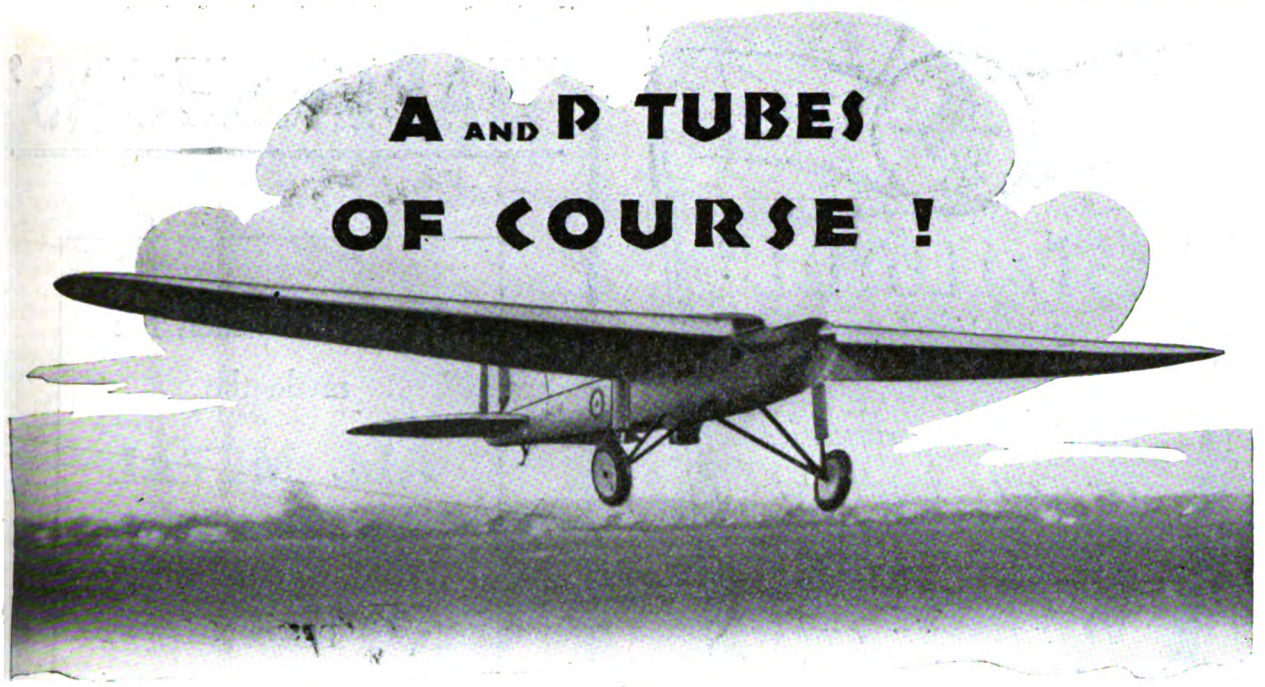

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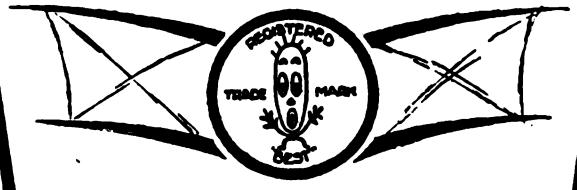

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COMMERCIAL AERONAUTICS.

THE "GRAF ZEPPELIN."

The *Graf Zeppelin* landed at Friedrichshafen on Sept. 4 at 8.48 hrs. after completing the journey from Lakehurst to Friedrichshafen in 67 hours 35 minutes.

The *Graf Zeppelin* flew round the World from Lakehurst to Lakehurst in 21 days 7½ hours and from Friedrichshafen in 20 days 4 hours. These times quite put Jules Verne's dream of Round the World in 80 days in the shade.

As a result of the *Graf Zeppelin's* transatlantic flights and the interest thereby aroused on both sides of the Atlantic the possibilities of a transatlantic airship service appear somewhat closer.

The Goodyear-Zeppelin Company of America are about to build two airships, which have already been designed, and the German company, the Luftschiffbau Zeppelin is proposing to build two. The American-built airships are to be used for a Transpacific Service and the German for Transatlantic use.

THE LOSS OF THE "CITY OF JERUSALEM."

The *City of Jerusalem*, a three-engined D.H. Hercules belonging to Imperial Airways Ltd., crashed while making a night landing at Jask on Sept. 6. The pilot, Captain A. E. Woodbridge, Mr. V. G. Bell, of the Malay States Forestry Dept., who was a passenger, and Mr. J. Court, of Imperial Airways, were killed. Mr. H. Bourne, the wireless operator, and Mr. H. C. Amor, the engineer, received burns, but are now progressing satisfactorily. They are expected to leave for Karachi by the first steamer.

The *City of Jerusalem* appears to have been late in arriving at Jask and therefore the pilot found it necessary to ignite the wing-tip flares for landing in the dark. One of these flares seems to have set fire to the wing and thus caused a crash by burning away the wing-tip and aileron on that side.

Lord Thomson, Secretary of State for Air, has sent the following telegram to Sir Eric Geddes, Chairman of Imperial Airways, Ltd:—"Air Council learn with profound regret of accident to air liner at Jask and loss of three lives involved."

The Postmaster-General announces that as a result of the accident the outward-bound Indian mail which left this country on August 31 has been totally destroyed.

AN AMERICAN AIR LINE DISASTER.

The wreckage of a Ford Tri-motor Monoplane belonging to Transcontinental Air Transport Lines, the *City of San Francisco*, was discovered near the top of Mt. Taylor, New Mexico, on Sept. 8.

The machine had been missing since Sept. 3 when it left Albuquerque, New Mexico, for Los Angeles.

Five passengers and the crew of three were all dead.

The aeroplane appears to have been forced from her course by a storm and to have struck the hill-top while travelling at full speed.

The wreckage caught fire, and reports say that the metal fuselage was destroyed. This seems probable, as aluminium burns fiercely when subjected to intense heat.

"THE AIR PILOT."

Volume I of the 1929 edition of *The Air Pilot* has now been published by H.M. Stationery Office from whom it may be obtained or from THE AEROPLANE Book Dept., Cannon House, Pilgrim Street, E.C.4, at the price of 12s. 6d. net.

As a result the Monthly Supplements have ceased with the issue of No. 55. A new series of supplements, entitled *The Air Pilot (Volume I) Monthly Supplement*, will be published, the first number of which will appear in September.

The loose-leaf system of binding has been retained for the 1929 edition, so as to facilitate the insertion of amendments and additions. An alphabetical index has been included.

A CALCUTTA FOR FRANCE.—On Sept. 3 a Short Calcutta 14-passenger flying-boat (three Bristol Jupiter engines) which has been ordered by the French Government was tested at Rochester prior to being handed over. In the group above are, from left to right: Capt. Mayer of Short Bros., M. de Fleuriau, the French Ambassador, Lieut. de Vaisseau Sala, the French Air Attaché, Mr. Oswald Short, Managing Director of Short Bros. Ltd., and Mr. Mayer of the Bristol Company.

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The new volume is divided into two parts. The first is devoted to Great Britain and Northern Ireland, the second to the Irish Free State. Under the headings of *General Information, Pilotage Directions, Meteorological Services, Radioelectric Services,* and *Air Stations,* is a mass of information which is necessary to all concerned with air pilotage.

CIVIL AIR MAPS OF GREAT BRITAIN.

Air Ministry Notice to Airmen No. 5 of the year 1929 announces the placing on sale of certain additional sheets of the civil air maps of Great Britain. These are as follows:—

(i) *The Ordnance Survey Ten Mile Map of Great Britain (Special Air Edition).*—

Sheet 1.—That portion of Scotland lying N. of Latitude 55°40/N.

(ii) *The ¼ inch Ordnance Survey Map of England and Wales (Civil Air Edition).*—

Sheet 5.—That portion of England and Wales lying between Latitudes 52°34/N. and 53°36/N., and between Longitudes 0°45/W. and 3°21/W.

Sheet 6.—That portion of England lying between Latitudes 52°32/N. and 53°36/N., and E. of Longitude 0°45/W.

Sheet 8.—That portion of England and Wales lying between Latitudes 51°32/N. and 52°34/N., and between Longitudes 0°48/W. and 3°20/W.

Sheet 9.—That portion of England lying between Latitudes 51°30/N. and 52°32/N., and E. of Longitude 0°48/W.

Sheet 11.—That portion of England and Wales lying S. of Latitude 51°32/N., and between Longitudes 0°50/W. and 3°19/W.

Copies of these maps may be obtained through the usual agents or through The Aeroplane Book Dept., Cannon House, Pilgrim Street, E.C.4.

MEMENTO MORI.

A memorial to the late M. Maurice Bokanowski, the former French Minister of Air, who was killed in a flying accident, was unveiled at the Ministry of Air in Paris by M. Laurent-Eynac, the present Minister, on Sept. 2.

It was the death of M. Bokanowski which considerably accelerated the reorganisation of French Civil Aviation resulting in the purchase of foreign-built aircraft for use by the subsidised French Air Lines,—to encourage French constructors.

THE KAITAK AERODROME, HONG KONG.

A *Reuter* message from Hong Kong dated Sept. 5 states:—

In the Legislative Council to-day the Colonial Secretary announced that the Air Ministry would co-operate in the building of a shed hangar at Kaitak Aerodrome. The contributions of the Imperial Government towards the construction would amount to £100,000.

A ROYAL PATRON FOR HULL.

It is stated that Prince George, who is to be present at the air pageant arranged for the opening of civic week at Hull, will arrive and depart by air. He will fly from Croydon in the morning and land at the Hedon aerodrome.

THE JUNKERS C.I. ENGINE.

On Friday, Aug. 30, the Junkers aircraft fitted with the the Junkers compression-ignition oil-engine was sent on its first utility flight, from Dessau to Cologne. The flight was uneventful and took 3 hours non-stop.

SIGHT-SEEING FOR CHARITY.

King Edward's Hospital Fund for London have arranged for a special visit to the Air Port of London, at Croydon, on Saturday, Sept. 21, at 2.30 p.m.

The party will be conveyed by omnibus from Charing Cross Underground Station, Victoria Embankment, leaving at 2 p.m.

They will be able to witness the arrival and departure of Continental air liners and to inspect the control tower from which the taking-off and landing of outgoing and incoming aeroplanes are regulated, and the lighting equipment and movement of aircraft in the vicinity are controlled.

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Tickets, price 7s. 6d., can be obtained from the Secretary, King Edward's Hospital Fund for London, 7, Walbrook, E.C.4.

By arrangement with the Surrey Flying Services, visitors will be given an opportunity of taking short flights over the surrounding district at an additional charge of 10s. 6d.

WHAT A HOPE!

A report in *The Times* of Sept. 10 states that invitations have been issued by the French Aero Club to the British and Italian Air Departments to compete for a cup to be offered by the club at La Baule on Sept. 15 for racing seaplanes.

HOW TO PUSH A WIRE ROUND A CORNER.

All aircraft drawing offices and similar high-brow concerns interested in the production of better and better aircraft, know the sickening business of taking control systems round corners.

An extremely simple and ingenious gadget has been devised which makes bends and curves a positive holiday for the P.B.D. This device is now approved for use on British aircraft by the Air Ministry, and is known as the Arens Control, and is being looked after in this country by Mr. L. H. Freeman, of 52, Russell Square, London, W.C.1.

The Arens Control consists essentially of a flexible multi-strand, multi-lay wire cable, covered with a spirally wound wire cover (that is to say, essentially a Bowden mechanism), both of which pass through a brass tube bent through the required angle at a standard radius. The ends of the cable and wire cover are sweated to screwed studs for the attachment of the tubes of the control system.

When a compression load is put on the system, it is taken through the spirally wound cover, and when the system is in tension, the flexible cable takes the stress.

The Arens Control was produced in America, and a sufficiently impressive guarantee of the device's value is the fact that American aircraft firms of such calibre as Boeing Curtiss, Keystone, Wright, Laird and Fokker, all use the Arens Control.

The whole mechanism works very easily, and the losses due to friction are small, though forced lubrication of the grease-gun type can easily be fitted. The Arens Control can be made to suit any particular conditions, and can be designed to transmit loads through any complicated system of curves.

[Something very like it, but with a flexible outer casing instead of metal tube, was put on the market in 1903, or thereabouts, and gave a practical flexible push-and-pull mechanism. Unfortunately it was killed by the Bowden patent.—C. G. G.]

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 24, Monday, 40, Tuesday, 41, Wednesday, 43, Thursday, 37, Friday, 37, Saturday, 34.

Imperial Airways Ltd.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 100, passengers 930, freight 36 tons. India Mail: inward, 4 passengers, mail 754 lbs., outward, 1 passenger, mail 726 lbs.

Air Union:

Paris—London and return: Machines 73, passengers 324, freight 26 tons.

K.L.M.:

Amsterdam—Rotterdam—London and return: Machines 28, passengers 207, freight 15¼ tons.

Sabena:

Brussels—London and return: Machines 13, passengers 71, freight 31 tons.

Deutsche Luft Hansa A.G.:

Amsterdam—London and return: Machines 26, passengers 66, freight 8 tons.

Miscellaneous:

British Machines 11, passengers 11.

Foreign Machines 5, passengers 2.

Total number of trips by British Machines 111, carrying 941 passengers. Foreign Machines 145, carrying 670 passengers.

COMPARATIVE FIGURES.

Week ending Sept. 7:
Machines, 256; Passengers, 1,611; Crews, 582. Total personnel, 2,193.

Corresponding week, 1928:
Machines, 227; Passengers, 1,423; Crews, 397; Total personnel, 1,820.

Corresponding week, 1927:
Machines, 144; Passengers, 941; Crews, 266; Total personnel, 1,207.

Corresponding week, 1926:
Machines, 167; Passengers 657; Crews, 193; Total personnel, 850.

Corresponding week, 1925:
Machines, 136; Passengers, 607; Crews, 184; Total personnel, 791.

Corresponding week, 1924:
Machines, 137; Passengers, 572; Crews, 165; Total personnel, 737.

Corresponding week, 1923:
Machines, 138; Passengers, 549; Crews, 223; Total personnel, 772.

Corresponding week, 1922:
Machines, 121; Passengers, 411; Crews, 215; Total personnel, 626.

Corresponding week, 1921:
Machines, 96; Passengers, 224; Crews, 120; Total personnel, 344.

Corresponding week, 1920:
Machines, 115; Passengers, 285; Crews, 142; Total personnel, 427.

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AIR TAXIS.

Air Taxis Ltd., Stag Lane Aerodrome, Edgware. 'Phone: Colindale 6307.

Aerofilms Limited, Aerial Tours, Taxi Work, Aerial Photography, Air Survey. Colindale Avenue, Hendon, N.W 9 'Phone: Colindale 6183 and 6184.

British Air Lines.—Croydon Aerodrome. Cabin monoplanes for charter, day or night, all machines fitted with wireless telephony. Our own private car picks you up anywhere within a radius of 25 miles, free of charge. 'Phone:—Fairfield 5824. Telegrams:—Britalyne—Croydon.

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150, New Bond Street, W.1.
'Phones: Mayfair 2908. 'Grams: Talsundar, London.

AIRCRAFT INSTRUMENTS.

Coley Ltd., Aircraft Surplus. Main Oil Tanks, 10s.; Windscreen frames and brackets, without glass, 2s.; K.L.G. Plugs F.9, new in maker's boxes, doz., 9s. 9d.; Smith's Revolution Indicators, 600-2,600 r.p.m., with 3 ft. drive, 22s. 6d.; Cross Levels, 1s. 6d.; Dashboard new spotlamps, 2v. bulb and length of wire, 1s. 9d.; Above postage paid. Free List obtainable. Coley Ltd., Ordnance Works, Queen Elizabeth Road, Kingston-on-Thames.

AIR SURVEY.

Air Survey Co. Ltd., 39, Grosvenor Place, S.W.1 (Sloane 6048), Dum Dum, Calcutta, and Monkey Point, Rangoon.

The Aircraft Operating Co. Ltd., 8, New Square, Lincoln's Inn, London (Holborn 8131), and Bulawayo, Southern Rhodesia; Cairo, Egypt; Rio de Janeiro, South America: Contractors to the Ordnance Survey. Laboratories and Subsidiary Company for aerial photography in the British Isles. Aerofilms Ltd., Colindale Avenue, Hendon (Colindale 6183 and 6184).

AIRCRAFT FOR SALE.

Authorised Moth Agents.—Immediate delivery from stock. Demonstrations arranged.—Phillips and Powis Aircraft (Reading) Ltd., Reading Aerodrome. 'Phone Sonning 114.

G-AADC Coupé Gipsy-Moth, slotted wings. Done 150 hours. Just been overhauled. Complete with two 20 gns. compasses and Hot and Cold air supply and extra large locker. Offers to be made to Capt. W. R. Bailey, Cavalry Club. Machine can be seen and flown Stag Lane.

Mark IV Avian, 100 hours' flying, 8 months' old. £420. Southern Aircraft Ltd., Shoreham.

Parnall Pixie Monoplane. Bristol Cherub III. M/c: 16 hours. Engine: 241 hours. Fit for Flying, but C. of A. Expired. £150. Apply Bristol and Wessex Aeroplane Club Ltd.

SITUATIONS VACANT.

Experienced Jig and Tool Draughtsman required, with experience in Tooling for Metal Aircraft, including design of dies for draw benches and Rolls special Section Materials. Write stating age, experience and salary required, Box No. 5707, The Aeroplane, Cannon House, Pilgrim Street, E.C.4.

Section leader required on Aircraft. State age, experience and salary to Saunders-Roe Ltd., East Cowes, I.O.W.

Crown Agents for the Colonies. Colonial Government Appointments. Applications from qualified candidates are invited for the following posts. M/1328. Artisans qualified as Ground Engineers required for the Kenya and Uganda Government Railway for one tour of 20 to 30 months, with possible extension. Salary £300-£18-£360 a year. Free quarters and passages and liberal leave on full salary. Candidates, age 25 to 35, must be qualified Ground Engineers, holding an Air Ministry licence either in Categories "A" and "B" or "C" and "D." Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M 1328.

Wanted for the Colonies. Experienced Aeronautical Draughtsman able to undertake detail and Component Design. Full particulars and salary required to Box No. 5710, The Aeroplane, Cannon House, Pilgrim Street, E.C.4.

Engineering fitter-erector with experience of aircraft construction required for Inspection Dept. Preference to applicants with Ground Engineer's Licence "A" or "B." Give full details of experience and state wage required. Apply in writing to Chief Inspector, Westland Aircraft Works, Yeovil.

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Officers' Uniform R.A.F. Whipcord.—Excellent materials and workmanship. Jacket to measure £3 15s., slacks 30s., suit £5. Kings, Madeira Walk, Ramsgate.

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Aircraft Comprehensive Insurance.—Aeroplane owners requiring Insurance covering damage, 3rd party, occident and life *should first consult* Services and General Insurance Agency, 108, Victoria Street, Victoria, S.W.1. *Special terms according to experience.*

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R.A.F. personnel going overseas should advertise their cars, motor-bicycles, wireless sets and other unwanted gear in The Aeroplane, where it will be seen by everybody else in the Service, including those posted to the Home Establishment.

MISCELLANEOUS.

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Lt.-Col. G. L. P. Henderson, being unable to compete with Subsidisation and monopoly by continuing instruction at commercial rates, begs to announce the inauguration of a new flying Club for South London with a magnificent aerodrome at Addington on the 1st of October. Instruction will be given at competitive rates and every facility given to private owners for garage and repairs. All communications for particulars as to membership, etc., to Lt.-Col. G. L. P. Henderson, Croydon Aerodrome.

"Chequers Inn," Slaugham, Board Resident. Golf and coarse fishing half-mile. London 35 miles. Brighton 17 miles. Proprietor.

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SEPT. 18, 1929.

THE AEROPLANE

Incorporating

Aeronautical Engineering

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ON GETTING BACK TO WORK.

There is a legend, which like all other legends probably has some standing on fact, that when, after winning the Schneider Trophy at Venice in 1927, Squadron Commander James Bird and Mr. R. J. Mitchell returned to Southampton, to be received on their arrival by the Mayor and Corporation complete with bands and banners, as they stepped out of the railway carriage Sq. Cdr. Bird turned to Mr. Mitchell and said "Now Mitchell, we have finished with all this nonsense and we can start doing some real work." Whether the story is true or not the sentiment should be taken to heart at this moment by the British Aircraft Industry.

Besides the fresh glory which has been deservedly added unto the Supermarine firm by Mr. Waghorn's victory, and by Mr. Atcherley's records for 50 kilometres and 100 kilometres, and by Sq. Ldr. Orlebar's records for absolute speed over the straight three kilometres, the whole British Aircraft Industry shares in the reflection of that glory. British aircraft and British aero-engines have received a World-wide advertisement. And now is the Heaven-sent chance for our Industry to get to work and profit by that advertisement.

To Whom The Honour.

The British Aircraft Industry owes a deep debt of gratitude to Mr. Mitchell and to Mr. Royce for designing the aeroplane and the engine which have given us that advertisement.

With them must be joined Sq. Cdr. Bird, Chief Director and Mr. Hunn, the Works Manager of the Supermarine Works, and the Directors of Vickers (Aviation) Ltd., who, though they acquired the Supermarine Company after the winning machine had been designed and very largely constructed, have shown themselves as enthusiastic in their support of the Supermarine projects as if those projects had originated in Vickers House. Also we should acknowledge the work of Mr. Sidgreaves, the new Managing Director of Rolls-Royce Ltd., who has backed up so thoroughly the efforts of that great engine firm.

Hardly less gratitude is due to Mr. Wilkinson of the Napier Company and to Mr. Folland of the Gloster Company for the designs which produced the graceful Gloster-Napier machines. Though they did not win or capture records they did at any rate show a remarkable advance on

"IN THE RACE HE EQUALLED ALL THE PROMISE OF HIS FORM IN THOSE HIS ROUNDS, AND SO WITH NOBLEST PRIZE OF CONQUEST LEFT THE GROUND."—(Sophocles—*Electra*, 687.)

"THIS WAS WELL DONE!"—Sq. Ldr. Orlebar descending from the Supermarine-Rolls-Royce S.6 in which he beat the World's Speed Record on Sept. 10 (and beat it again on Sept. 12). Sq. Ldr. Orlebar remained in the cockpit while the machine was towed in.—(*"Aeroplane" photograph.*)

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Mr. R. J. Mitchell and Mr. F. H. Royce.

the performance of two years ago. Considering that the Napier Lion, which is a small engine compared with its great competitor, has apparently something between 500 and 700 less horse power it has put up a truly remarkable performance. The immense difference in power only shows how heavily we have to pay for added speed.

With them must be associated Mr. David Longden, who is the controlling power of the Gloster Company, and Mr. H. T. Vane of the Napier Company. And we must not forget Mr. Montagu Napier who, living in the South of France because of his health, yet manages to play a very important part in the technical developments of the Napier firm.

But there is one other man whose name, so far as one can remember, has not been mentioned in the praises which have been poured so deservedly on all who have had a hand in our victory. That is Mr. A. J. Rowledge, the chief of the design staff of Rolls-Royce Ltd. He cannot be allowed to pass unhonoured and unsung.

Mr. Rowledge is in the curious position of having been intimately concerned with the designs of both the Napier Lion and the new Rolls-Royce engines. While the Lion was being developed in the early years after the War, Mr. Rowledge was Chief Designer of the Napier firm. In 1921 he joined the Aero Engine Department of Rolls-Royce Ltd. and has been largely responsible for the development of the "F" type engine, which gave such a good impression on its first appearance at the R.A.F. Display a year ago and has since proved itself to be one of the finest engines in the World.

From the "F" engine has been developed the "H" engine, which is now coming into use as one of the R.A.F.'s chief high-powered engines, and from the "H" engine is more directly developed the "R" engine which was used in the Schneider machines.

Mr. Rowledge is such a retiring individual, and so seldom appears in public, that he is nothing like as well-known as he deserves to be. But on such an occasion as this he deserves full acknowledgment for his share in developing what are probably the two finest water-cooled aero-engines in the World.

MR. ROYCE.

Quite one of the most remarkable features of this recent orgy of high-speed development is the work of Mr. Royce himself. As his photographs show, Mr. Royce is by no means a young man. He was not a young man even when the late the Honourable Charles Rolls first induced him to make a motor-car at Derby in 1904. At that time Mr. Royce had already a high reputation as a builder of steam cranes.

His ideas of first-class workmanship, and the ideas of Charles Rolls on what a motor-car ought to be, produced what is acknowledged in all countries to be the World's finest motor-car. When the War came and the Rolls-Royce Company began building aero-engines they produced the Hawk, the Falcon and the Eagle engines,—which for reliability were the equal of any motor-car ever produced.

But Mr. Royce in those days apparently believed that excellence in aero-engines was to be got by a multiplicity of parts. There certainly was not a better engine in the World than the war-time Rolls-Royce. And there certainly never was an engine with so many parts to it. Where the Germans held a cylinder on by four large bolts, the cylinders of a Rolls-Royce were held by innumerable small studs. And where an American engine drove its ignition with a piece of flexible steel or a leather disc or a lump of rubber, the Rolls magnetos had an arrangement of worm-gears and internal- and external-splined shafts which must have cost nearly as much as a cylinder for machining.

Nobody was ever so prodigal in the expenditure of labour, but nobody ever got such results from it. To-day Mr. Royce might be described, with all due respect, as a reformed prodigal, and he is apparently all in favour of simplicity. Like Mr. Bill Stout, of Ford Aircraft fame, he seems to believe in the motto "Simplicate and add more lightness."

Those who have admired Mr. Royce's work for so many years will be glad to learn, on the authority of one of Mr. Royce's intimate friends, that so far from having any idea of retiring on his well-earned reputation, Mr. Royce has never been so full of ideas for the development and improvement of internal combustion engines as he is to-day, and that he has never had so great a capacity for work. Let us hope that for many years to come Mr Royce will continue to add to the honours of British aeronautical engineering.

SOME TECHNICAL GUESSES.

Though a definite specification of the winning Supermarine Rolls-Royce S.6 is not available, an American aircraft designer who has nothing to do with the machine or its engine has worked out a few figures about it which may be interesting.

His method of arriving at these figures is rather amusing. He takes the known performance of the machine, and a few minor facts which he has observed, and then constructs the machine from these details much in the way that archæo-zoologists construct a whole Brontosaurus from the odd tooth or toe-nail.

He says that the machine weighs about 5,100 lbs. loaded and that its wing loading is about 30 lbs. per square foot. The airscrew is about 3 metres (or 9 feet 9 inches) in length, with a pitch of 18 feet, and that it runs at about 1,400 to 1,500 r.p.m.

The Rolls-Royce "R" engine, he calculates, must have been giving about 1,500 h.p. in the Contest, running partly throttled down as it was, and it used about 95 gallons of petrol,—not including that consumed by Mr. Waghorn in going the extra three-quarters of a lap.

The compression ratio of the engine is 5.75 to 1, which for a racing engine is very low. But it is supercharged up to 11 lbs. per square inch,—on top of the ordinary atmospheric pressure of 15 lbs. per square inch. This, he says, is equivalent to flying at 16,000 feet *below* sea-level.

As the Gloster VI did not compete for the Trophy our friend was not so much interested in it, but he says that it weighs about 3,700 lbs. loaded, and that the Napier Lion gives about 1,250 h.p.

These figures do not pretend to be accurate, but they are probably not very far wide of the mark.

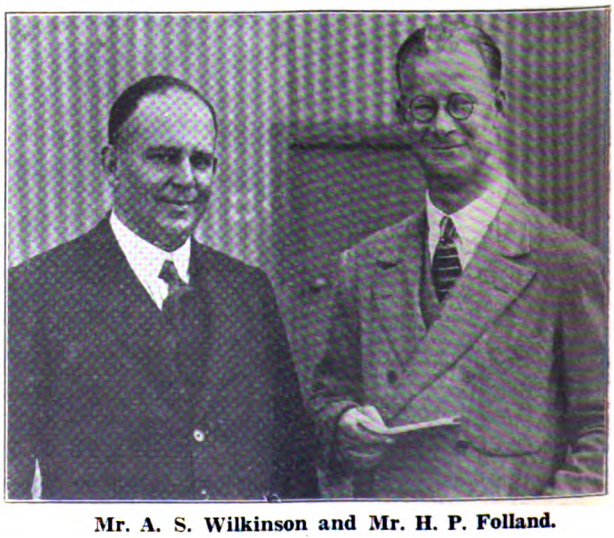
THE ITALIAN TROUBLES.

Details of the Italian machines are practically ungetable, but there are one or two points about them which are worth discussing, because they have at any rate something to do with their failure.

About the most notable fact about the two big Macchis (the 67s) in the Schneider Contest was that in spite of the undoubted skill of the Italian pilots they simply could not get round the corners. Those who were watching them at the sharp turn off Cowes said that their cornering was the most alarming thing they had ever seen.

One of them trying to take the corner on a normal banked turn, as our pilots did, staggered part of the way round the turn on the verge of spinning all the time. Then he gave it up as a bad job and had to straighten out into a dive from which he recovered only just in time to pull the machine up over Old Castle Point and steer it for Ryde.

Apparently much the same thing happened at the South-



Mr. A. S. Wilkinson and Mr. H. P. Folland.

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Proved Reliability!

THE greatest formation flight ever carried out was achieved by four Royal Air Force Supermarine "Southampton" flying boats, each fitted with two NAPIER engines, which flew from England to Australia, round Australia and back to Singapore—180,800 engine miles without mechanical trouble.

THE first non-stop flight from England to India was carried out by a Royal Air Force Fairey monoplane fitted with NAPIER engine—4,130 miles in 50 hours 38 mins.

These flights were carried out with production engines — the same as purchased by our clients.

NAPIER

The finest aero engine in the World

D. NAPIER & SON, LTD
ACTON, LONDON, W.3

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WHAT CANADA USES.—A Fairchild monoplane (Wright Whirlwind)—from the U.S.A.

sea turning point, when the machine created something like a panic by diving at the roof of a house in Southsea and missing it with little enough to spare.

The fact seems to be that the designer has got the side-areas of the machines hopelessly wrong. They are lumpy about the nose, which, when the machine begins to yaw out in turning, gives the nose a hold on the air so that the rear of the machine tries to spin round it.

They are too short in the fuselage for the size of the nose, and that deprives the pilot of his rudder control.

Besides that they have as much fin below the fuselage as they have above it. Consequently when they start a turn and begin to slide outwards the lower fin takes hold of the air and gives the machine a tendency to fall over itself towards the outside of the turn.

When you consider that as soon as the machine begins to slide out on the turn the side pressure on the floats and on this lower fin all tend to roll the machine over towards the outside of the turn, you then see why the very high fin and rudder of the Supermarine steadies the machine on the turn and gives our pilots the power to turn on a perfectly clean bank, as they do.

This defect in the controls probably accounts for the typical Italian turn about which our pilots have had so much argument. The Italians, finding that they cannot get round a turn on a normal bank, as our people do, fly straight at the turn, shove the nose of the machine up with the elevators, as if they were starting a loop, then throw it over on the left wing-tip, and dive back onto the course, in the way which during the War 1914-18 was called an Immelmann turn. They did it quite successfully at Venice, and the Macchi 52 did it quite well over the Solent. But the new Macchi 67s seem to be so bad on their controls that they will not even take their corners properly in that way.

The Proposed Record Attempts.

This known lack of control when cornering probably accounts for the declared intention of the Italians to go for speed records over a straight course. And if they cut down the weight and size of their floats in the way which Lieut.-Col. Bernasconi advocated in the statement attributed to him last week, quite possibly they may get back the speed record. That is all the more reason why we should now settle down to work steadily to get business all over the World on the strength of the advertisement which we have already got out of winning the Schneider Trophy and the accompanying records.

Even if our friends in Italy do get that speed record we can at any rate claim that we beat them fairly and squarely in the Schneider Trophy Contest by producing for that contest aircraft which were thoroughly air-worthy, which could take their corners as aeroplanes should, which would stand the battering of getting onto and off sea-water and not merely the glassy surface of a lake, which stood the requisite six hours of mooring-out afterwards, and which, thereafter, added some forty miles an hour to the existing World's Record for Absolute Speed.

But the question is whether the British Aircraft Industry will set out here and now to get the business which is waiting, or whether it will sit and bask in its reflected glory while somebody else gets the business.

How to Get Business.

There are several ways of getting the World's business in aircraft. The best of all would be a co-operative effort on the part of the whole British Aircraft Industry, in which each firm would contribute so much to the expenses of a World tour by a collection of British aircraft of all types,—a kind of travelling circus of British aeroplanes and pilots.

Each firm would send with that circus one aeroplane, plus spares, of the type which its Directors thought would be the most saleable. Each firm would also send a pilot and a salesman. The circus would visit every country where there was any possibility of selling aircraft, and each machine would have an absolutely fair chance of selling on its merits.

Such a scheme seems so obvious and so simple that neglect of it seems sheer imbecility. Unfortunately it is not workable, simply because the commercial community in this country happens to be predominantly Anglo-Saxon, and the Anglo-Saxon is temperamentally an individualist.

The Curse of the Country.

Co-operation never has succeeded in England. Even agricultural co-operative societies are a hopeless failure in this country. Such co-operative societies succeed in Ireland because the Irishman, being a Mediterranean, is by nature a conspirator and a co-operative society is a conspiracy against the local shopkeepers. Co-operation succeeds in Germany because the Germans, as the word implies, are by nature a brotherhood (*vide* the word germane, and the Spanish word *hermanos*). But the Saxon will not combine.

Several attempts have been made to organise a co-operative circus of this kind even on quite a small scale by co-operation between three or four firms. One has discussed the question individually with a number of quite important

A POSSIBLE RECORD-BREAKER.—The tandem-engined Savoia-Marchetti (Fiats).

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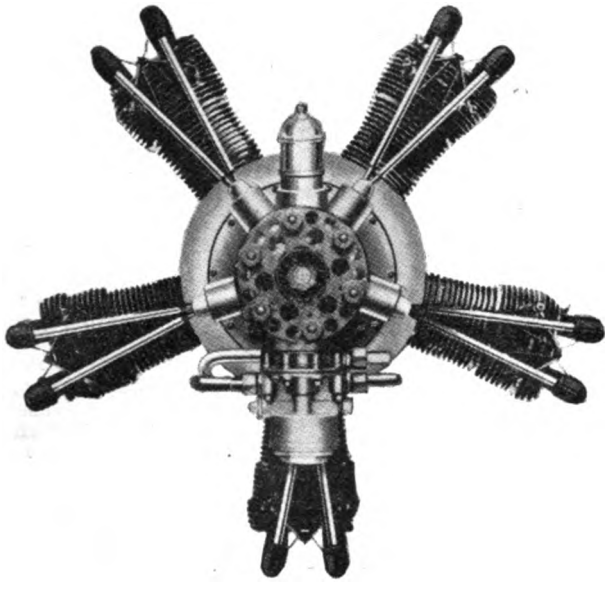
A New Armstrong Siddeley Engine —the GENET MAJOR



Front view showing the enclosed Valve Gear and streamline rocker covers.

THE 100-110 h.p. Genet Major represents the results of ten years' continuous progress in the design and manufacture of air cooled radial engines. It embraces many of the most successful features of the latest Jaguar, Lynx and Mongoose engines and is specially suitable for powering light aircraft and multi-engined aeroplanes.

FLOWN AND KNOWN ALL OVER THE WORLD.

LEADING FEATURES:

5 cylinders 4.25" or 108 mm. x 4.5" or 114.3 mm. 319 cubic inches or 5.23 litres. Compression ratio 5.23 to 1. Normal r.p.m. 2200. Rated normal B.H.P. at sea level 100, actual 103. Maximum B.H.P. at sea level 110. Weight complete with two magnetos, carburettor, air intake, propeller hub and tachometer drive 250 lbs. or 113.5 k.g. Overall measurements: diameter 38" or .95 m., length 36.2" or .905 m.

ARMSTRONG SIDDELEY

ARMSTRONG SIDDELEY MOTORS LIMITED
Head Office and Works: Coventry. London: 10 Old Bond Street, W.1

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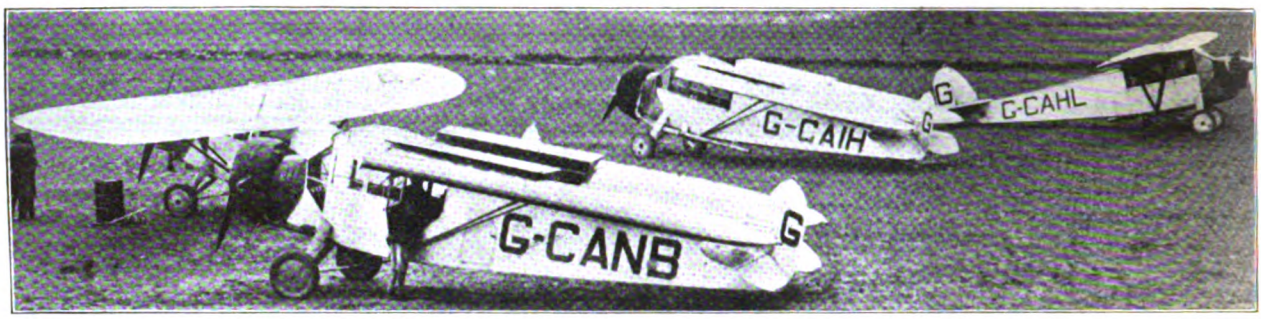

WHAT CANADA USES.—The Fairchild monoplanes (Whirlwinds and Wasps)—from the U.S.A.

people in the Aircraft Industry, and to put the matter bluntly and brutally, they do not trust one another enough to make such co-operation possible. This individualism and mutual mistrust is the curse of English trade in all lines of business.

Several years ago Captain Gerald Deane, who knows the South American nations, or at any rate the aeronautical part of them, better than any other man in this country, proposed just such a scheme as this, and had to give it up as a bad job.

There are others who think as he did, as is shown by a letter from a reader in Canada. This letter is published because it shows quite clearly how we lose our opportunities, and how we ourselves are to blame for losing business.

A Canadian View.

"Sir,—I am an irregular reader of several British, Canadian and American aeronautical publications, and am now writing with reference to an answer to your criticism of the action of a Canadian firm in purchasing a number of American amphibian aircraft, which appeared in *Aero Digest* for July. I did not see your own editorial on the subject.

"Perhaps the company in question might have done better by purchasing British aircraft, but what proof had they that any particular British aircraft would prove suitable to Canadian conditions? They had seen the Sikorsky prove its suitability.

"British aircraft constructors can never hope to dominate the Canadian trade unless they demonstrate the suitability of their products in practical tests and under Canadian conditions.

"Every month a full-page advertisement of a well-known British aero-engine appears in *Canadian Aviation*. On another page a similar advertisement of an American engine of practically the same class appears. The American engine continues to be used exclusively, even though the British engine may be superior to its American rival.

"The American engine has been demonstrated, found satisfactory, and has come into use. The British engine has never been used commercially in Canada.

"Practically every 'plane used for transport work in Canada is American. Even our own R.C.A.F. is using a considerable number of American aeroplanes and engines for forest fire suppression. The man or boy on the street only knows the name of American aircraft.

"In the light 'plane field, however, the situation is exactly the reverse. Here British Moths and Avians hold complete sway. Both types have proven their worth in the Air Force for training and forest fire detection, and in civil life as training 'planes and as light commercial 'planes. The British designers have shown here their ingenuity.

"The Americans are in a better position geographically, it is admitted. In Britain, however, labour is not so expensive, and by adopting quicker and less costly method of construction they could overcome the disadvantage o position. Why then, do the British companies not mak a really serious bid to dominate the Canadian air transpor field?

"I would suggest that the British constructors shoul form a sort of travelling aircraft show. This show woul tour Canada and demonstrate British aircraft products t both the aircraft operators and to the general public, an provide both young and old with interesting literature o all the exhibits.

"I would also suggest that these 'planes give demonstra tions to operators on the northern lakes. Such a tou would be sure to attract widespread attention, and if som of the 'planes broke a few records for air travel (i.e. Winni peg to Vancouver in less than ten hours) then all the mor publicity would be theirs.

What Canada Wants.

"The following, in my opinion, are the characteristic necessary for a successful aeroplane in Canada:—

"1. The engines should be of either radial or in-line typ and should be air-cooled. Several sizes of engines should b developed, having as large a degree of standardisation o parts as possible (i.e. Armstrong-Siddeley series).

"2. The aeroplanes themselves should be of the cabin type and in sizes ranging from four to ten passengers They should be single-motored except in mountainous dis tricts, where a medium-sized tri-motor type would fin favour.

"3. Provision should be made so that the pilot is enclose for Winter flying, and open for Summer use.

"4. The landing gear should be interchangeable from wheels to floats or skis. Flying-boats are only useful i Summer. An amphibian which could be fitted with re tractable skis would be useful.

"5. The fuselage of the 'plane should be of welded steel Its outer skin should be of fabric or of metal. Plywood i unsuitable on snow in Winter and for seaplane work i Summer.

"6. The aeroplane must be able to take off and land in a very small space, as pilots often have occasion to land i small lakes surrounded by trees.

"7. Folding wings are useful, especially in cases where machines have to be taken through heavy city traffic i transporting them from a landing field to a seaplane base to change to floats.

"8. To compete with aircraft now in use the 'planes should have a top speed of 140 m.p.h.

"In conclusion I would say that the aircraft constructors in Britain should not delay in beginning their active campaign in this country, because the companies now estab-

WHAT CANADA USES.—A Junkers monoplane (Wasp)—from Germany.

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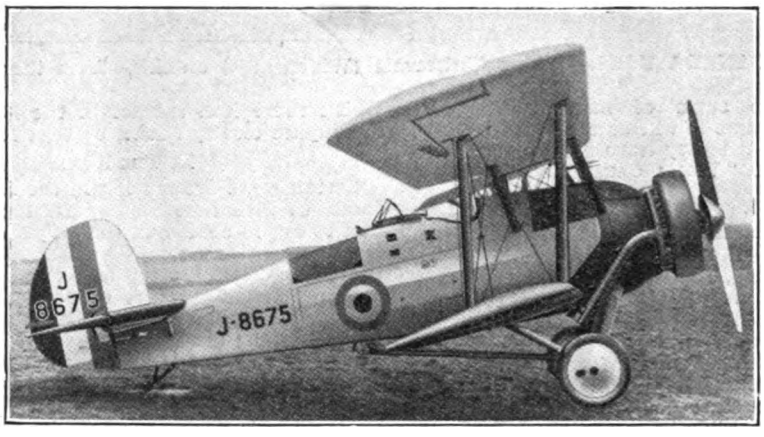
ARMSTRONG WHITWORTH
AIRCRAFT



THE ALL STEEL ATLAS
(ON WHEELS, FLOATS OR SKIS)

THE all-steel Atlas is the best aircraft for land or sea reconnaissance.

It is the standard Army Co-operation two-seater of the Royal Air Force.

Its steel construction accounts for its unrivalled durability and ease of maintenance. Fitted with the world-famous Armstrong Siddeley Jaguar engine (plain or geared type), its speed, climb and ceiling fulfil the severest Service requirements. It is produced on the grand scale by the best equipped aircraft works in Europe.

PERFORMANCE FIGURES

ATLAS WITH JAGUAR ENGINE AND TOWNEND RING

Fuel, 75 gallons (337 litres). Oil, 7 gallons (32 litres). Military Load, 880 lbs. (400 kgs.)

	Plain Engine.	Geared Engine.
Approx. total weight	4000 lbs.	4115 lbs.
	1820 kgs.	1870 kgs.
Speed at ground level	143.5 m.p.h.	149 m.p.h.
	231 km.p.h.	240 km.p.h.
" " 5000 ft.	139.5 m.p.h.	145 m.p.h.
" " 10000 ft.	134 m.p.h.	140 m.p.h.
" " 15000 ft.	125 m.p.h.	131 m.p.h.
" " 1000 metres	226 km.p.h.	236 km.p.h.
" " 3000 metres	216 km.p.h.	225 km.p.h.
" " 5000 metres	193 km.p.h.	204 km.p.h.

	Plain Engine.	Geared Engine.
Time to 5000 ft.	5.25 minutes	4.25 minutes
" " 10000 ft.	12.5 "	10.5 "
" " 15000 ft.	26 "	21.75 "
" " 1000 mtrs.	3.5 "	2.5 "
" " 3000 "	12.5 "	10.25 "
" " 5000 "	34 "	27.5 "
Absolute Ceiling	19000 ft.	19100 ft.
	5800 metres	5830 metres
Service Ceiling	17300 ft.	17700 ft.
	5280 metres	5400 metres

Maximum allowable R.P.M. 2200. Normal R.P.M. 2000

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LIMITED

Works and Aerodrome: Whitley, Coventry. London: 10 Old Bond Street, W.1

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WHAT CANADA USES.—Fokker Universals (Whirlwinds) on skis,—from the U.S.A.

lished are spending large sums of money on repair equipment, and in a short time it will be too late to try to sell them equipment for which they have not proper facilities for repairing. (Signed) "VOX A CANADA."

ANOTHER WAY TO TRADE.

That letter is not published in any hopes that it will help to produce co-operation in the British Aircraft Industry, because, as already explained, such co-operation is a psychological impossibility. It is merely published to show what might be done. Also it is published in support of the next part of this argument.

Let us grant freely that co-operation is impossible. What then is the next way to go for business? Obviously it is for each individual firm to start out in competition with all the other firms to give possible buyers of aeroplanes the kind of aeroplanes they want, at a price they can pay.

That letter shows that there is at any rate a demand for one type of aeroplane, and that is a type which is not produced in this country, namely, an aeroplane with a comfortable cabin and a reasonably high performance.

The Americans make it and we do not. The American market, for the present anyhow, is rapidly becoming saturated and the American manufacturers will soon be starting to sell their surplus machines in our Dominions Overseas,—just as they sold their motor-cars. And, though this paper has been hammering at the British Aircraft Industry for two or three years to make what the market wants, we are still not making it.

AN UNANSWERED CHALLENGE.

A few weeks ago Mr. C. D. Barnard brought down on himself the wrath of certain exalted personages in the British Aircraft Industry for saying publicly that he had bought an antiquated Fokker monoplane for the Duchess of Bedford to fly to India and back because there was not a machine in this country to do the job. His statement was supported with full argument in this paper.

Mr. Handley Page, the new Chairman of the Society of British Aircraft Constructors, was challenged by THE AEROPLANE to support with argument the unsupported assertion which he issued to the Press in contradiction of Mr. Barnard's statement. And he has, so far, failed to give an account of the faith that is in him.

These pages are still open to Mr. Handley Page's reply whenever he cares to produce it. But one cannot imagine how he is going to convince the World that there is in England an aeroplane for that particular job. And the aeroplane for that job just happens to be the aeroplane for which there is a market in the British Dominions to-day, as is quite clearly shown by that letter from Canada.

IN THE RIGHT DIRECTION.

Certainly we are moving in the right direction. Mr. J. D. Siddeley, with that commercial foresight which has placed him to-day in control of the biggest organisation for the production of aircraft and engines in the British Empire, recently acquired the rights for the British Empire for the construction of aircraft to Fokker designs. At the Aero Show at Olympia we saw what a very beautiful job can be made of these purely commercial aircraft.

So far the Siddeley organisation is concerning itself chiefly with the production of triple-engined machines. But no doubt it is equally well able to produce a single-engined machine of similar design.

The De Havilland Co., having produced that interesting experiment the Hawk-Moth, with a 200 h.p. Vee-type air-cooled engine, is now producing the first of a batch of similar machines with radial engines of something over 200 h.p. These are distinctly steps in the right direction,—but by now we ought, as a nation, to be well along down the street with such a proposition, and should not be, at this date, merely making preliminary hesitating steps.

Also the De Havilland Co. are now flying experimentally a very interesting high-wing monoplane with a kind of cabin top. This is a still further step in progress, because this is a type of machine which has not yet been fully tried out either for pleasure or for commercial work. It is in fact a kind of intermediate stage between the big Fokkers and the little Widgeons. It has much to recommend it, and it might well be developed into a high-speed touring craft.

THE CRAZE FOR MULTIPLICITY.

In spite of the fashion, one might almost call it a craze, in this country, for multiple-engined aeroplanes, the case against the single-engined machine is by no means proven.

A single engine running well within its power is certainly more reliable than three engines running almost up to full power. Statistics of accidents all over the World show that the majority of fatal accidents are caused by errors of pilotage, and such errors are not decreased by a multitude of engines.

Accidents due to breakages in the aeroplane itself or to fire in the air or to crashes in bad weather or to landing on bad ground are not decreased in multiple-engined machines,—in fact the fire risk is probably increased.

Also, big multiple-engined machines must always cost more than single-engined machines of medium size. And for normal air service for a good many years to come, cer-

WHAT CANADA USES.—Western Canadian Airways Ltd. operates seventeen of these Fokker Super-Universals (Wasps)—from the U.S.A.

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PROOFS THAT CIRRUS ENGINES ARE

THE WORLD'S MOST RELIABLE LIGHT AERO ENGINES.

¶ The great majority of Light Aircraft of British manufacture are fitted with CIRRUS or CIRRUS HERMES engines.

¶ There are more different types of Light Aircraft of Foreign manufacture fitted with Cirrus engines than with any other power unit.

¶ Cirrus engined aircraft won the King's Cup in 1926 and 1927 and the Siddeley Trophy in 1928 and 1929.

¶ Cirrus engines are in use by the British Royal Air Force and are standardised by National Flying Services Ltd.

¶ Cirrus engines are now fitted in over 40 different types of British and Foreign Aircraft.

¶ Cirrus Hermes engines are now fitted in 19 different types of British and Foreign Aircraft.

¶ The record of Cirrus engines in World Flights, International Competitions, Racing, and in every other activity in which Light Aircraft are employed cannot be approached by any other type of British or Foreign low powered engine.

CIRRUS SUPREMACY IS FOUNDED UPON CIRRUS PERFORMANCE.

CIRRUS AERO ENGINES LTD,
Regent House,
Telephone: Holborn 4076. 89, KINGSWAY, LONDON, W.C.2. Telegrams: "Ocirruso, London."

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tainly for air-taxi services, and even for air-line work, there will be more regular employment for machines carrying four or six or eight passengers than there is for machines carrying twenty or thirty or fifty passengers.

If a British firm were ready to-day to supply single-engined four-seaters and six-seaters and eight-seaters to the British Dominions at reasonable prices, and furthermore if they were ready to back those machines up with a proper service system which could suply spare parts and assure quick repairs on the spot, that firm would be able to do business with such machines for the next four or five years.

If no British firm is ready within the next twelve months to supply such machines, then Australia and New Zealand and South Africa and Central Africa and West Africa and East Africa and India will start buying American machines instead of English machines. And, remember, the old excuse of the Motor Trade that we cannot compete against American mass-production, will not work. American aircraft are not mass-produced. They are built economically by men who are far more highly paid than our men are.

Our Reputation.

As our Canadian correspondent admits, we have got the market for light aeroplanes practically all over the World. Those light aeroplanes have built up a magnificent reputation for British workmanship, British design and British material. And our Schneider victory has increased our reputation.

If our manufacturers have the sense to get to work now and will supply bigger aeroplanes of equal quality, with a better performance in proportion to the power used, at a more reasonable price, then there will be plenty of work in British aircraft factories for many years to come.

Anybody with any mechanical sense and a little foresight can easily think out dozens of ways of improving, or even revolutionising altogether, existing designs of aeroplanes, but if we want work in the British factories the best policy at the moment is to sell what the market wants and then offer them improved types later on, instead of waiting and waiting for better and better aeroplanes and letting our friends in America capture the markets.

One offers these suggestions to the British Aircraft Industry as a general line of policy for getting to work in the quickest and most profitable way. There are many other phases of this question and these will be discussed in succeeding issues of this paper.—C. G. G.

AN ANONYMOUS ENTHUSIAST.

Sir,—It is with a certain amount of trepidation with which I take up my unpractised pen to write to you.

This is my first letter to a paper (or magazine) of The Aeroplane's type—or any other for that matter.

It is with reference to your repeated paragraphs (which so often appear in your personal articles) cursing the average man for not becoming air-minded—cursing the air clubs for not encouraging the average man to become air-minded and generally bemoaning the fact that one does not go out and break one's blasted neck for the honour and glory of British Aeroplane Manufacturers. All of which in theory is right. [But that one did not do so.—C. G. G.]

But take my case—I flew in the War (the more recent tribal dispute) R.E.8s, etc., and cultivated several tastes—two of which I cannot afford now, whisky, which matters least, and flying, which I literally yearn for. God knows I, and thousands like me, in normal health (I am A.1), light-handed, and of an age of discretion, *want* to fly, badly, but if you are running a wife, a house and an Austin Seven on about £500 a year it doesn't give you much hope does it?

It is not only the cost of lessons, but the incidental expenses which always occur when one joins a club of any description, particularly if one is of a temperamental nature and not a teetotaller. So I spend my time in making model aeroplanes which won't fly, reading your delightful articles, and trying to keep up to date as far as I possibly can for the next skirmish—but I suppose I'll be too old for the job then.

You needn't take any notice of this letter,—only realise that there are crowds of fellows who would only too willingly hazard the air and throng the club shows,—but simply cannot afford it.

Flying (civil) is still the well-to-do's game (whoever they are). The rich to-day are usually of the war-profiteer type and as a rule they are afraid to drive their own damned cars.

Good Luck to your top-hole paper and do go on writing those vitriolic articles of yours. (Signed) Thirty-Five.

[As a rule anonymous letters are ignored, but 35 (Squadron or age?) voices the views of so many good sportsmen that his moan deserves a hearing. What about joining the Auxiliary Air Force? Or is the nearest squadron too far away even for the Austin? This letter suggests that we could well do with some more squadrons of the A.A.F.—there seems to be no difficulty about manning and officering them.—C. G. G.]

AN AFRICAN ADVENTURE.

An official communiqué from National Flying Services Ltd. announces that "The Chairman, Captain the Right Honourable F. E. Guest," is proposing to leave this country on October 5, accompanied by Mr. E. H. Fielden and Mr. E. J. Hordern and Miss Winifred Spooner, to open an office at Nairobi, capital of Kenya Colony, and to inaugurate an air taxi service between the various centres of population in that part of Africa.

Those who are interested in National Flying Services, either financially or sentimentally, and who remember that the chief reason for the formation of the company was its grandiose scheme for the opening of aerodromes all over Great Britain, and for the formation of a system of linked clubs and service stations and landing grounds, may be a little surprised to find this firm launching out into the comparative wilds of Africa before it has achieved anything tangible in this country beyond the somewhat luxurious furnishing of an extra-suburban mansion and the laying-out of an aerodrome round it.

Such persons might reasonably have expected the aforesaid mansion to have been linked up with a number of provincial aerodromes near the chief industrial centres of England, from which the firm might reasonably expect to draw customers to its mansion, and so might begin to earn something towards paying a dividend on its capital, or towards relieving the subsidy which the firm draws from the taxpayer, before expending its energy abroad.

So far as one can recollect, nothing was said in the prospectus about activities overseas. The prospectus rather stressed the idea that the firm's reason for existence was the development of aviation within the British Isles,—hence the title National, instead of Imperial or International.

To avoid any misconception on this point the communiqué from N.F.S. says, "It will be remembered that prior to the formation of the company the Chairman, Captain the Right Honourable F. E. Guest, foreshadowed the possibility that this organisation might ultimately provide feeders or branch lines for the main Imperial air routes. This possibility has now been given concrete shape by the decision to open an aeroplane service covering certain districts in East Africa."

Possibly this side-line, as it were, may be a venture quite apart from the firm's main operations and may be separately financed. But if it is not, one questions whether the directors are justified in their action. The subsidy was granted to N.F.S. distinctly on the understanding that it was for the development of aviation in Great Britain. We may grant that it is a subsidy which is paid solely on results, but one cannot help feeling that any diffusion of energy is bound to diminish the amount of work done in this country, and must so diminish the value received by the Nation for the subsidy.

Nevertheless, if N.F.S. is resolved to extend its activities all over the British Empire the directors are undoubtedly wise in starting in an area where a great deal of pioneering work has already been done by other people. Capt. Gladstone, and the Blackburn organisation known as the North Sea Aerial and General Transport Co. Ltd., spent a great deal of time and money in converting the authorities of the Sudan, Kenya, Uganda and Tanganyika to a belief in aviation. Mr. Tymms, of the Air Ministry, has visited the country and has interviewed the chief political people. Sir Alan Cobham has also worked strenuously in that area. Various flights by formations of the R.A.F. and of the South African Air Force have been made over the area. Quite a considerable amount of air taxi work has already been done in that area by individual owners of light aeroplanes. A recently registered firm known as Wilson Air Lines, which one gathers is financed by a Mrs. Wilson, is about to begin operations there, with Flt. Lt. Swoffer, late of the Hampshire Club, as Chief Pilot and Manager. Also, Imperial Airways Ltd. have their plans well advanced for the running of the main Imperial airway to South Africa through that area, with Colonel Sir Helperus Van Ryneveld in charge at the southern end.

Thus undoubtedly there are great possibilities for the development of such services as N.F.S. intend to operate, and the directors have displayed commercial shrewdness in taking advantage of such well-prepared ground.

A FLYING YACHT.

The Dornier company is building a flying yacht to the order of Mr. Garfield Wood, the builder of speed-boats.

The new machine, to be known as the Do-Car, will have accommodation for twenty-four passengers and will be driven by four 500-600 h.p. engines.

It will have an after deck 18 ft. long and 8 ft. wide, a forward deck 10 ft. long and 8 ft. wide. These decks will be for use when the air-yacht is on the water. The yacht will have four staterooms, frigidaire equipment, wireless, shower baths, h. and c., usual offices, a top speed of 140 m.p.h. and a cruising speed of 120 m.p.h.—so it should be within easy reach of any railway station, 'bus and tube. In other words, an ideal residence for a wealthy business man.

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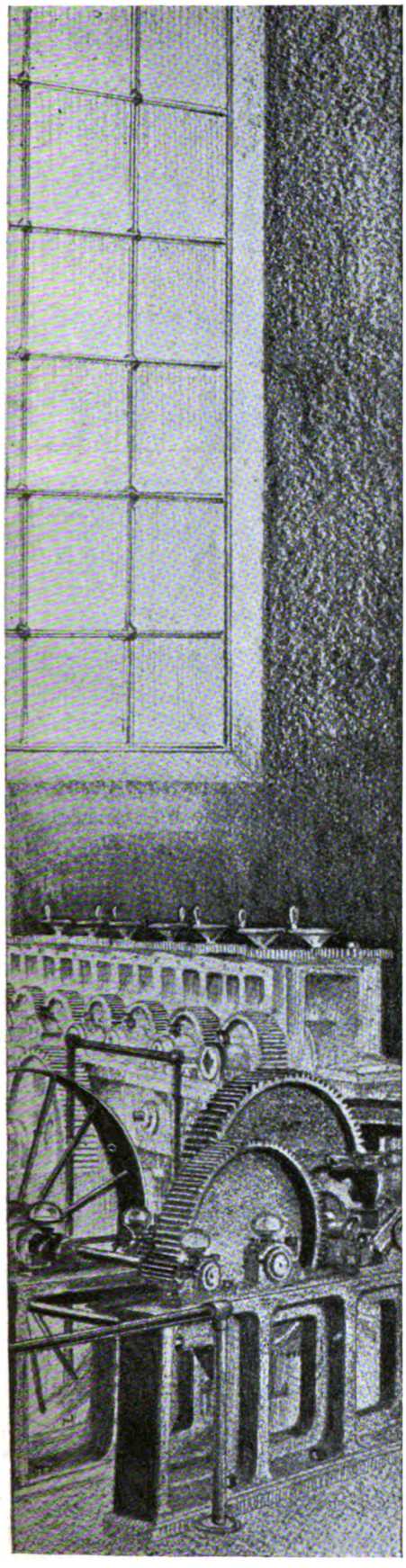

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MILITARY & CIVIL AIRCRAFT CONSTRUCTION.

For more than ten years the Bristol Aeroplane Company have pursued a policy of diligent research and experiment in the matter of metal aircraft construction. The result of this work is displayed in the "Bristol" Bulldog and other "Bristol" types. High tensile steel is used for all load carrying members of the structure, and the method of manufacture and assembly of the built up high tensile steel strip units is such that lightness, strength and rigidity are obtained, together with the utmost simplicity and ease of maintenance and repair.

Telegrams: Aviation, Bristol.

THE BRISTOL AEROPLANE CO., FILTON,—BRISTOL.

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ANOTHER FORE
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Moths are already used for training in the
British Royal Air Force, Royal Australian Air Force, Royal Canadian Air Force, South African Air Force, Irish Free State Army Air Corps, New Zealand Ministry of Defence, United States of America Army and Navy, Chilian Military Air Force, Italian Royal Air Force, Danish Royal Air Force and Naval Air Service, Jugo-Slavian Naval Air Service.

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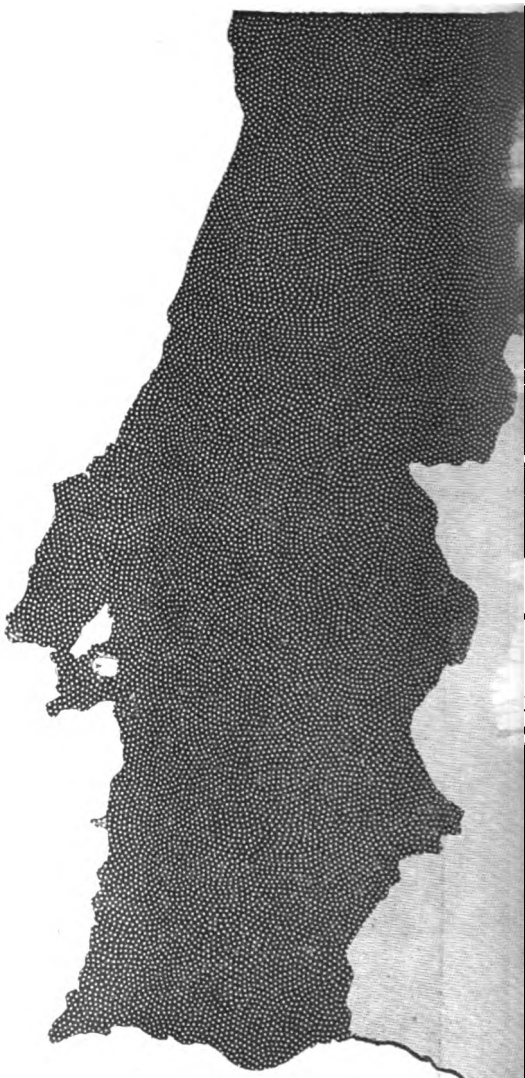
India, Sarawak, Sweden, Finland, Japan, Greece etc.

At the majority of Schools in
Great Britain, Australia, Canada, India, South Africa, Kenya, Sweden, Singapore, Switzerland, Spain, New Zealand, Finland, Colombia, etc.

For Private or Commercial Flying in all the above Countries and
France, Germany, Belgium, Portugal, Poland, Argentina, Brazil, Straits Settlements, Nigeria, Tanganyika, The Bahamas, Rhodesia, New Guinea, Peru etc.



THE DE HAVILLAND AIRCRAFT COMPANY, LIMITED
Stag Lane Aerodrome, Edgware, Middlesex
Telegrams: Havilland Phone, London,
Telephone: Edgware 0171

THE DE HAVILLAND AIRCRAFT OF CANADA, LIMITED
Sterling Tower, 372 Bay Street, Toronto 2, Canada
Telegrams: Moth Toronto

THE DE HAVILLAND AIRCRAFT PTY., LIMITED
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THE WRIGHT AERONAUTICAL CORPORATION
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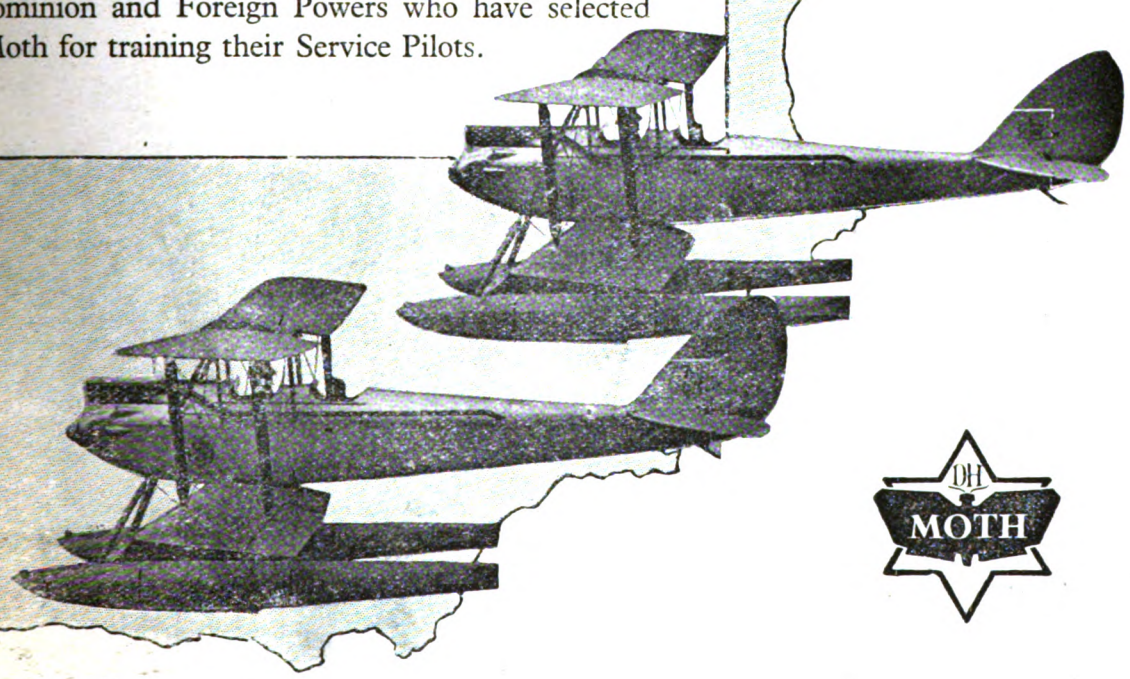
OR PORTUGAL

POWER ADOPTS
NING PURPOSES*

FURTHER EVIDENCE OF MOTH ROBUSTNESS

A deputation of Portuguese Officials in examining the merits of various aircraft have finally chosen a complement of Gipsy Moth Seaplanes for the Portuguese Naval Air Force. These are to be used for training and instruction purposes in **aerobatics.**

Portugal's decision once again endorses the claims of Moth robustness and reliability, for aerobatics demand machines not only of unquestionably high performance, but also of structural strength to withstand abnormal stresses. Portugal's name is thus added to the long list of Dominion and Foreign Powers who have selected the Moth for training their Service Pilots.



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Blackburn
LINCOCK

200 H.P. LINCOCK SINGLE-SEATER FIGHTER

"One is glad to have another opportunity of emphasising the Lincock's performance, for it is miles an hour faster than any single-seater which is at present issued to squadrons of the R.A.F. ... It did everything that has ever been done at an R.A.F. Pageant by a single-seater. Its vertical upward rolls were quite remarkable and its slow horizontal rolls showed that it is good to handle." *The Aeroplane April 3 1929.*

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THE WORLD'S SPEED RECORD.

The World's Speed Record over a straight line course of three kilometres (one mile seven furlongs) was broken twice at Calshot on Sept. 10 by the High Speed Flight, R.A.F.

The conditions which govern this record, which is in Class C.a of those decreed by the *Fédération Aéronautique Internationale*, rule that the aircraft must pass the starting line in horizontal flight and must not enter the course by diving. The course has to be covered twice in each direction in one flight, and the speed of the four runs recorded. The average of these four runs is the official speed. If more than four flights are made, the best speed on four consecutive runs (two in each direction) are taken.

No height greater than 400 metres (1,312ft.) may be reached throughout the flight. The pilot must not be at more than 400 metres (1,312ft.) for a distance of 500 metres (half a kilometre, or roughly 550 yards) before entering the speed course.

The measured course for this trial was between Calshot Spit and Agwi Pier. The timing was recorded by the new automatic speed-course timing apparatus, which has been devised by the Royal Aircraft Establishment at Farnborough. This apparatus has been approved by the *Fédération Aéronautique Internationale* for timing speed records.

It consists of a special camera at each end of the course with a connecting submarine cable. Each camera is provided with two magnetically operated counters, each of which is connected electrically with the corresponding counter on the other camera. The two circuits thus formed are interrupted alternately by contacts on either side of one prong of a tuning fork, and by this means the counters are operated alternately every one-twentieth of a second. Images of the counters are projected on the film, and in this way the passage of the aeroplane across the sighting post is recorded on some ten or fifteen consecutive photographs, beside each of which is the photograph of two counters.

The tuning fork, which is electrically maintained, is started well before the first run. A stop-watch is automatically started when the counters are set in operation, so that a check can be made on the period of the fork.

The method of deducing the time for each run consists of plotting the distance of the aeroplane from the centre of the film in each picture—a mean line being drawn through the points. The readings of the counters at the time when the aeroplane crosses the sighting post is thus found, and by subtracting the initial readings of the counters when at rest before the run the number of vibrations made by the fork from the start of the counters is found.

The records from both cameras are treated in this way and, by further subtraction, the time for each run is found. By this method the time can be determined to one-fiftieth second, giving the speed with an accuracy of 0.3 m.p.h. at 300 m.p.h.

The weather conditions in the early morning at Calshot were not good, and at 10.00 hours, when the Gloster-Napier VI was towed out on a pontoon, there was still a considerable amount of mist over the water, and quite a thick haze over Southampton. Although the air cleared in the evening, it was very far from satisfactory during the trials.

Flt. Lt. Stainforth took the Gloster off at 10.45 hours after a run of only 12½ seconds on the surface. Six minutes later he entered the speed course. After the third run over the course he took an extra turn, having apparently found some difficulty in getting an accurate check on the starting line. He flew over the course five times before alighting. The last four were recorded, and his speeds were: Second 351.3 m.p.h.; Third, 328.3 m.p.h.; Fourth, 336.2 m.p.h.; Fifth, 329.3 m.p.h.—Average, 336.3 m.p.h.

The second attempt was made by Sq. Ldr. Orlebar in the Supermarine Rolls-Royce S.6, which won the Schneider Trophy on Sept. 7, but fitted with a new engine. Sq. Ldr. Orlebar took off at 12.20 hours, after two attempts to unstick, and entered the course at 12.26 hours. Visibility was no better than when Flt. Lt. Stainforth went up, although the wind had shifted slightly. Sq. Ldr. Orlebar had to circle round between every run over the course to get his bearings, and after the fourth run he alighted. Mr. Atcherley, who had been up in two successive Flycatchers during the trials to act as mark buoy, giving them the altitude, alighted alongside the S.6.

Sq. Ldr. Orlebar's speeds were: First, 368.8 m.p.h.; Second, 345.3 m.p.h.; Third, 365.5 m.p.h.; Fourth, 343.7 m.p.h.—Average, 355.8 m.p.h.

Air Ministry officials and representatives of the manufacturers concerned expressed themselves unsatisfied with the results of these trials. She was taken into her shed, and a new airscrew fitted.

On Sept. 11 no flying by the members of the High Speed Flight was allowed by the Medical Officer in charge of the Unit. This order coincided with the Government lunch to the Teams in London, so no time was lost, and if the weather had broken up the Government and the Doctor would have had to share the blame. The Team themselves probably thought that a few hours flipping round the Solent at 350 odd m.p.h. was far less trying than accepting the Government's hospitality, with the consequent liability to speech-making.

On Sept. 12, a final attack was made on the Speed Record. The haze lifted at about 16.00 hours, and Sq. Ldr. Orlebar took the Supermarine Rolls-Royce S.6 up. He dispensed with the pontoon, and taxied the machine straight off the slipway. She unstuck in about 40 seconds in a dead calm.

Sq. Ldr. Orlebar made six runs over the course. The speeds recorded were: Second, 354.6 m.p.h.; Third, 358.7 m.p.h.; Fourth, 353.5 m.p.h.; and Fifth, 365.1 m.p.h. The average speed was 357.7 m.p.h., an improvement of nearly two miles an hour over his speed on Sept. 10.

After the Supermarine had alighted Flt. Lt. Stainforth took the Gloster-Napier VI up, but after a short trial he alighted again, some small defect having developed in the engine.—C. M. MCA.

A GOVERNMENT ENTERTAINMENT.

The members of the British and Italian Schneider Trophy teams were the guests of the British Government at a lunch at the Ritz Hotel on Sept. 11. The Secretary of State for Air, Lord Thomson, was in the Chair. The other guests included senior officers of the R.A.F., members of the Italian Legation and the designers of the seaplanes and engines.

EXPERT APPRECIATION.—Some of the personnel of Calshot with their families and certain aeronautical correspondents of the Press watching Sq. Ldr. Orlebar flying at 345 m.p.h. at Calshot in the Supermarine-Rolls-Royce S.6 at Calshot on September 10. —(*"Aeroplane" photograph.*)

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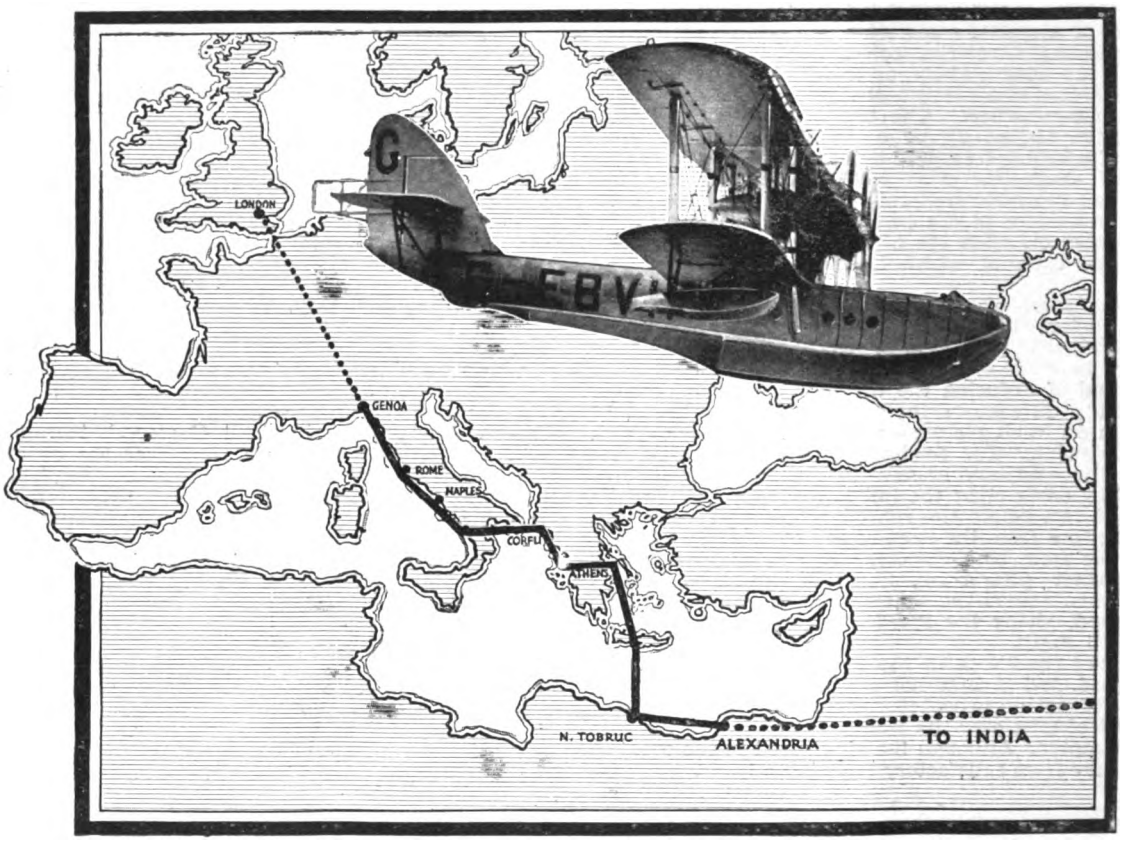
"Makes a new flying link of Empire"



IMPERIAL AIRWAYS CHOSE THIS BOAT

for the longest commercially operated Sea Route in the World, 1.700 Miles

15 PASSENGERS
TOTAL PAYLOAD 4860 lbs

CRUISING SPEED 100 M.P.H.
RANGE 6½ HOURS NO PETROL IN HULL

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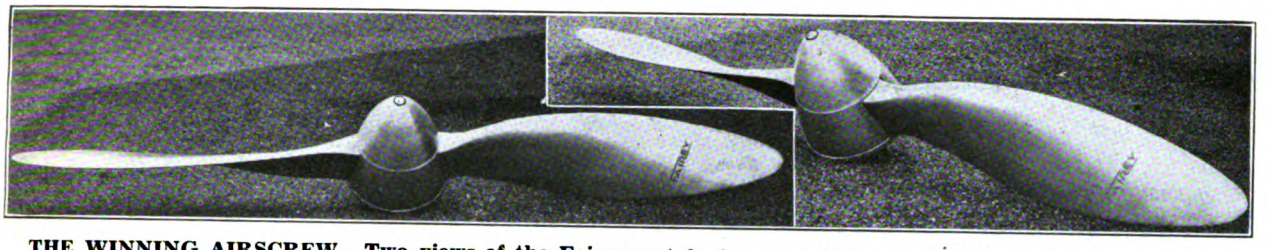

THE WINNING AIRSCREW.—Two views of the Fairey metal airscrew which was fitted on the Supermarine-Rolls-Royce S.6 which won the Schneider Trophy Contest and the World's Speed Record.

The following is believed to be a fairly accurate condensation of what was said after lunch,—albeit second-hand:—

Proposing the health of the teams, LORD THOMSON said that he was glad to welcome General Balbo who had worked with such inexhaustible energy, and Mr. Henry Royce who had designed the winning engine and Mr. Mitchell who had designed the winning aeroplane.

Referring to the Italian team he said that they were regarded here as great pilots and very gallant gentlemen.

In congratulating our own team, Orlebar and his officers, he was congratulating the Royal Air Force, of whose system of training and administration they were products. The staff of the Air Ministry had been largely responsible for the organisation. We were proud of the British champions and grateful to them. They had done what was expected of them and a great deal was expected of all the R.A.F.

To mark the Nation's sense of pride and gratitude His Majesty the King had authorised him (Lord Thomson) to announce that he intended to confer the Air Force Cross on Flying Officer Waghorn.

He believed that the members of this year's team had flown for the last time in the Schneider Trophy Contest. This year's pilots would be succeeded by others.

Three factors counted in this race, men, machines, and money. The amount of money required from the taxpayers gave us furiously to think.

Speaking as one who for the time being represented flying in this country in its political aspect he wished well of our Italian Guests and hoped that we might always meet equally good and generous sportsmen.

GENERAL BALBO, through an interpreter, thanked Lord Thomson. He was not very happy at the results that Italy had attained. They had not come to win the Schneider Trophy but for good fellowship. In their hearts they said to the British Team, "Till next time."

COLONEL BERNASCONI said that his team had come to England to fulfil a promise. Unhappily the machines and engines had not been quite ready. Sq. Ldr. Orlebar had broken the record which Italy had held for three years and in the true spirit of sportsmanship he felt that Italy should try to take the honour from him as soon as possible.

SQUADRON LEADER ORLEBAR said that Mr. Royce and Mr. Mitchell and the technical staff of the Air Ministry, by their splendid work with the team at Calshot, had made themselves members of the Team. The firms and the Air Ministry could be compared to the back in a Rugby team,—they had looked after the team, protected them and showed them the way to go. Then they had the forwards, the mechanics of the Flight and the mechanics from the various works, who, out of the limelight, had pulled their weight in a most wonderful way. Then there were the pilots who might be called the three-quarters who had the brilliant runs. Waghorn had scored a most colossal try and Atcherley and Greig had done the same thing. They had run right through and scored. The team had been as much a team as, and even more than, a fifteen in a Rugby match.

They had all felt greatly privileged to have taken part in such an event and they thanked their Italian rivals for the wonderful show they had put up in spite of their difficulties and the loss of their great Captain Motta. They had done marvels and the way in which they had faced their difficulties had been wonderful.

RUMOURS FROM ROME.

Reports from Rome state that Warrant Off. Dal Molin and Serjt. Agello are making preparations to test the Piaggio seaplane with the intention of obtaining the World's Speed Record.

The Piaggio was a non-starter for the Schneider Trophy and is alleged to have no floats. The wings are said to support the machine on the water, and apparently only the front airscrew of the tandem engines can work when it is on the water. The rear screw seems then to be in the water, so the machine has to take off with the front engine only.

Rumour also states that a Macchi 67 is being got ready to attack the record, a special wing which is hoped to add 10 m.p.h. to the speed of the machine is to be fitted. Presumably the new wing will be smaller than the original, so that the landing speed will also be put up.

THE ROYAL AERONAUTICAL SOCIETY.

The following congratulatory telegrams have been sent by the Royal Aeronautical Society:—

To the Supermarine Aviation Works:—

All members join in sending your Chief Designer (Mr. Mitchell) and all concerned with the production of the S.6 that performed so brilliantly and victoriously to-day, extremely cordial congratulations.—SEMPILL, President Royal Aeronautical Society.

To Brig.-Gen. the Rt. Hon. Lord Thomson, Minister of Air:—

May I offer through you to the Royal Air Force High Speed Flight as a whole, and to Flying Officer Waghorn in particular, the Royal Aeronautical Society's profound congratulations.—SEMPILL, President.

To Mr. Royce, of Rolls-Royce, Ltd.:—

All members of the Royal Aeronautical Society join together in paying tribute to your outstanding genius, which, with the collaboration of your assistants and workmen in Rolls-Royce has resulted in the production in record time of your remarkable new type engine.—SEMPILL, President.

A DEEP DEPRESSION OVER CALSHOT.—Flt. Lt. Stainforth, with Mr. H. P. Folland, in light suit, Mr. J. S. Buchanan (left), and (between Flt. Lt. Stainforth and Mr. Folland) Mr. A. G. Forsyth, registering disappointment after the attempt on the World's Speed Record by the Gloster-Napier VI at Calshot on September 10.

("Aeroplane" photograph.)

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THE ROYAL AIR FORCE.

The London Gazette.

September 10.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—The following are granted S.S. comns. as Plt. Offs. on probation with effect from and with seniority of Aug. 30:—K. M. Cass, H. R. Clay, L. A. Cubitt, G. G. Dixon, G. D. W. Prayling, D. W. H. Heath, R. J. B. Hitchin-Kemp, H. de M. Middleton, R. J. Parkhouse, A. C. Richardson, J. B. Tatnall, H. Travis.

Lt. J. B. Heath, R.N., is reattached to the R.A.F. as a Flg. Off. with effect from Aug. 20, and with seniority of June 16, 1924.

The following are granted perm. comns. in the ranks stated:—FLT. LT.—R. Y. Eccles (May 1). FLT. LT.—F. Boston (Sept. 1). FLG. OFFS.—H. R. Bardon, C. A. Bell, H. A. Evans-Evans, T. P. P. F. Fagan, J. D. Greaves, J. A. Hawkings, W. T. Holmes, L. T. Pankhurst, T. H. Perry-Keene, F. C. Rowland, A. C. H. Sharp (Sept. 1).

The following are promoted with effect from Sept. 11:—FLIGHT LIEUTENANTS TO BE SQUADRON LEADERS.—L. G. Le B. Croke, P. Warburton, M.B.E., R. P. M. Whitham, M.C.

FLG. OFFS. TO BE FLT. LTS.—R. W. E. Bryant, J. J. Nolan, M. D. Ommanney, C. F. Steventon, C. R. Hancock, C. H. Tighe, F. W. Moxham.

The following Plt. Offs. are promoted to the rank of Flg. Off.:—K. F. T. Pickles (June 17); P. G. J. Atkinson (July 9); A. C. Pearson (July 9).

Sq. Ldr. P. C. Sherren, M.C., is placed on the half pay list, Scale B, Sept. 3 to Nov. 2, 1929, inclusive. Flg. Off. E. J. Wright is placed on the retired list on account of ill-health (Sept. 7); Flg. Off. E. G. Olson is transferred to the Reserve, Class C (Sept. 4). The S.S. comns. of the following Plt. Offs. on Probation are terminated on cessation of duty:—P. F. Corbett (Sept. 7); J. E. Ashworth (Sept. 11); A. A. McLaren (Sept. 11). Flg. Off. V. S. Bazalgette (Lt., King's Own Royal Regiment) relinquishes his temp. comn. on return to Army duty (Sept. 1).

CHAPLAINS BRANCH.—The Rev. A. H. Dolphin, A.K.C., relinquishes his S.S. comn. on completion of service (Sept. 6).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—The following Plt. Offs. on probation are confirmed in rank (Mar. 18):—N. A. Lindley, A. A. Worth.

Flg. Off. V. P. Field relinquishes his comn. on completion of service (Sept. 7); Plt. Off. on probation F. E. S. Groves relinquishes his comn. in the Special Reserve on account of ill-health (Sept. 4).

The comns. of the following Plt. Offs. on probation are terminated on cessation of duty:—D. S. Clarke (Aug. 10); R. A. Robbins (Aug. 23).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 601 (COUNTY OF LONDON) (BOMBER) SQUADRON.—The following Plt. Off. to be Flg. Off. (Jan. 26):—T. J. R. Cornewall-Walker.

Appointments.

Week ending Sept. 16.

GENERAL DUTIES BRANCH.—Wing Commanders R. J. F. Barton, O.B.E., to No. 1 F.T.S., Netheravon, to Command, 31/8. J. T. Babington, D.S.O., to Air Ministry (C.A.S.), for Air Staff duties, 31/8. Sir C. J. Q. Brand, K.B.E., D.S.O., M.C., D.F.C., to R.A.F. Depot, Middle East, for Engineer duties, 9/8. P. Babington, M.C., A.F.C., to H.Q., R.A.F., Middle East, for Personnel Staff duties, 30/8.

Squadron Leaders F. H. M. Maynard, A.F.C., to No. 12 (B) Sqdn., Andover, 1/9. W. R. Cox, M.C., A.F.C., to No. 504 (B) Sqdn., Nottingham, 19/8. R. S. Sugden, A.F.C., to No. 501 (B) Sqdn., Filton, 26/8.

Flight Lieutenants A. J. Elliott, to R.A.F. Depot, Uxbridge, 1/9. I. M. Rodney, to H.Q., A.D.G.B., Uxbridge, 14/9. H. G. Sawyer, A.F.C., to R.A.F. College, Cranwell, 4/7. N. H. D'Aeth, to No. 204 (F.B.) Sqdn., Cattewater, 31/8. H. R. F. Baxter, to A.G. School, Eastchurch, 2/9. R. Duncanson, to No. 35 (B) Sqdn., Bircham Newton, 16/8. T. S. Ivens, to H.Q., Wessex Bombing Area, Andover, 22/9. W. E. Theak, to No. 13 (A.C.) Sqdn., Andover, 31/8. E. J. L. Hope, A.F.C., to No. 17 (F) Sqdn., Upavon, 1/9. M. H. Ely, to R.A.F. Base, Calshot, 16/9. H. M. Mellor, to R.A.F. Depot, Uxbridge, 26/8. H. M. Groves, to No. 27 (B) Sqdn., India, 2/8. M. E. B. P. Storrie, to No. 14 (B) Sqdn., Palestine, 14/8. W. E. Knowlden, to No. 26 (A.C.) Sqdn., Catterick, 2/9. J. Cottle, M.B.E., D.F.C., to No. 2 A.C.C., Palestine, 3/9. A. R. Jones and A. E. Lindon, M.B.E., to H.Q., R.A.F., Middle East, 3/9. W. J. Millen, to No. 26 (A.C.) Sqdn., Catterick, 2/9. E. B. Grenfell, A.F.C., to No. 99 Sqdn., Upper Heyford, 12/9. C. D. Pyne, to No. 33 (B) Sqdn., Netheravon, 16/9. H. Thomas, to No. 1 F.T.S., Netheravon, 11/9. H. G. Kirkman, to School of Photography, S. Farnborough, 25/8. R. L. Ragg, A.F.C., and G. H. Smith, to R.A.F. Base, Calshot, 24/9.

Flying Officers H. A. Evans-Evans, to H.Q., R.A.F., Middle East, 3/9. H. H. Brookes, to No. 2 A.C.C., Palestine, 3/9. N. K. Howard, to R.A.F. Depot, Uxbridge, 10/8. M. H. Clare, to No. 404 Flight, Mediterranean, 30/7. N. B. Morris, to No. 2 A.C.C., Palestine, 3/9. M. Lowe, to No. 4 F.T.S., Middle East, 31/8. T. F. Molony, to E. and W. School, Cranwell, 9/9. E. G. C. Stokes, to E. and W. School, Cranwell, 9/9. E. V. S. Lacey, to Station H.Q., Kenley, 12/8. C. R. Mason, to Night Flying Flight, Biggin Hill, 12/8. R. G. Hart, M.C., to School of Photography, S. Farnborough, 14/9. W. M. C. Kennedy, to C.F.S., Wittering, 12/9. J. F. Moir, to No. 2 F.T.S., Digby, 24/8. J. Clarke, to R.A.F. College, Cranwell, 4/9. S. R. Groom, to Andover Communication Flight, 17/8. J. H. Woodin, to R.A.F. Base, Calshot, 22/9. P. G. Lucas, to R.A.F. Depot, Uxbridge, 1/9. W. T. Holmes, to Station H.Q., North Weald, 2/9. T. P. P. F. Fagan, to Station H.Q., Cattewater, 2/9. J. G. Franks, to A. and G.S., Eastchurch, 2/9. H. H. V. Tristem, to No. 5 F.T.S., Sealand, 22/9. H. W. Pearson-Rogers, to No. 24 (C) Sqdn., Northolt, 4/9. J. C. C. Slater, to A. and G. School, Eastchurch, 26/8. N. S. Allinson, to A. and G. School, Eastchurch, 2/9. H. J. G. E. Proud, to A. and G. School, Eastchurch, 24/8.

Pilot Officers F. K. Wood, to School of Naval Co-operation, Lee-on-Solent, 16/8. O. W. Hoffman, to R.A.F. Depot, Uxbridge, 15/7. P. S. Hession, to R.A.F. Depot, Uxbridge, 8/7. F. L. P. Henzell, to No. 8 (B) Sqdn., Aden, 30/8. R. Chadwick, to R.A.F. Base, Calshot, 24/9. The undermentioned Pilot Officers are posted to the R.A.F. Depot, Uxbridge, on appointment to S.S. Comns. on probation, with effect from 30/8:—K. M. Cass, H. R. Clay, L. A. Cubitt, G. G. Dixon, G. D. W. Frayling, D. W. H. Heath, J. B. Hitchen-Kemp, H. de M. Middleton, R. J. Parkhouse, A. C. Richardson, J. B. Tatnall, H. Travis.

MEDICAL BRANCH.—Squadron Leaders J. Rothwell, M.B., to No. 23 Group H.Q., Grantham, 16/9. K. Biggs, M.C., D.P.H., to R.A.F. Depot, Uxbridge, 26/9. R. E. Bell, M.B., to H.Q., Inland Area, Stanmore, 20/9.

Flight Lieutenant J. Magner, M.B., to Aircraft Park, India, 5/8.

STORES BRANCH.—Flight Lieutenants E. W. Lawrence, to No. 47 (B) Sqdn., Middle East, 21/8. E. R. Wood, to No. 4 Stores Depot, Ruislip, 10/9.

Flying Officer J. E. Reynolds, to No. 35 (B) Sqdn., Bircham Newton, 27/8.

ACCOUNTANT BRANCH.—Squadron Leader J. S. Griffiths, to R.A.F. Training Base, Leuchars, 9/9.

Flight Lieutenant E. C. MacK. Knott, to H.Q., Inland Area, Stanmore, 16/9.

Flying Officer R. J. Wishlade, to No. 111 (F) Sqdn., Hornchurch, 2/9.

CHAPLAINS BRANCH.—The Rev. J. A. Jagoe, M.A., to H.Q., R.A.F., Cranwell, 1/9.

The New Air Member for Personnel.

The Air Ministry announces that the following appointment will take effect from Jan. 1, 1930:—

Air Vice-Marshal Tom Ince Webb-Bowen, C.B., C.M.G., to be a Member of the Air Council (Air Member for Personnel) in succession to Air Chief Marshal Sir John Maitland Salmond, K.C.B., C.M.G., C.V.O., D.S.O., on the latter taking up his appointment as Chief of the Air Staff.

Air Vice-Marshal Webb-Bowen was born in 1879, and after passing through Sandhurst was gazetted to the Bedfordshire Regiment. He served with his regiment in India in 1902. He learned to fly on a Farman biplane at Brooklands, and his Royal Aero Club certificate No. 242 is dated July 2, 1912.

He transferred to the Royal Flying Corps shortly after its formation in 1912, and when Major Fulton inaugurated the Aeronautical Inspection Department at Farnborough Capt. Webb-Bowen, as he was then, was put in charge of the workshops at the Central Flying School.

He went to France with the R.F.C. in 1914 and early in 1915 he took over the command of No. 2 Squadron from Major C. J. Burke. In June 1915 he was promoted Lieutenant Colonel.

In February 1916 he took over command of II Brigade from Major-General J. M. Salmond, who had been called home to reorganise flying training in England.

In 1917, when General Plumer took an Army to Italy, to restore the front after the defeat at Caporetto, he asked for and obtained the appointment of Brig.-Gen. Webb-Bowen to command his air force. Brig.-Gen. Webb-Bowen was promoted Brevet-Colonel for distinguished service on that front. He was also awarded the Military Order of Savoy. He was mentioned in Sir Douglas Haig's Despatch on Jan. 4, 1917.

His foreign decorations also include the Légion d'Honneur (France), the Croix de Guerre (Belgium), the Order of Leopold (Belgium), and the Order of St. Anne (Russia).

He was appointed to be a Companion of St. Michael and St. George in the New Year Honours of 1918 and made a Companion of the Bath in the New Year Honours of 1919.

In August 1919 he was appointed to a permanent commission in the R.A.F. with the rank of Air Commodore. In January 1920 he was appointed Air Officer Commanding, R.A.F., India. In April 1923 he was restored to the Home Establishment to command No. 3 Group, Spittlegate, and in 1924 he was appointed to command the Inland Area, R.A.F.

He was promoted Air Vice-Marshal in July 1925 and in November 1926 he was appointed to command the R.A.F. Middle East.

A Fatal Accident.

The Air Ministry regrets to announce that, as a result of an accident at Upavon, Wiltshire, to a Siskin machine of No. 17 (Fighter) Squadron, Upavon, on Sept. 10, Plt.-Off. Lawrence Errington Jeff Lucas, the pilot and sole occupant of the aircraft, was killed.

The Cattewater Station.

An Air Ministry Order states that on and after Oct. 1, 1929, the R.A.F. Station, Cattewater, will be known as the R.A.F. Station, Mount Batten.

The postal address will be Mount Batten, Plymouth, Devon.

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The Trooping Season.

The R.A.F. Transport *Nevasa* will sail from Southampton on Oct. 8, and will reach Port Said on Oct. 18; Suez Oct. 19; Port Sudan Oct. 21; Aden Oct. 23; Basrah Oct. 29. Leaving Basrah on Nov. 2, she will arrive at Karachi on Nov. 6; Aden Nov. 15; Port Sudan Nov. 17; Suez Nov. 19; Port Said Nov. 20; Southampton Nov. 30.

Special Assessments.

The following officer and airmen have been awarded special assessments as shown on completion of a course of *ab initio* flying training at No. 1 Flying Training School:—

Distinguished Pass:—Plt. Off. R. A. Benyon; 363131 Sjt. S. Lugg; 355528 Cpl. J. C. Sowden; 363973 L-AC. C. A. Groves; 364083 L-AC. G. F. Harcourt-Powell.

Notations have been made accordingly in the official records.

Fleet Observers.

A Fleet Order states that a few vacancies still remain to be filled in the next course for officers to qualify as Naval Observers in the Fleet Air Arm. The course begins at the Signal School on Oct. 28. The names of any additional officers who desire to be considered for selection for this course are to be forwarded without delay through the usual channels.

Long Service and Good Conduct.

The Long Service and Good Conduct Medal has been awarded to the following airmen. The award in each case is with effect from the date in brackets:—

188 S.M.1 Copper, E. E. (29.4.29); 246 S.M.1 Baker, C. W. (28.3.29); 654 S.M.1 Hanson, T. A. (17.10.28); 215 S.M.1 Kerr, J. H. (11.8.28); 186747 S.M.1 Linn, G.A. (25.3.29); 314114 S.M.2 Billing, W. C. (23.3.29); 313241 S.M.2 Scott, J. J. A. (21.12.28); 1344 F-S. Cockram, S. W. (5.7.26); 180 F-S. Holder, A. F. J. (21.4.29); 313221 F-S. Raverty, G. R. M. (23.7.20); 86 F-S. Williams, M. (5.11.24); 314934 F-S. Wooltorton, G. E. H. (10.1.29); 336076 Sjt. Bowerman, H. H. (3.10.27); 163052 Sjt. Crowley, J. J. (22.10.28); 340921 Sjt. Dennett, J. R. (4.12.26); 65843 Sjt. Fletcher, W., M.M. (21.2.29); 341741 Sjt. Jump, W. (5.1.28); 314859 Cpl. (A/Sjt.) Bowdidge, E. E. (1.1.29); 354305 L-AC. Chester, C. H. (19.4.29); 136895 L-AC. Geal, F. (6.2.29).

The Royal United Service Institution.

The following is the programme of lectures to be delivered at the Royal United Service Institution during the winter:—

Oct. 9.—"Progress in Civil Aviation," by Air Vice-Marshal Sir Sefton Brancker. Chairman, Brigadier-General Lord Thomson.

Oct. 22.—"Co-ordination of Imperial Defence," by Major W. Elliot, M.P. Chairman, Admiral Sir George P. W. Hope.

Oct. 30.—"Australia's Part in Naval Defence," by Captain H. J. Feakes, R.A.N. Chairman, Major-General Sir Granville Ryrie.

Nov. 20.—"Modern Military Bridging," by Colonel A. Brough. Chairman, Major-General P. G. Grant.

Dec. 11.—"The Situation in the Middle East," by Sir E. Denison Ross. Chairman, Major-General Sir Percy Cox.

Dec. 18.—"Tactical Concentration," by Rear-Admiral C. V. Usborne. Chairman, Admiral Sir Roger Keyes.

Jan. 8.—"The Functions of the Territorial Army," by Colonel P. L. Hanbury. Chairman, Lieutenant-General Sir Reginald B. Stephens.

Jan. 22.—"The Strategical Mobility of Air Forces," by Group Capt. C. L. Courtney, R.A.F. Chairman, Air Vice-Marshal Sir John F. A. Higgins.

Feb. 5.—"Recent Economic Developments in the Dominions and Colonies," by Sir Halford Mackinder. Chairman, Field-Marshal Sir Claud W. Jacob.

Feb. 19.—"The Navy in the Persian Gulf," by Captain R. St. P. Parry. Chairman, Vice-Admiral B. S. Thesiger.

Feb. 26.—"Developments in Army Organisation," by Lieutenant-Colonel P. G. Scarlett. Chairman, Major-General C. Bonham-Carter.

Mar. 5.—"Air Co-operation with Mechanised Forces," by Wing Commander T. L. Leigh-Mallory, R.A.F. Chairman, Lieutenant-General Sir A. A. Montgomery-Massingberd.

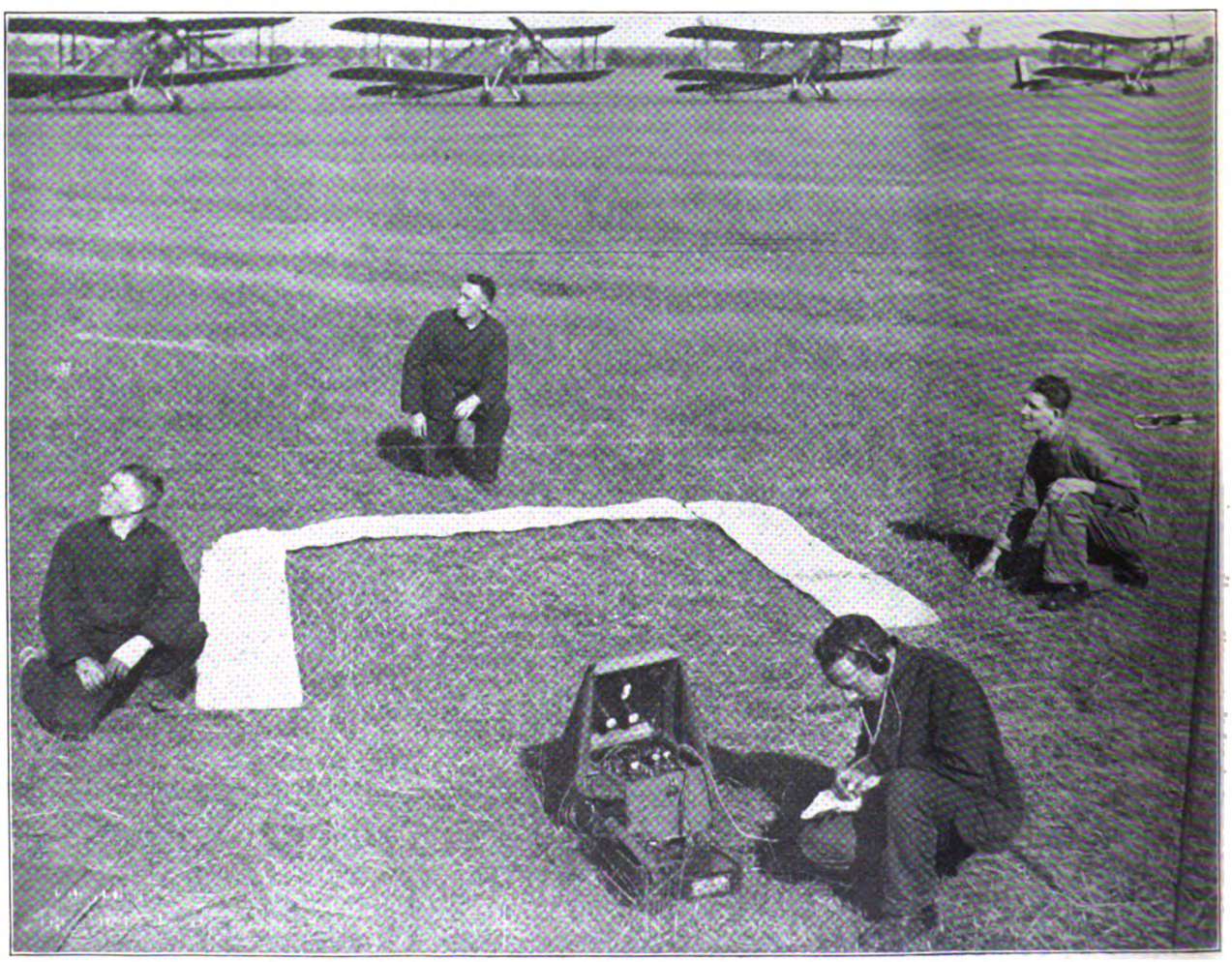
Mar. 19.—"The Chemistry of War," by Dr. F. A. Freeth.

The lectures all begin at 15.00 hours.

Hard Lying Concessions.

An Air Ministry Order states that as from April 1, 1928, an allowance at the rate of 10s. a quarter is issuable to airmen during the period in which they are present with their units on H.M. Aircraft Carriers, to cover the cost of washing the following articles of public clothing and bedding which are not washed at public expense:—Overalls, hammocks, bed-covers and blankets.

Entitlement is to be based on naval ration strengths and the allowance is to be paid quarterly in arrear. For periods of less than 90 days, the allowance is issuable at the rate of 1⅓rd pence a day calculated to the nearest penny.



ARMY CO-OPERATION.—Men of the Army Co-operation Flight of No. 3 Squadron, Royal Australian Air Force, signalling by Radio Telephony and ground strips to aircraft in the air. In the background are four of the Westland Wapitis which are the new equipment of the Squadron.

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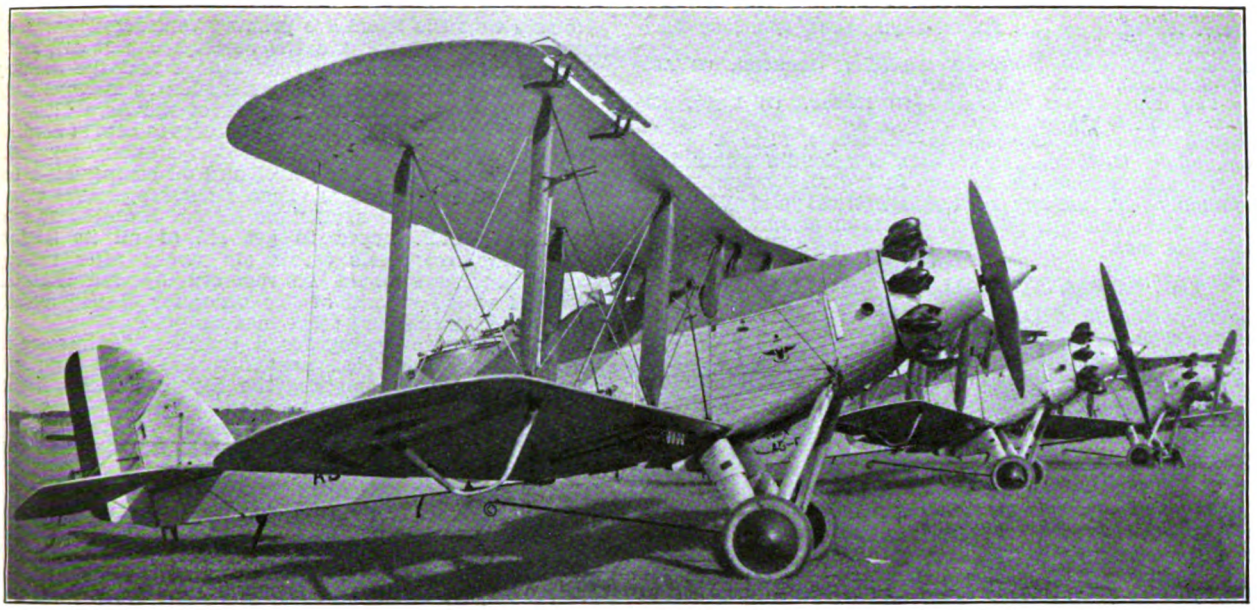


SLOTTED WAPITIS IN AUSTRALIA.—The equipment of "A" (Army Co-operation) Flight, No. 3 Squadron, Royal Australian Air Force, on the Squadron's Aerodrome at Richmond, New South Wales. The Squadron's crest can be seen on the fuselage of the nearest machine.

The R.A.F. Swimming Championships.

The fourth annual championship meeting of the R.A.F. Swimming Association was held at St. George's Baths, London, on Sept. 13. The importance of swimming in the R.A.F. can hardly be overestimated. Apart from its obvious value as a form of exercise, the history of the Service contains numbers of incidents in which the lives of personnel have been saved by good swimmers going to the rescue of disabled and sinking aircraft

The officials of the R.A.F. Swimming Association who give so much of their time to the sport deserve the gratitude of the authorities, as well as of their fellow-sportsmen. That the championship meeting was so poorly attended by those officers of the R.A.F. who could so easily have been there was not the fault of the officials of the Association, but a regrettable lapse on the part of the aforesaid officers.

Among those who were present at this year's meeting were Air Marshal Sir John Higgins and Lady Higgins, Air Vice-Marshal Sir John Steel, Group Capt. L. W. B. Rees, V.C., Wing Cdr. R. J. Mounsey, and Mrs. Mounsey.

Wing Cdr. Mounsey refereed the water polo, and Mrs. Mounsey presented the prizes, Flt. Lt. H. Norrington acted as starter. The judges were Flt. Lts. Howell, Harrison, and Patterson, and the timekeepers were Flt. Lt. Wakeford and Plt. Off. Roth. The whips were S-M. Harrison, Flt. Sjt. Snelling, and Flt. Sjt. Holmes and the excellent announcer was S-M. Trowbridge.

A small R.A.F. string band made heroic efforts to play between blasts of Flt. Lt. Norrington's whistle. Some of the competing Units, notably Uxbridge, were strongly supported by airmen and their friends.

Three new R.A.F. records were put up. In the final of the 220 yards championships, L-AC. Henderson beat his own record by 3 1/5 seconds, a notable achievement. In the final of the 100 yards championship, AC. Robertson, of Manston, beat the R.A.F. record put up by the late Flt. Off. W. H. O. Rumfitt (who was killed in a flying accident at Leuchars in October, 1927), by 3/5 sec. In the plunging championship, Flt. Lt. Smylie, of Halton, beat the record put up by Sjt. J. B. McGinn last year by 8½ inches.

The final of the Inter-Unit Water Polo Championship was between Manston and Digby, and resulted in a draw of 4 goals all, after extra time had been played. Manston had one man out of the water most of the time with cramp. Both sides had a man out of the water most of the time, not necessarily for fouling, but for unlawful offences.

Three London swimming clubs took part in the Invitation Relay Race of two lengths, which was won by the Penguins, a Croydon Club. An exhibition of swimming was given by three members of the Hammersmith Ladies' Swimming Club, who performed sundry novel feats which were warmly applauded.

The results were:—

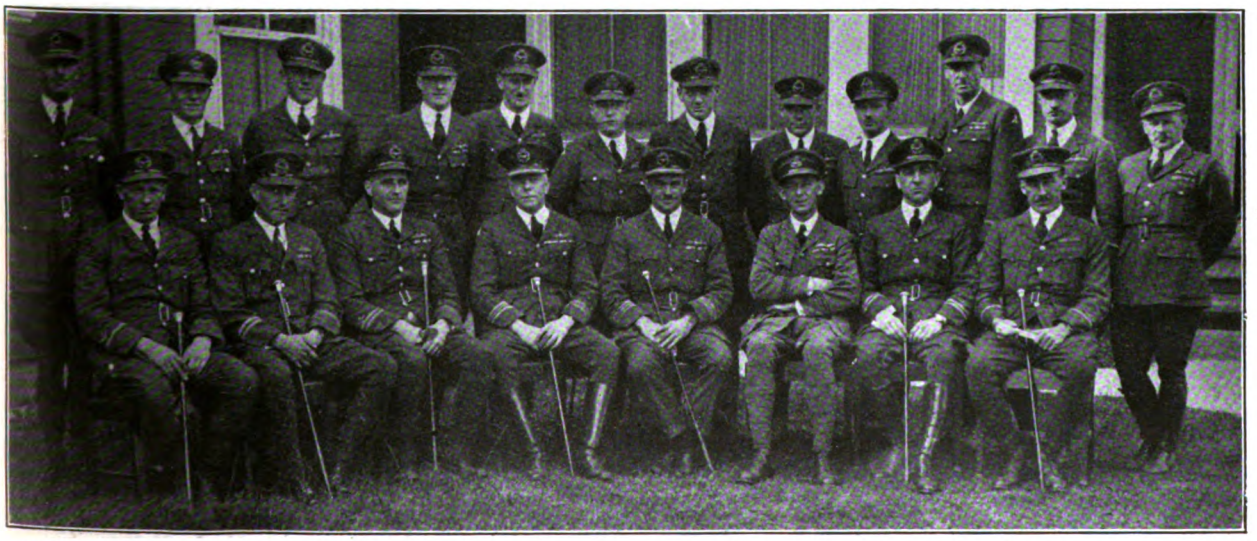
440 *Yards Championship.*—(1) AC. Reeves (Manston), (2) Sjt. McGinn (Digby). Time, 7 min. 5 sec.

100 *Yards Back Stroke Championship.*—(1) Plt. Off. Brackenbury, (2) AC. Greenwood. Time, 1 min. 23 4/5 sec.

220 *Yards Championship.*—(1) L-AC. Henderson, (2) AA. Godwin. Time, 2 min. 57 1/5 sec.

100 *Yards Breast Stroke Championship.*—(1) AA. Bradshaw (Halton), (2) L-AC. Nicholls (Henlow). Time, 1 min. 24 4/5 sec.

Diving Championship.—(1) AA. Feask (Halton), (2) AC. Richards (Uxbridge), (3) AC. Willmott (Felixstowe).



OPERTA APERTA (The Motto of No. 3 Squadron, R.A.A.F.).—The Commanding Officer, Sq. Ldr. Lucas, and Officers of No. 3 Squadron, Royal Australian Air Force. Third from the right (seated) is Flt. Lt. C. T. Anderson, on exchange from the R.A.F., and commanding the Army Co-operation Flight, and second from the left, Flt. Lt. James Moir who, with Flg. Off. Owen, flew from Australia to Greece and later from England to Australia.

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Plunging Championship.—(1) Flt. Lt. Smylie, 60 ft. 5½ in., (2) Wing Cdr. Mounsey (Henlow), 58 ft. 7½ in.

100 *Yards Championship.*—(1) AC. Robertson (Manston), (2) AC. Brown (Wittering). Time, 66 1/5 sec.

Inter-Unit Relay Race, 240 Yards.—(1) Henlow, (2) Digby, (3) Manston. Time, 2 min. 35 1/5 sec.

Inter-Unit Water Polo Championship.—Manston 4, Digby 4.

Once again Cranwell, which has a splendid swimming bath, was not represented in the Inter-Unit Competitions. Undoubtedly the moving of the Electrical and Wireless School to Cranwell will alter this state of affairs in future years.—C. M. MCA.

THE ROYAL AUSTRALIAN AIR FORCE.

The Department of Defence of the Government of the Commonwealth of Australia has recently placed an order with the Bristol Aeroplane Co. Ltd., of England, for eight Bristol Bulldog single-seat Fighters with Bristol Jupiter Mark VI supercharged engines. The Bulldogs are intended for the Royal Australian Air Force at Point Cook, for training purposes.

The original order for twenty-eight Westland Wapitis for the General Purpose Squadrons of the R.A.A.F. has been increased to thirty-one. Of these fourteen have been delivered and the rest are promised for the end of this year. Thirty-two D.H. Moth "air-frames" (that is machines without engines) have been ordered, on tender, from the Larkin Co.

No. 3 Squadron, R.A.A.F., the Unit which is the subject of the photographs accompanying these notes, was inspected by the Governor-General, Lord Stonehaven, and the Minister for Defence, Sir William Glasgow, during its three weeks in camp at Richmond, N.S.W., during July.

This Squadron has recently been re-equipped with Westland Wapitis. Its work includes Army Co-operation, Photography, Wireless, and general-purpose duties. The Commanding Officer is Sq. Ldr. Lucas and the Other Ranks consist mainly of citizen personnel drawn from Sydney.

During the 1929 camp "A" (Army Co-operation) Flight alone completed 270 hours' flying without a single breakage of any kind. This Flight is commanded by Flt. Lt. C. T. Anderson, D.F.C., an officer of the Royal Air Force who is on exchange duty with an officer of the R.A.A.F. Flt. Lt. Anderson transferred to the Royal Flying Corps after serving in France with the 2nd Manchesters in 1917 and was awarded the D.F.C. in 1918. After various appointments on the Home Establishment and in India he was posted to Australia for Army Co-operation duties in 1928.

On the occasion of the annual dinner of the Victorian Section of the Australian Aero Club, held in Melbourne in May, Air Commodore R. Williams, C.B.E., D.S.O., Chief of the Air Staff, Royal Australian Air Force, responding to the toast of the R.A.A.F., made several interesting statements concerning the Air Defence of Australia.

He said that the R.A.A.F.'s primary consideration was, of course, that of defence and the development of civil landing grounds, the provision of workshops and the training of civil pilots and ground engineers, such as is supplied by the various flying clubs or sections of the Aero Club, all helped quite materially towards readiness in case of need.

He also appreciated the helpful co-operation throughout the Commonwealth of the petrol and oil companies—a co-operation of vital importance from a defence point of view.

With regard to the equipment of the R.A.A.F., he said that the R.A.A.F. hoped to get rid of all its S.E.5as, D.H.9s, and Avro 504Ks within six weeks after making his speech. These would be replaced by the Westland Wapiti of which several of the order for 31 had already arrived in Australia, and other modern types.

The Service was hoping for a considerable increase in appropriations during the next financial year. The programme included re-equipping the Flying Training School and two Citizen Air Force squadrons.

It had been decided that the whole of the R.A.A.F. equipment, both Service and training, should be fitted with the automatic slot.

With regard to wireless, he thought it would be interesting for people to know that for the last two years the R.A.A.F. Station at Point Cook had been communicating every day, by short wave, with the British Air Ministry, thus saving a good deal of money that would otherwise have been spent in cablegrams. The same station was now in regular communication with Canada and New Zealand.

While the British Forces were in Shanghai this station had passed many messages on their behalf to England.

They hoped shortly to instal direction-finding apparatus. Provision had been made for all new R.A.A.F. equipment to carry W/T installations.

Good progress had been made during the year with aerial photography, and work had been done for the various State Governments.

The Citizen Air Force had now been running for about three years, but this was the first year in which they had had anything approaching the requisite number of aircraft for a squadron in training. The results they had got at this year's three weeks' camp were very good indeed.

In the matter of aircraft materials, he said that there were two schools of thought. One was for wooden construction, and the other for all-metal. A committee had been formed to inquire into the possibilities of manufacturing aircraft from Australian raw materials, and it hoped to arrive at a definite policy in the near future.

He thought that Australia would be willing to learn from other people. There were lots of brains throughout the world, and not all concentrated in one country. "We should," he concluded, "make use of experience throughout the world; and this was being achieved to some extent by means of a regular exchange of officers between the R.A.A.F. and the R.A.F."

THE ROYAL AUSTRALIAN AIR FORCE.—Lord Stonehaven, Governor-General of Australia, at Richmond, New South Wales, where No. 3 Squadron, R.A.A.F., are stationed. On the left of the group is Sq. Ldr. Lucas, Officer Commanding No. 3 Squadron, and next to him is Flt. Lt. C. T. Anderson. On the right is Flt. Lt. Walters, Adjutant.

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THE METAL-CLAD AIRSHIP.

The first product of the Aircraft Development Corporation, Detroit, Mich., which is now a division of the Detroit Aircraft Corporation—the metal-clad airship ZMC-2—has recently made its first test flights with success.

The Metal-clad Airship was designed by Mr. Ralph H. Upson in 1921, and in the following year the Aircraft Development Corporation was formed in Detroit, to develop this ship. Mr. Harold H. Emmons, who had charge of Aircraft Engine production for the U.S. Government during the War 1917-18, was president, Mr. Carl B. Fritsche vice-president and general manager, and Mr. R. H. Upson the chief engineer of the Corporation.

The first four years' operations of the company was confined to experimental work, but in the autumn of 1926 a contract was signed with the U.S. Navy for the building of an experimental airship, and it is this ship which has just made its first test flights.

Mr. Ralph Upson read a paper before the late Institution of Aeronautical Engineers (London) on June 4, 1926, in which he explained the principles which led up to the development and construction of the Metal-clad Airships. A *résumé* was published in THE AEROPLANE for June 16, 1926.

The ZMC-2 is remarkable for a number of novel features the most notable being that it is all made of metal.

The framework of the ship consists of five main transverse circular frames, seven intermediate frames of smaller section whose main function is that of acting as formers, and twenty-four longitudinals, the whole being covered with a skin of Alclad .0095 in. thick.

The longitudinals are of single-rolled channel-section duralumin varying in thickness from .014 to .032 in., and the five main circular frames are built-up in triangular section. The whole framework is stamped out for lightness.

The ship was assembled in two upright halves starting with the end rings at the bow and stern. This operation was illustrated in THE AEROPLANE of Feb. 20, 1929.

As the work of assembly progressed, the sections were hoisted towards the roof of the shed. When both sections were completed they were tilted over to a horizontal position and rivetted together. The work of assembling the framework and rivetting on the covering was done progressively.

The metal covering was cut in strips ranging from 6 ins. to 17¾ ins. wide and shaped to the correct curvature. To join these thin strips a special automatic rivetting-machine was devised.

This machine was set on a carriage running on concentric rails placed directly under each half of the hull. The machine was then adjusted to the proper angle of the hull plating and set in motion. This machine is capable of spacing, inserting, and completing 135 rivets per minute, or about 40,000 rivets in one 8-hour shift. In its operation it gauges the correct and uniform overlap of the plates.

Three strands of wire are fed like thread into the machine and sections, rivet-length, are sheared off, and punched through the two sheets of metal covering. After this a revolving cam heads-up the rivets. After rivetting the seams were treated on the inside with a bitumistic sealing compound.

The metal skin carries the shear stresses and a certain portion of the tensile stresses as well as reinforcing the internal frame members. It thus reduces the quantity and size of internal framing necessary.

Unlike the practice in other all-metal airships, the hull itself of the ZMC-2 acts as the only container for the lifting gas.

There are two ballonets, one forward and the other aft. The two comprise about 25 per cent. of the total hull volume. These ballonets are made of two-ply rubberised fabric and the seams are lapped, cemented and taped, but not sewn. They are inflated with air to regulate the gas pressure.

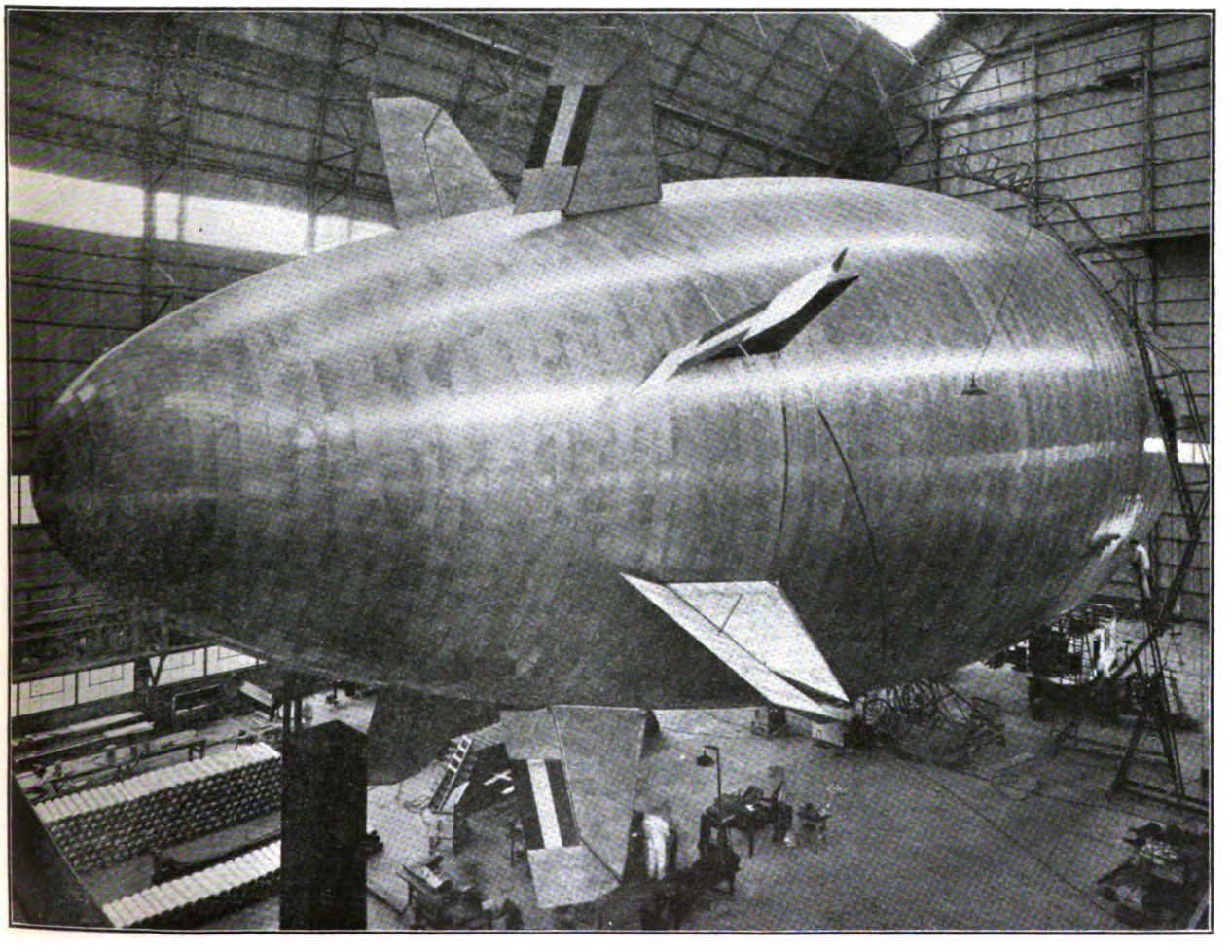
The control system comprises eight fins placed equidistantly round the hull, thirty feet forward of the stern.

The hull is 145 ft. 5 ins. long and 52 ft. 8 ins. in maximum diameter, giving a fineness ratio of 2.83. By placing the control surfaces well forward of the stern, the designers hope to utilise the smooth flow of air as near as feasible to the point of greatest diameter.

The four nearly vertical fins have four rudders and the four nearly horizontal surfaces are fitted with four elevators. All these surfaces are built up in a manner similar to that employed in the Ford all-metal monoplane.

The control-car is of metal, and like the control surfaces is covered with corrugated duralumin. On each side of the car is mounted one 200 h.p. Wright Whirlwind J-5 air-cooled radial engine driving a tractor airscrew.

Fuel is carried in a 200-gallon container in the rear portion of the car, together with 50-gallon water ballast container.



THE METAL-CLAD AIRSHIP.—The ZMC-2 nearing completion in its shed at Detroit.

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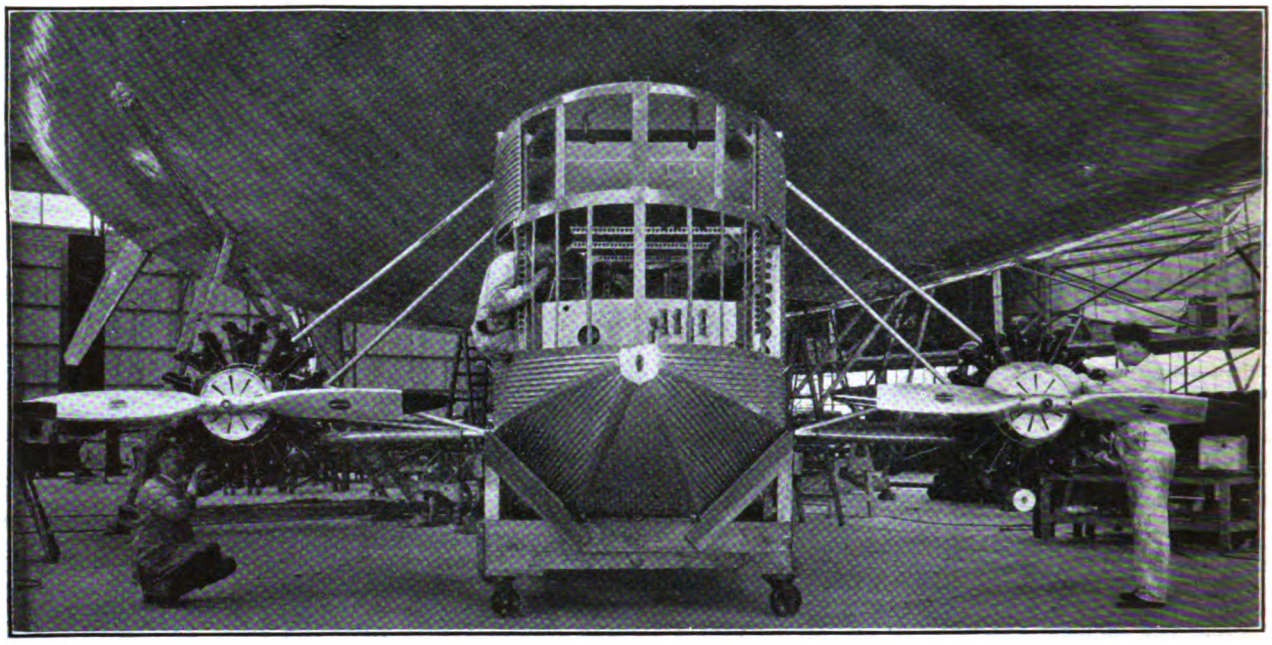


THE METAL-CLAD AIRSHIP.—The control car and engines.

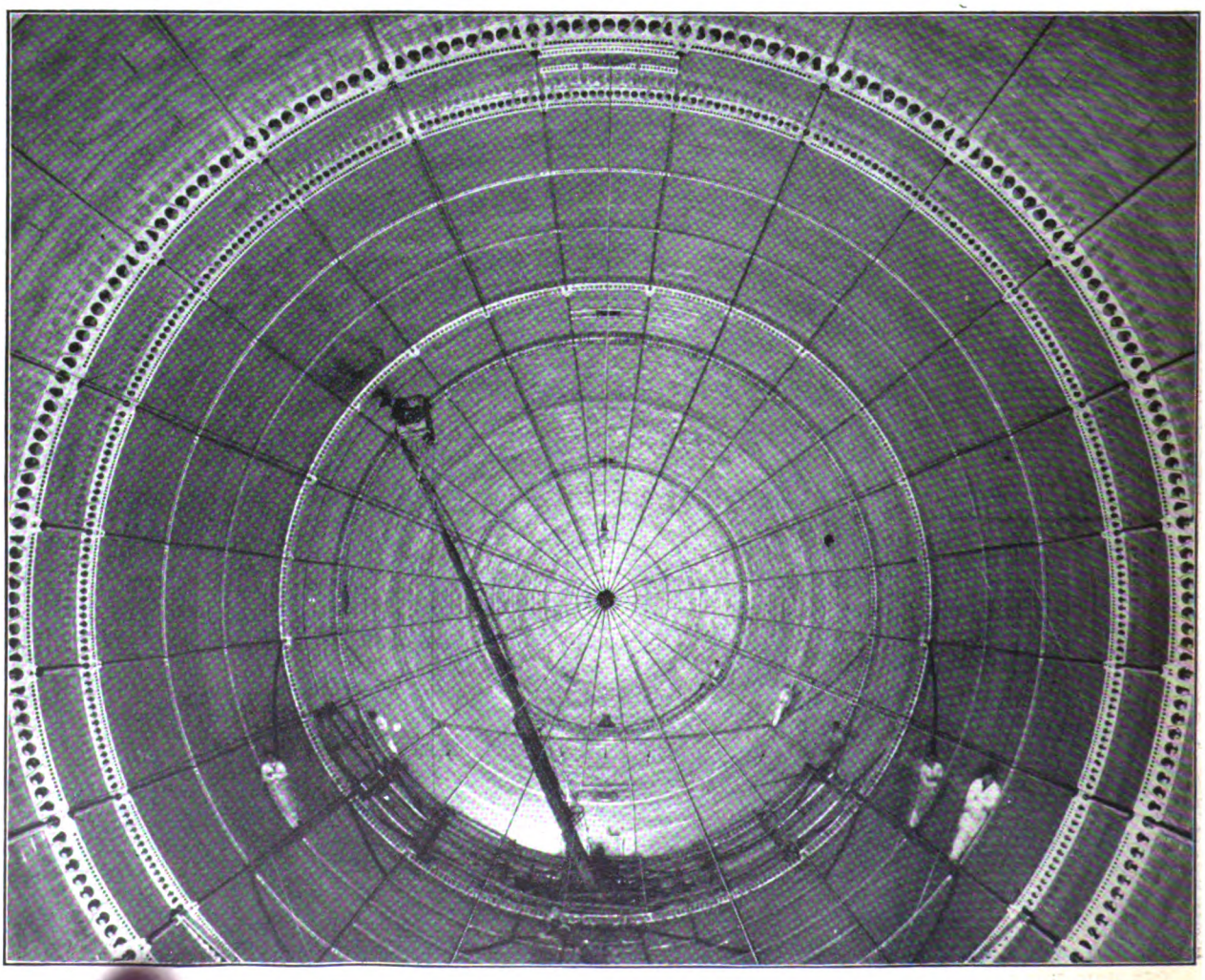
The ZMC-2 was designed to have a gross lift of 12,242 lbs., of which 3,442 lbs. is useful load, on a helium gas capacity of 202,200 cub. ft.

On its initial flight it carried a useful load of between 2,200 and 2,300 lbs., made up of five men, about 700 lbs. of fuel and oil, 400 lbs. of water, and 140 lbs. of sand, on a helium gas capacity of 180,000 cub. ft.

In the initial flights a speed of 47 m.p.h. was made with the engines running up to 1,200 r.p.m.

Before delivery to the U.S. Navy the ZMC-2 will undergo a number of tests, including a 15 ft. per sec. ascent under power, a 15 ft. per sec. descent under power, descent as a free balloon 1,000 ft. in 4 mins., as well as tests for trim, gas and air tightness, speed and reliability.

[One would like to add a personal note of congratulation to Mr. Ralph Upson and Mr. Carl Fritsche,—two of one's most valued friends in the United States,—on this preliminary success of a completely revolutionary experiment. They have pinned their faith to it for five years, despite the jesting disbelief of many of their friends and the jibes of all their enemies,—and they deserve every success that can come to them.—C. G. G.]



THE METAL-CLAD AIRSHIP.—An interior view of the hull,—with men on the sides to give scale effect.

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THE FORD TRIMOTOR AT CROYDON.

The Ford All-Metal Monoplane with three 425 h.p. Pratt and Whitney Wasps, which was perhaps the most interesting foreign visitor at the Aero Show, has recently returned to this country after flying about 7,500 miles on the Continent.

On Sept. 10 and 11 the Ford Motor Company arranged for this machine to give demonstration flights at Croydon. On Sept. 10 the Ford Trimotor, as Mr. Bill Stout's creation is called in the States, was to be seen flying pretty low over London. On Sept. 11 one went down to Croydon, and on arriving at Waddon was fortunate enough to meet Mr. Capel, of Cirrus Engines, Ltd., who designed the Cirrus Hermes. He had come to meet someone by the same train who failed to turn up. Mr. Capel gave one a lift up to the Air Port, where the Ford could be seen standing in front of the hotel with the engines lazily ticking-over

There did not seem to be much organisation, and nobody had much to say as to what had been done and what was going to happen. However, hearing that the Director of Civil Aviation was coming down, one waited about and watched the machine giving demonstration flights

One was not told how much fuel there was aboard, and the passengers certainly were not blessed with luggage, so that the Trimotor was not flying fully loaded; nevertheless, in a wind of 8 to 10 m.p.h. she leapt from the ground in about nine seconds and climbed with remarkable agility. The Trimotor appeared to be landing reasonably slowly, but the ease of handling on the ground was the real eye-opener.

The Ford has independent wheel brakes and a tracking tail-wheel. The result was that after landing the machine ran up to the crowd like a car and then swung right round in its own length much more quickly than a large car could have done. Nobody in the crowd bothered to move, because they knew the machine was under control and steerable.

During this part of the proceedings one was able to have a word or two with Mr. Manning, who is the Ford test pilot. He found time to outline roughly the European trip of the Trimotor

The Ford left Croydon and flew to Paris, where she stayed for two or three days giving demonstration flights for the benefit of everybody who mattered. The next step was to Berlin, by way of Cologne. In Berlin the Ford stopped for a week. In spite of the fact that Germany is the home of all-metal construction, the Ford attracted a lot of attention, and raised a lot of enthusiasm.

From Berlin the Ford flew to Moscow by way of Danzig and Riga. For some reason the Ford personnel were allowed all over the Government aircraft factories and saw everything there was to see. The Russians gave them a good time, and one gathers that the Ford crew felt the visit was well worth while.

From Moscow the Ford flew back to Berlin by Smolensk, Riga, Warsaw, and Posen. The next step was to Copenhagen, by Travemünde. At Copenhagen they visited the Rohrbach Works, and at Malmö, whither they next flew, they had a look-see over the Swedish Junkers Works.

Then they came back to Britain by way of Amsterdam and Rotterdam, to Lympne. The Ford flew on to Hamble to see the Contest for the Schneider Trophy, and then returned to Croydon.

By this time those who had flown had drifted away and the others had gone to tea. At this point one noticed Mr. R. R. Rhodes of Blackburns, who was busily engaged in comparing British and American aircraft practice, and seemed to be the only representative of British constructors who had taken the trouble to come and see it fly. In this connection one must again comment on the fact that the Americans display unbounded optimism in not protecting their duralumin either anodically or by means of paint or other protecting surfaces.

The polished Alclad exterior of the Ford still twinkles as brightly as it did at Olympia, but one was able to find traces of corrosion on the fairings of the tailplane bracing struts. One feels that time will prove the necessity of very carefully protecting all the interior structure work of these machines against corrosion.

Sir Sefton Brancker arrived about 16.25 hours, while the Ford people were all away having tea. The Director of Civil Aviation took this opportunity of making a careful study of the machine, and was occupied in doing this when his hosts arrived.

This was the first occasion that the writer had had the opportunity of seeing the American type of inertia starter motor in action. The starting handle is wound round and round quite slowly and about half a dozen times until the flywheel is rotating fast enough to emit quite a high note, a knob on the side of the engine nacelle is then pulled out to let the clutch in, the airscrew turns four or five times, and then the engine starts. On this particular occasion the engines had not been idle for very long, and one would not expect their starting to be difficult.

The inertia starter does, however, appear to offer a very satisfactory method of engine starting, and lacks the complication of extra pipe-lines and distributing mechanism entailed by gas or compressed-air starters.

Fifteen people, including Mr. Manning, the pilot, and Sir Sefton Brancker, who sat beside him, then climbed into the Ford and took off.

The tailwheel, with which this machine is equipped, makes taxying at all speeds with the tail on the ground a very comfortable business, but before one had finished analysing one's impressions on the subject, the machine had left the ground and was high above Croydon.

The Ford is fairly noisy, but the writer did not find it unpleasant, and was quite able to carry on a conversation with Mr. Rhodes, who was his neighbour across the aisle. The only objection to the opening windows is the fact that they let in more noise—there is no excessive draught.

Soon Putney Bridge hove in sight, and then Hammersmith—from the air its Broadway looks quite a pleasant place. From here the course was set by the Great West Road for Hanworth, and the Ford climbed up to 3,000 feet. From this height the pilots—for Mr. Manning and Sir Sefton Brancker were flying the machine between them—put the Ford into a fairly sharp bank and circled down, using the rudder only, with hands off the control column. The Ford apparently can be put into a bank and stays there without any increase of angle. The machine came in quite low over the hangars, and was soon on the ground—where a large number of black and orange Moths could be seen lined up.

The party trooped out of the machine and indulged in various conversations with the Hanworthians who came up to greet the invader. There were about a dozen cars parked at the edge of the field, as the Americans call it, and quite a lot of people in chairs were watching the proceedings.

The Ford soon took off again, and flew over to Heston, finally returning to Croydon, where as a final demonstration of its manœuvrability it was taxied up to the concrete and spun round four times by the simple process of locking one wheel.

As the hour was latening, one remained behind at Hanworth, whence through the kindness of Mr. C. A. Pennington one was transported by car, Col. and Mrs. Pennington very kindly driving one right into town.—T. J.

On Sept. 14 the Ford left for Constantinople through Central Europe. One of the stopping places is Friedrichshafen.

THE LA BAULE RALLYE.

The International Seaplane Meeting, organised by the Aéro Club de France, was held at La Baule, the new and much-advertised seaside resort on the coast of Brittany, on Sept. 14 and 15. The loud-speakers announced that everywhere both to the north and south of La Baule sea mist was still hanging about all day; but the bay itself was happy in that the sun shone, the fog had lifted, and even the visibility was quite good.

Among those present at the meeting were Monsieur Francois Poncet, Under-Secretary of State for Fine-Arts who represented the Government; Admiral Pirot, Prefect Maritime of Brest, representing the French Navy; Marshal Franchet d'Esperey; M. Blériot; M. Flandrin, President of the Aéro Club de France and Vice-President of the Chambre des Députés and others. British Aviation was represented by Air Vice-Marshal Sir Sefton Brancker, and Group Capt. Smyth Piggott, Air Attaché at Paris. M. Laurent Eynac was represented by Admiral Esteva.

There were three prizes for competition:—For the *Rallye Internationale Aérienne*, Frs. 100,000 in kind, and a work of art of value Frs. 10,000; for Speed, a cup awarded by the Aéro Club de France; and for Altitude, the George Dreyfus prize of Frs. 25,000. Saturday's was mainly a military programme; Sunday's was exclusively sporting.

The morning of the first day was devoted to group flying and evolutions over the bay by five C.A.M.S. (Lorraine, 450 h.p.), and two Goliaths. Some very pretty flying was seen, the C.A.M.S. in particular making nice landings in perfect formation. This squadron was put at the disposal of the organising committee by the Naval authorities.

In the afternoon a more spectacular programme had been arranged. Beginning at 2.30 p.m. a quite realistic bombardment and exhibition of aerial warfare took place, the crowd being most interested in the first demonstration in France of a smoke screen, and hugely delighted by the fountains of water thrown up by dropped bombs. "Worse than a whale!" was one sweet young thing's awestricken comment. For the smoke-screen display the weather was almost ideal,

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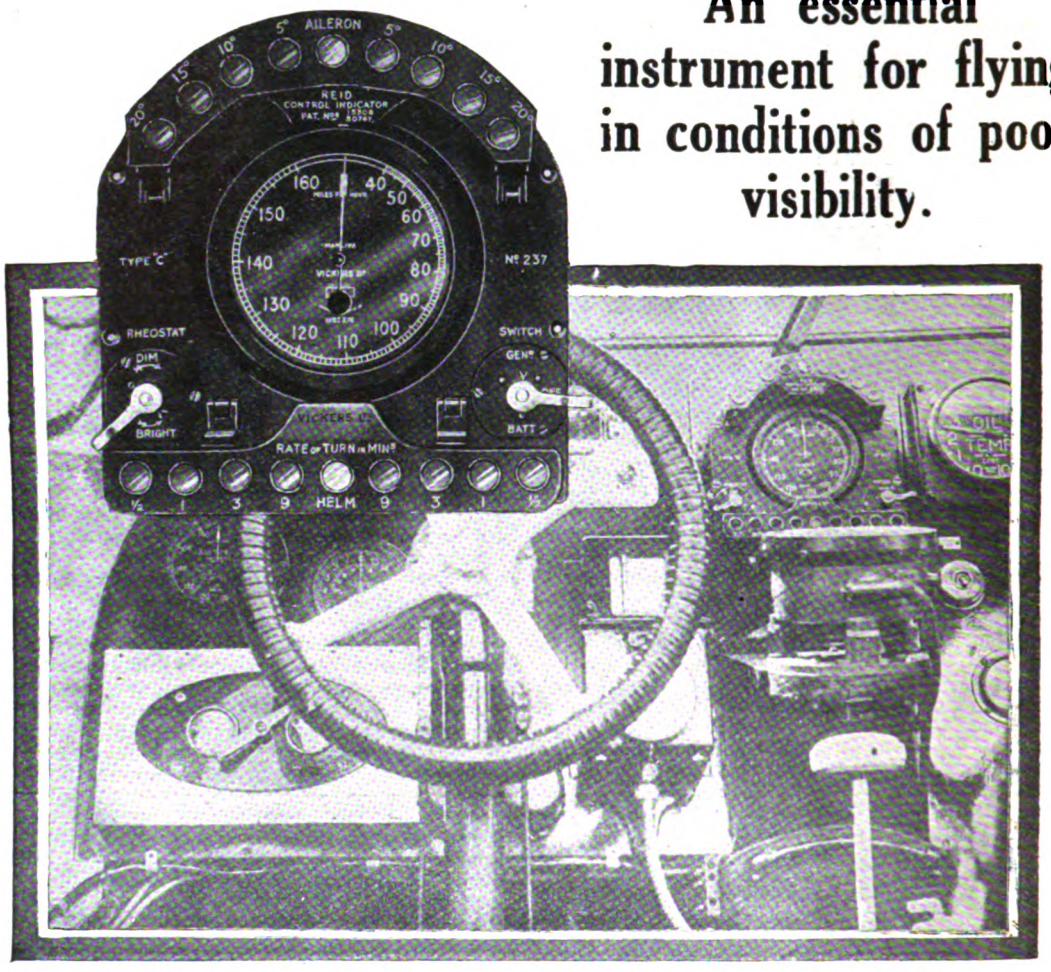

Captain C. D. Barnard, who in seven days with Her Grace The Duchess of Bedford, recently flew from England to India (Karachi) and back writes :—

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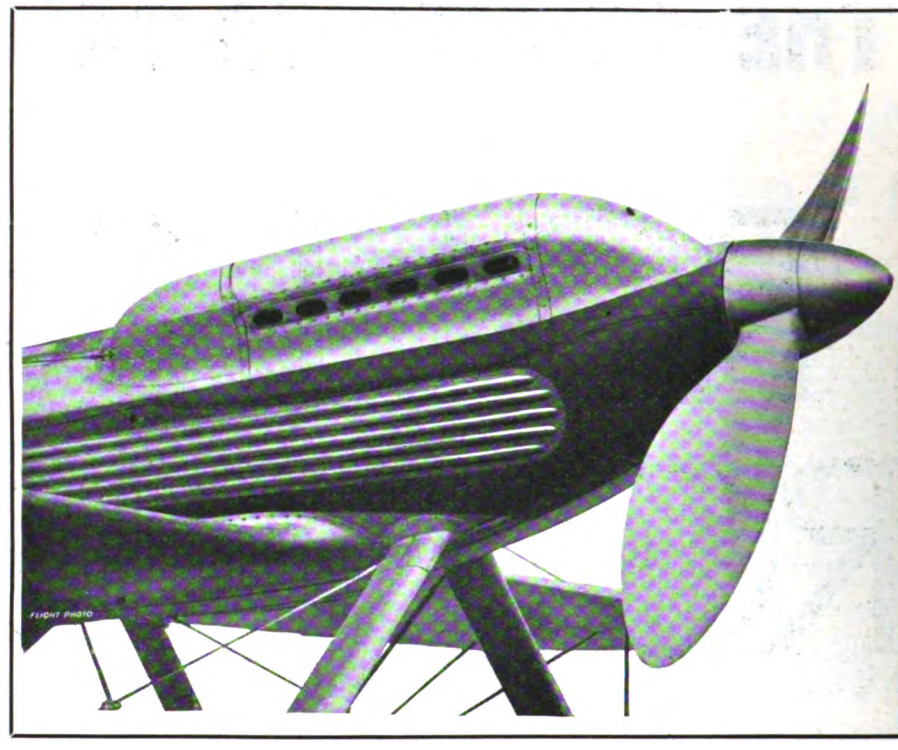

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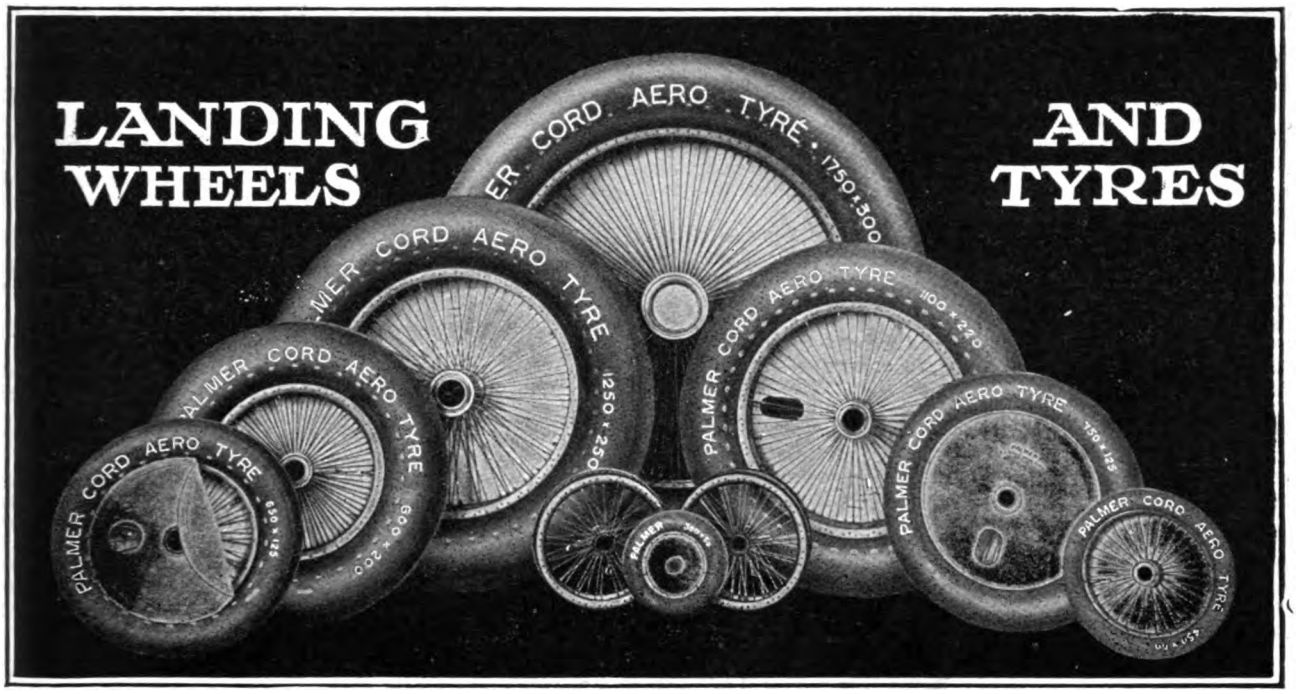

STANDARD SIZES

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
,,	195	130.	38.09	Central
300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
,,	172	130.	38.09	Central
575×60	21	160.	28.	Central
,,	180	150.	38.09	104/46
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
600×75	21	160.	28.	Central
,,	180	150.	38.09	104/46
,,	186	120.	34.92	Central
,,	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
,,	196	178.	55.	Central
600×100	188	120.	34.92	Central
,,	304	150.	38.09	104/46
,,	333	120.	34.92	Central
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700×100	112	150.	38.09	Central
,,	176	178.	44.45	Central
,,	179	178.	55.	132/46
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
,,	188	120.	34.92	Central
,,	336	178.	44.45	132/46
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
,,	176	178.	44.45	Central
,,	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
,,	162*	185.	55.	Central
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	177	185.	55.	135/50
,,	183	185.	55.	Central
,,	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
,,	174	250.	80.	Central
,,	182	185.	55.	Central
,,	187	220.	66.67	Central
,,	201	185.	60.32	125/60

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000×150	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	157	185.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
975×225	192	185.	60.32	Central
,,	194	185.	55.	125/60
1100×250	364	220	60.32	Central
1250×250	314	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	305	304.8	152.4	Central
,,	306	304.8	101.6	Central
1525×325	197	304.8	101.6	Central
1750×300	139	400.	152.4	Central
,,	191	350.	150.3	Central
1750×350	193	400.	125.	Central
2000×450	363	500.	152.4	Central

*Wheels Nos. 161, 162, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings. Grease gun equipment is now a standard fitting on all wheels.

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there being practically no wind at all, and the screen hung about for twenty minutes.

The interval between the aerial warfare display and the arrivals of the entrants in the Rallye Internationale was filled with some good stunting by Detroyat in a Morane-Saulnier, Sadi Lecointe, and others, and by periodic announcements of the varied progress made by Sir Sefton Brancker towards La Baule. Sir Sefton, who was brought by Mr. J. T. Pitt in his luxury flying yacht, the Saro Cutty Sark, came from England, but was delayed very considerably en route by the sea fog which prevailed everywhere except at La Baule. He eventually arrived at 6.30 p.m. and found the tide so low that he had to wade to land.

On Saturday night a dinner was held at the Casino to officials, participants, and the Press. Air Vice-Marshal Brancker, speaking in French, commented on the cordial relations which existed between French and English aviation circles and expressed a wish for them to continue. M. Flandrin announced that M. Blériot had promised to offer a cup value Frs. 100,000, for an international speed competition for landplanes next year. The 1930 spectacle was expected to be on a much larger scale.

On Sunday Detroyat again gave a display. His exhibition was chiefly distinguished by the number of people who hastily sat down when he passed overhead and by two enthusiasts of riper years who fell off their chairs in an effort not to lose sight of him. He made by far the greatest impression on the crowd. But at no time did the enthusiasm of the general public strike one as excessive—not even at his eighty degrees angle of ascent, or his falling leaf, or his flying upsidedown for three miles—unless dropping one's hat off the official tribune into the water is a sign!

Here a thought obtrudes itself; is England really the only country where spontaneous enthusiasm is expressed by loud noises in the throat? Clapping does seem *so* spineless after hearty cheers.

The scene in the afternoon was very picturesque. The tremendous expanse of perfectly flat sea with tiny waves flapping the sand; eleven sea-planes and various yachts, warships, and fishing smacks scattered about; an empty blue sky; and the blood-red Morane-Saulnier rushing to and fro. The gathering storm had conveniently heaped itself, along with the sun, behind one's back. The music which played during the intervals is worthy of mention; it was decidedly above the average for such a show. In this connection one really must congratulate whoever arranged the perfect synchronism of the best music, the loudest planes just overhead and the loud speaker. Maybe it was the man who did,—or rather didn't,—the fireworks!

The entrants in the Rallye had left on a twelve hundred kilometre course at 4.30 a.m. Saturday and arrived back between 5 p.m. and 7 p.m. the same night, and the results were announced early on Sunday. It did not necessarily follow that the first man back was the winner as the points were awarded according to a formula L^2/W, where L was a coefficient of the distance and W the power per passenger—all rather reminiscent of Orly and somewhat complicated.

De Précourt was first on a Schreck amphibian (Hispano-Suiza 180 h.p.), he thus wins Frs. 50,000 and the Cup offered by *Le Journal*. Challe was second on a Schreck (Lorraine). Tanguy third on a Schreck (Hispano 180 h.p.). Ponce, the Air Union pilot, who had seven passengers, was fourth. He was flying a Loiré-Olivier (420 h.p. Gnome-Rhone). Paumier on his Schreck amphibian (Hispano), was fifth.

The Speed Contest was won by Tanguy, who did a hundred kilometres in 55 mins. 54 secs. Paumier, Ponce, and de Précourt arrived in this order; and Challe gave up through engine trouble.

Great interest was shown in the arrival of a miniature land-machine, the Mauboussin, which had just broken four world's records. Two Portuguese Macchi machines were unfortunately stranded en route and after their arrival at Corunna no more news was received of them. Thus the Rallie was robbed of its last chance to be considered international this year by a series of unforeseen happenings.

Monday was devoted to joy-riding the more venturesome of the general public, and already on Sunday there was quite a formidable list of applicants. Altogther quite a jolly week-end and one that brought back very vividly the day of the school sports. Still, "little drops of water...." and surely the babe of two who clapped her hands at "le joli bruit" when Detroyat passed will have her own plane in twenty years.—V. G. W.

AN INTERNATIONAL OCCASION AT ROCHESTER.

At the beginning of this year the French Government decided to allow the use of foreign-built aircraft by the subsidised French Air Lines. Later in the year, as reported in THE AEROPLANE of April 10, the French Government ordered from Short Bros. Ltd. of Rochester a Short Calcutta similar to those used by Imperial Airways on the Mediterranean section of the Indian Air Route.

This latest Calcutta has now been completed and recently left for San Raphael, the Naval Air Station on the Mediterranean. Its route was that flown by our Far East Flight—and by Sir Philip Sassoon in the Blackburn Iris,—namely, down to Bordeaux, and then overland to the Mediterranean.

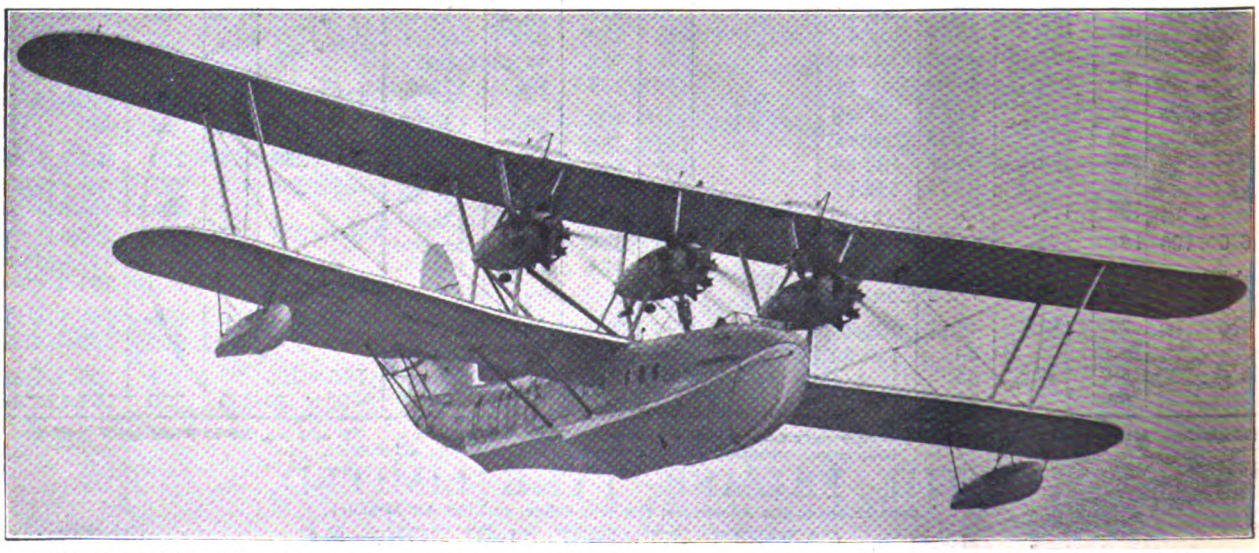
On Tuesday, Sept. 3, Monsieur de Fleuriau, the French Ambassador, accompanied by Lieut. de Vaisseau A. Sala, the French Assistant Naval Attaché for Air Services, paid a visit to Rochester.

After lunch the Ambassador and his companion went aboard the Calcutta, and when they had completed a tour of inspection, were taken for a flight, together with Mr. Oswald Short and a party of five or six. Besides the pilot, Mr. Lankester Parker, there were three in the crew aboard.

The writer's next-door neighbour on the trip was a newspaper man who had flown all over the Luft Hansa routes and France and has also flown in big airships. His first remarks were on the comfort of the pneumatically upholstered chairs and the feeling of spaciousness.

The Bristol gas-starter got the three Bristol Jupiter IX's going one after the other with no wait at all. The moorings were slipped and the big boat began to swing upstream. Mr. Parker taxied the boat about to warm up the engines, and when he had got into position above the Works turned downstream and opened out. The machine left the water almost immediately and was soon high above the three towns of Strood, Rochester and Chatham.

Owing to the fact that most of the party were smoking (the Calcutta's petrol tanks are in the upper centre-section,



FOR FRANCE.—The Short Calcutta (three Bristol Jupiter engines) being flown at Rochester before delivery to France.—(*"Aeroplane" photograph.*)

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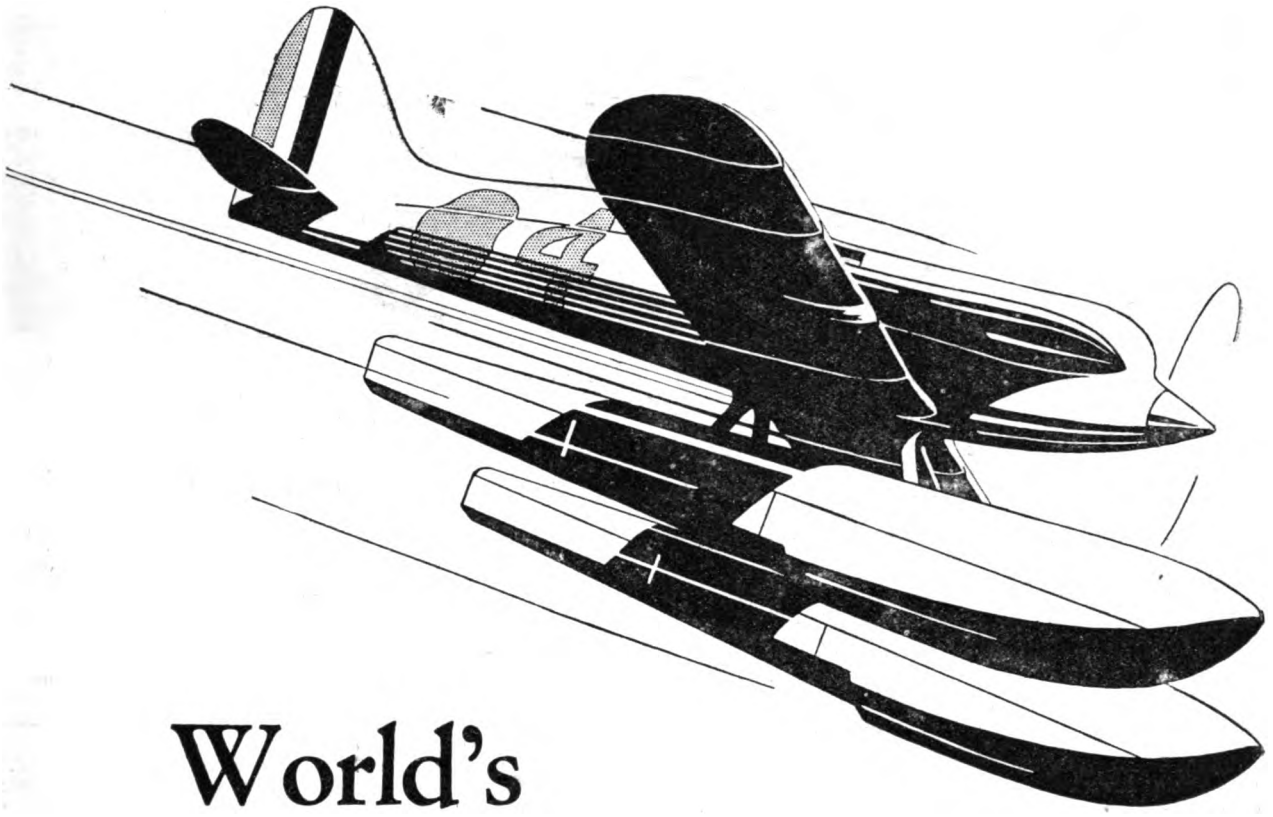

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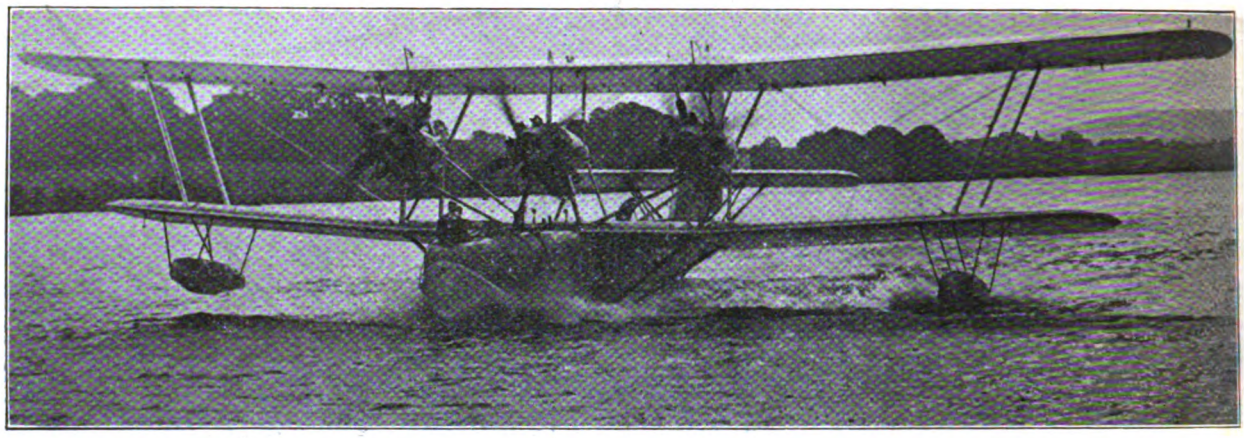


ON THE WATER.—The French Short Calcutta taxying on the Medway after the demonstration flight.
("Aeroplane" photograph.)

so that there is no danger of fire), it soon became necessary to take advantage of the adjustable ventilators in the central duct along the ceiling.

[One ventures to suggest that a leak in a tank in the centre-section, trickling down to struts, might conceivably form gas which might be sucked into the ventilating system of the cabin, with evil effect.—C. G. G.]

One hears so much about the noise problem in big aircraft that one wishes the hundreds of thousands who are compelled to travel twice a day by underground trains could have the opportunity of travelling in a Calcutta. There is no doubt that the result would be a chorus of praise that would result in a terrific burst of airmindedness. The noise is considerably less than that in underground trains at full-blast or in a motor-bus roaring up a hill on bottom gear.

There is no trace of deafness on landing. There appears to be no trace of vibration from the engines, and the view of the enormous steel tube chine-struts seen from the window is guaranteed to stouten the most failing heart.

The view from the seats is good. One can see everything on either side. Only in a forward direction is there no view. Even so the view from such a machine is much more interesting than that from a train, one can see so much farther and there is not that succession of objects flashing past that defeats the eye of the train-traveller.

The Calcutta climbs at the rate of 710 ft. per min. And at this height we travelled along the Medway doing "S" turns, so that Lieut. Sala, who was doing a turn of piloting, could feel what the boat was like on the controls.

After flying over some of the dockyard the Calcutta dropped down on the Medway to give the photographers a chance, and then rapidly regained her lost height. And having flown for half an hour Mr. Parker brought the machine onto the water.

One noticed most vibration when the engines were cut off, for then one seemed to feel the airscrews swinging round. This was all the more noticeable owing to the lack of vibration with the engines on.

Through the porthole one watched the water rushing past and waited for the bump as the boat hit—but it didn't. There was a sudden tearing sound of water rushing along the keel, which rapidly died away, and the boat was back on the water.

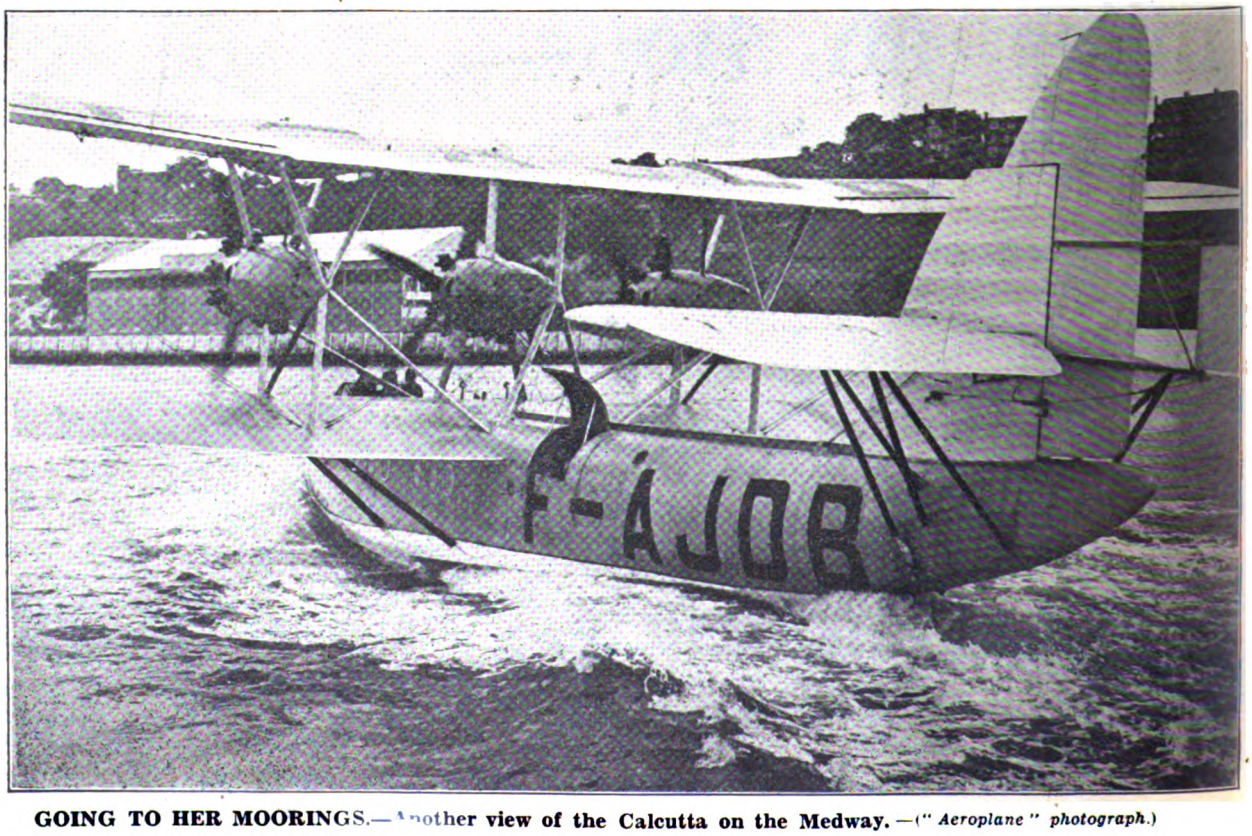
The drogues were thrown out and the boat taxied to pick up her moorings, which job of work was done by a member of the crew from the front cockpit, and then the passengers went ashore in the dinghy.—T. J.

A BROBDINGNAGIAN BLACKBURN BOAT.

The Blackburn Aeroplane and Motor Co., Ltd., has submitted designs and tenders to the Air Ministry for the building of a flying boat capable of carrying 50 passengers on a non-stop range of 1,000 miles, to be fitted with six Rolls-Royce "F" type engines.

The intention of the Air Ministry is, so reports say, to use this type of flying boat on certain over-water sections of the England—Australia and England—South Africa air routes

A model of this type of flying-boat was shown on the Blackburn stand at the last Aero Show. In general arrangement it resembles the Nile flying-boat. The six engines will be disposed, four in two tandem pairs and two as tractor engines, one on either side of the tandem engines. The total weight of the boats will be between 30 and 40 tons.



GOING TO HER MOORINGS.—Another view of the Calcutta on the Medway.—(*"Aeroplane" photograph.*)

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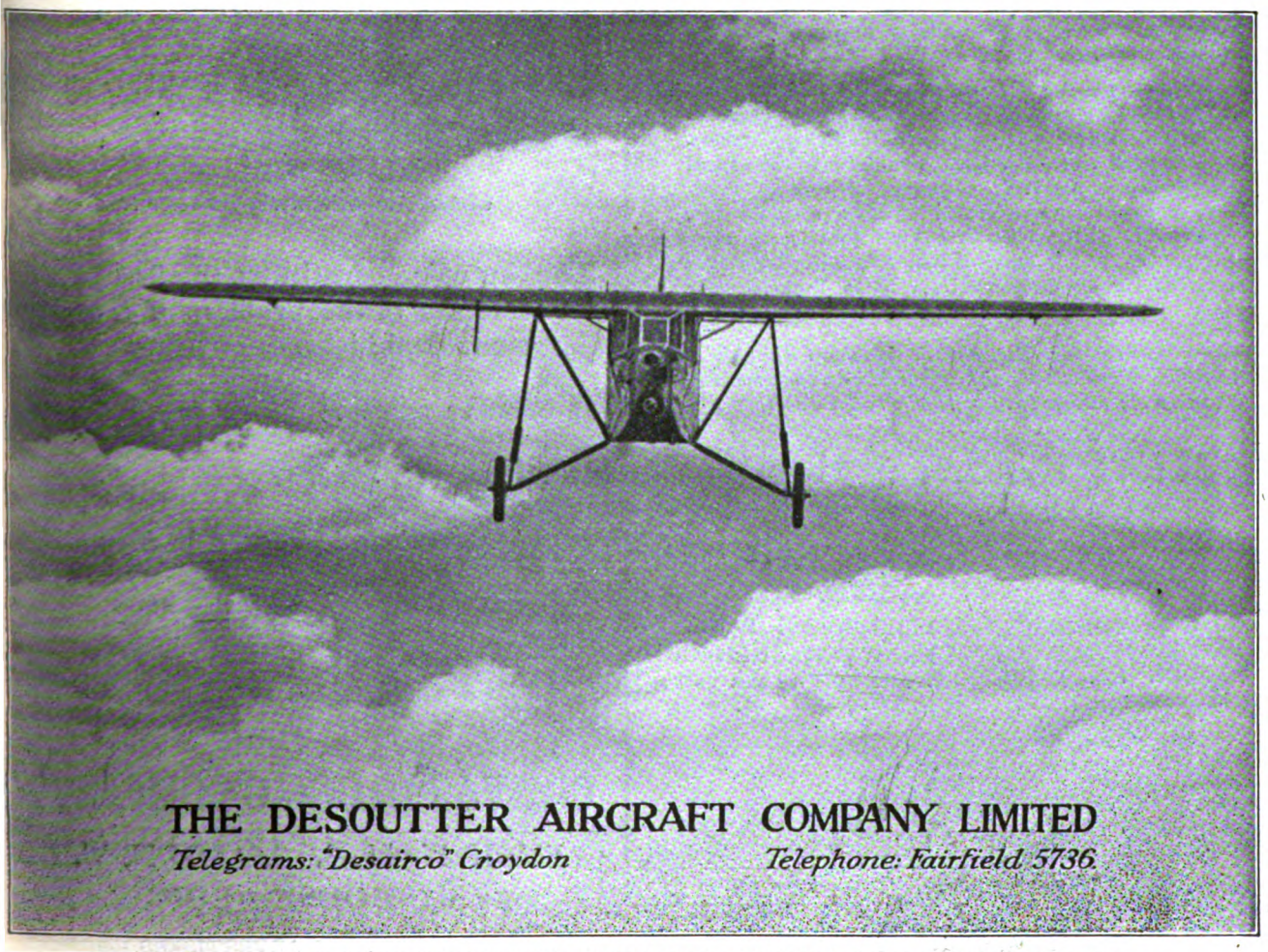
HANDLEY PAGE
AUTOMATIC SLOT CONTROL

"That the slotted wing has been found to be particularly useful in landing in water, is the opinion of the Director of the Provincial Air Service, who contends that a pilot is thus enabled to 'flatten out' ten or more feet above the surface, without resulting damage, in a 'pancake' landing. Among fliers it is generally conceded that unless there is a ripple to serve as a guide, it is practically impossible to judge distance accurately in landing on calm water."

"EVENING TELEGRAM,"
TORONTO.

HANDLEY PAGE, LTD.,
Cricklewood,
LONDON, N.W.2.



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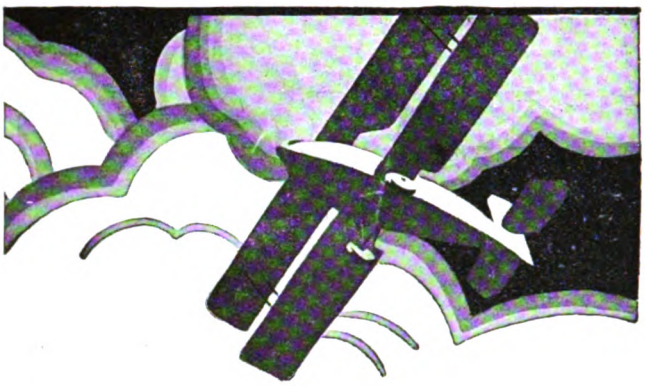

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Hanworth, the London Air Park and Country Club, is now open as the best-equipped private flying centre in the country. In addition to flying activities that include instruction, private flying, and an air taxi service, Hanworth offers social facilities unequalled in the aviation world.

A limited number of members are now being enrolled at the following rates: Flying Members 5 gns. entrance fee, and 5 gns. annual subscription; Non-flying Members, 3 gns. in each case. For 1929, two-thirds of the annual subscription is rebated. Serving Officers of H.M. Regular Forces are admitted without entrance fee. Membership of the Hanworth Club confers honorary membership of all other N.F.S. Clubs. Residential terms at Hanworth range from 5½ to 7 guineas per week.

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

MR. BROAD AND THE ZENITH CUP.

The Zenith Cup, like the Schneider Trophy, in no way sembles a drinking vessel. The trouble is that the French ll it *La Coupe Zénith*. Really the cup is a bronze statuette a nude figure holding a palm high above her head.

This cup has been offered, through the generosity of *La ociété du Carburateur Zenith,* under the auspices of the éro Club de France, for the fastest time round a circuit of ance in an aeroplane carrying more than one person.

The circuit is by way of Orly, Tours, Toulouse, Marseilles d Lyon and back to Orly. The distance is 1,044 miles.

On Sept. 16 Mr. Broad, flying the D.H. Gipsy Moth which flew in the King's Cup Race, left Orly at 07.30 hrs. He mpleted the circuit and returned to Orly at 16.44 hrs., an apsed time of 9 hrs. 14 mins. 47 secs. His average speed as therefore 113 m.p.h.

This is considerably better than the best previous time, hich had been put up by Herr Roeder, who flew a Junkers nior, or A.50 with a Walter engine. His average speed as 83 m.p.h.

The cup is open to competition between May 1 and Sept. and in that time anyone is free to enter provided they ive two days' notice. There is yet time for Mr. Broad's ne effort to be beaten.

Mr. Broad was flying the same machine which he flew the race for the King's Cup. This machine was specially treamlined and had a low coupé top. The irreverent called "The Pullover." The Gipsy engine is quite standard. In rder to qualify for the competition, however, an extra seat ad to be fitted.

To comply with this regulation Mr. Broad's faithful comnion, and engineer, Mr. Weedon, was "boarded-in and lled-up, with a slit to breathe through"—as one of the H. people put it. At any rate he was given a livingace which the Factory Act would not approve, and ckily covered in it about the amount of the whole King's up Course in one day.

The time is taken from Orly to Orly, so Mr. Broad merely nded and checked in at three of the enforced stopping laces and re-fuelled only once.

Altogether it was a fine performance by men, machine nd engine, and it is not at all likely to be beaten before he end of the month.

With a little luck the Moth will thus bring to England et another of the few "classic" trophies left to be aptured.

THE BRISTOL AERIAL GARDEN PARTY.

The Bristol and Wessex Club's Aerial Garden Party, which ill be held at the Filton Aerodrome on Sunday, Sept. 22, promises to be a thoroughly enjoyable show. Among other events a competition will be held for the Whiteley Challenge Cup, which can be held for six months. The competition will be either a bombing competition or a balloon-bursting competition, according to the weather. There will also be three other prizes for this event.

Many of those who are going to the Haldon (Teignmouth) meeting on the previous day are going on to Filton, and the organisers are looking forward to a very cheery meeting.

THE LANCASHIRE AERO CLUB AT HOME.

Although the attendance of visiting aircraft was unfortunately small, owing to a clash of dates with the opening of the Leicestershire Aero Club, the Lancashire Aero Club's "At Home" on Sept. 14 was highly successful and enjoyable.

Between two and three hundred members and friends filled the club house and enclosure, and kept the catering department fully employed what time they were not watching the flying or trying their skill at the various side-shows thoughtfully provided.

The flying events included the landing competition for the Pemberton Trophy (won by Mr. Twemlow), a bombing attack on a moving target (won by Mr. Scholes), a balloon-bursting contest (won by Mr. M. A. Lacayo) and an Aerial Treasure Hunt (won by Mr. T. N. Stack).

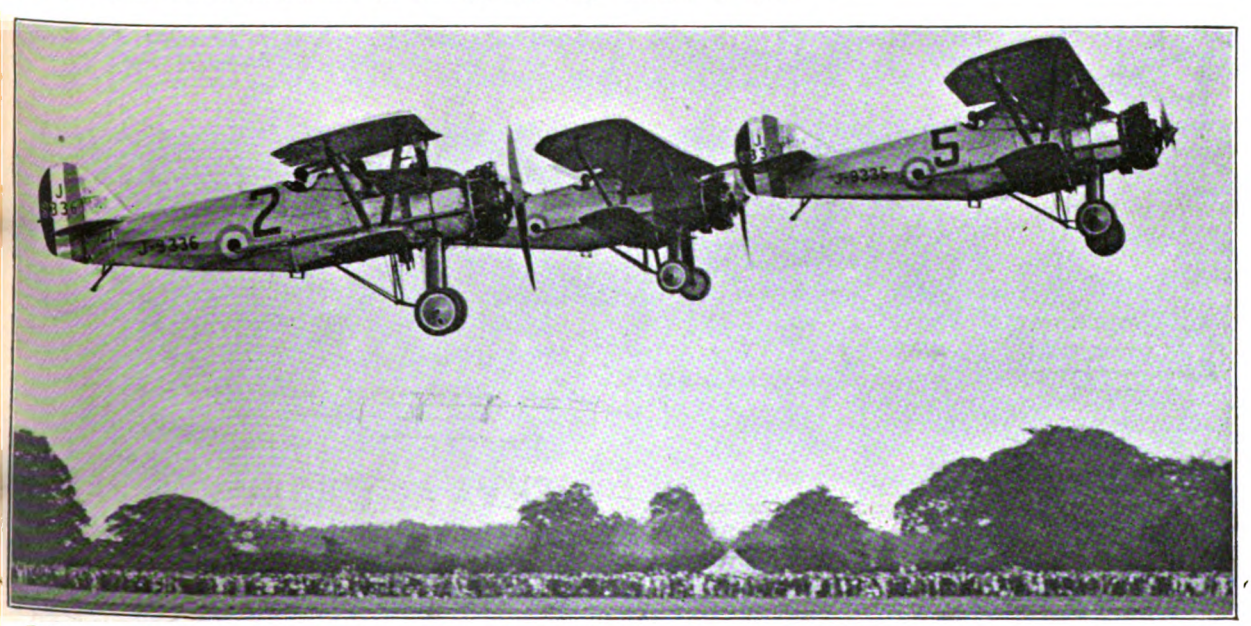
This last event was a novelty in which pilots were given written instructions by which to follow a course which ultimately led them to a ground signal indicating the buried treasure. On returning to the aerodrome they had to trace out on the judges' map the course followed and the site of the treasure. Not so easy as it sounds, but every competitor except one was successful. Mr. Stack won on time by a short head.

A model aeroplane contest produced some humorous home-made efforts from both juniors and seniors. And a height-judging contest produced some humorous guesses, ranging from 200 to 14,000 ft.

First-class flying displays were given by Mr. T. N. Stack and Mr. Schofield, both of National Flying Services Ltd., and by several R.A.F. pilots, whose anonymity shall be respected, on Avians loaned by the club and by A. V. Roe and Co. Ltd.

Tea and supper were served in the club-house and after the latter event the verandah was cleared and about 50 couples took the floor to the strains of sweet music.

The Committee promises that the event will be repeated and hopes next time to be able to give longer notice to the friends of the club.



THE AWAKENING OF LEICESTER.—The Armstrong Whitworth Siskins (Armstrong Siddeley Jaguars) from No. 3 F.T.S., Grantham, at the opening of the Leicestershire Club. —(*"Aeroplane" photograph.*)

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THE NEWCASTLE AIR PAGEANT.

The Newcastle Air Pageant, which is being organised by the Newcastle-upon-Tyne Aero Club Ltd. for Oct. 4 and 5, will be one of the most important meetings of the year. The flying on the Friday (Oct. 4) will consist of heats of the races for the Grosvenor Cup, the S.B.A.C. Challenge Cup and the Air League Challenge Cup. In the event of bad weather these heats will be flown on the Saturday morning.

The official programme will start at 14.00 hours on Saturday and will include, in addition to the finals of these races, an hour's show by No. 29 (Fighter) Squadron, R.A.F., exhibition flying by civilian pilots and a parachute drop by Mr. John Tranum. The small airship which has been built in the old balloon-shed near Cramlington will also perhaps attend the Pageant.

The Newcastle Club have mustered a generous supply of prizes in support of the Challenge Cups. The particulars of the Challenge Cup competitions and the prizes to be won are as follows:—

AIR LEAGUE CHALLENGE CUP (HANDICAP) RACE:—

The race is open to Light Aeroplane Clubs and there is no restriction as to the number of competitors entered by each club. The aircraft must be the property of the club entering *or a member of the club.* The pilot must be a member of the club entering. Paid pilot instructors are excluded.

The race is open to aircraft the weight empty of which must not exceed 1,200 lbs. Weight empty means total weight in flying order, the following weights not being included: petrol, oil and crew. The weight of water in the radiators shall count in the weight empty.—Course: 1 lap (total distance 15.85 miles).

First Prize: Challenge Cup presented by Air League of British Empire, and £25. *Second Prize*: £10. *Third Prize*: £5.

THE GROSVENOR CHALLENGE CUP (HANDICAP) RACE:—

The race is open to any type of aeroplane the weight empty of which must not exceed 1,200 lbs. Weight empty means total weight in flying order, the following weights not being included: petrol, oil and crew. The weight of water in the radiators shall count in the weight empty.—Course: 2 laps (total distance 31.7 miles).

First Prize: Challenge Cup presented by the late Lord Edward Grosvenor, and £100 presented by the *Evening World*. *Second Prize*: £15. *Third Prize*: £10.

THE S.B.A.C. CHALLENGE CUP (HANDICAP) RACE:—

This cup will be awarded to the Light Aeroplane Club which enters the aircraft which wins the race. The race is open to all Light Aeroplane Clubs, and there is no restriction as to the number of competitors entered *by each club.* Competing aircraft must be the bone-fide property of, and registered by, the entering club. The pilot must be an *ab initio* pilot trained by the entering club and holding an Air Ministry "A" Licence. No pilot holding a "B" Licence may compete.

The race is open to aircraft, the weight empty of which must not exceed 1,200 lbs. Weight empty means total weight in flying order, the following weights not being included: petrol, oil and crew. The weight of water in the radiators shall count in the weight empty.—Course: 1 lap (total distance 15.85 miles).

First Prize: Challenge Cup presented by the Society of British Aircraft Constructors, and £50. *Second Prize*: £10. *Third Prize*: £5.

The date for receiving entry forms was Sept. 14, but late entries will be received up till noon on Sept. 26 at a fee of five guineas per machine for each of the three races. Late entry fees are not returnable.

Completed forms must be sent to J. Bell, Hon. Sec., Newcastle-upon-Tyne Aero Club Ltd., Cramlington Aerodrome, Northumberland.

Competing aircraft must be at Cramlington Aerodrome for verification by the officials not later than 14.00 hours on Oct. 4. No shed accommodation is available and competitors must be prepared for their machines to be in the open overnight. All picketing gear must be brought with the machines.

THE LONDON AEROPLANE CLUB.

For the month of August the instructors were Major H. G. Travers and Mr. F. R. Matthews. The ground engineers were Messrs. C. Humphreys and A. E. Mitchell. The following machines were in commission:—G-AABL, G-AABN, G-EBZC, G-AAEX, G-EBXS and G-EBWY.

The club was closed down for the first fortnight of August for the staff holidays, but the flying time for the month of August was as follows:—Dual instruction, (134 flights), 65 hrs. 45 mins.; solo flying (159 flights), 66 hrs. 30 mins.; passenger flying (8 flights), 2 hrs. 40 mins.; test flights (53 flights), 9 hrs. 25 mins. Total, (354 flights), 144 hrs. 20 mins.

During the month the following members qualified for their "A" licences:—H. Armstrong, E. H. Allen, Hon. Miss M. K. Leith, R. O. I. Muntz.

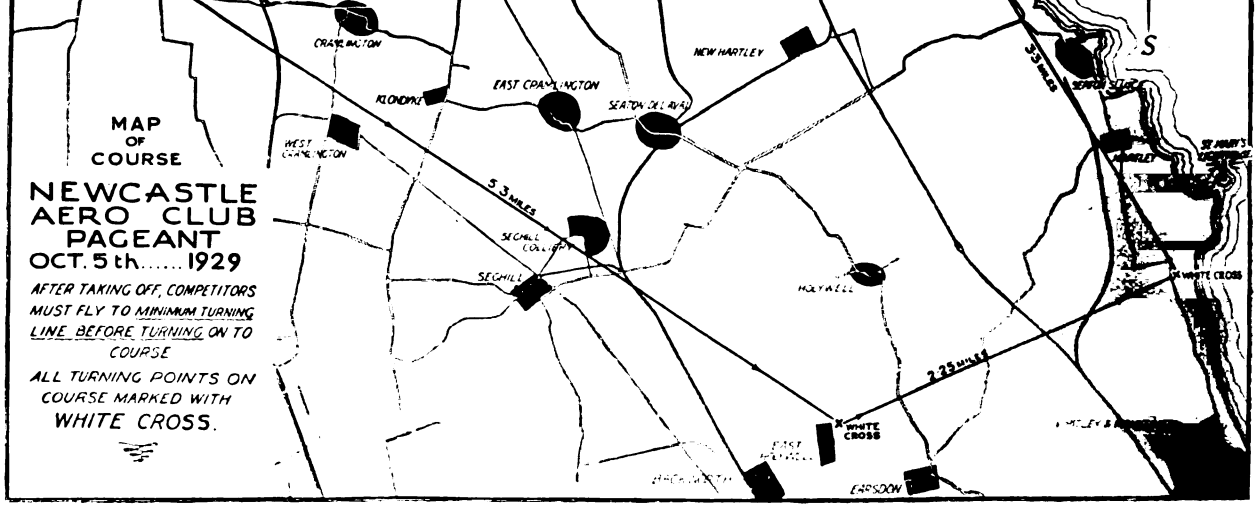
THE USES OF PRIVACY.

Country Clubs in the United States have their uses. Col. Charles Lindbergh, wishing to teach his wife to fly, found naturally that at any ordinary flying school he would be so surrounded by camera-men and Press people that he would practically never be able to push his way through them to get to an aeroplane. But the Aviation Country Club, of Hicksville, the opening of which was illustrated in THE AEROPLANE recently, is really exclusive, even for such a democratic country as the United States, so Colonel and Mrs. Lindbergh hied themselves thither, with the result that in six days Mrs. Colonel Lindbergh was able to go solo. Shortly afterwards she and her husband started off to look for the missing Ford tri-motor belonging to Trans-Continental Air Transport, which had piled itself up on a mountain in the Arizona Desert.—Really good work all round.

CANADA—MEXICO NON-STOP.

On Aug. 12 Mr. "Tex" Rankin, in a Great Lakes 2T—1 light biplane (90 h.p. American Cirrus engine), flew non-stop from Vancouver, B.C., to Agua Caliente, Mexico, a distance of 1,350 miles, in 13 hours 8 mins. His engine consumed 75 gallons of petrol of the 100 gallons carried, representing a fuel outlay of $22.50 (£4 10s. approx.).

But why? Vancouver, B.C., is no more dry than Mexico. And *agua caliente* can be got there also.—Apart from that the flight was an extraordinarily fine performance.



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THE OPENING OF THE LEICESTERSHIRE AERO CLUB.

THE GIVER OF BLESSINGS.—Mr. Frederick Montague, M.P., Under-Secretary of State for Air, after blessing the Leicestershire Club's Opening, leaves for Town in the official Moth, piloted by Flg. Off. P. P. Grey.
("Aeroplane" photograph.)

The opening of the Leicestershire Aero Club was a thoroughly good show. Hitherto the Northamptonshire Aero Club meetings have always more or less stood out as being friendly and cheery and good fun generally, but Leicestershire looks like running Northampton very close. They seem to have got the right people into the Club, and if only they can collect some of the hunting folk as well it will be one of the best flying organisations in the country.

The present aerodrome at Desford is seven miles out of the City of Leicester, and so is too far away to be much use as a commercial aerodrome. Also it is distinctly on the small side, and there are trees round it, which make it smaller. Consequently, though it is quite good for a Club aerodrome, there is very little chance of its being taken over by National Flying Services, Ltd., in accord with one of the original schemes for the Club, or of its becoming a Municipal Aerodrome.

The initial campaign in favour of forming an Aero Club for Leicester was, according to the excellently produced Programme of the Meeting, launched in the columns of *The Leicester Mercury*, which paper deserves full credit for its good work. The enthusiasts who started the Club invoked the aid of the Aviation Committee of the Leicestershire Chamber of Commerce and its energetic secretary, Mr. Harry Purt. Mr. Lindsay Everard, Member of Parliament for Melton Mowbray Division, consented to become President of the Club.

Whether the Committee of a club can best be formed of practical aviators or of sound business men is a point which can be argued, but, anyhow, the members of the Club chose Mr. Roy C. Winn as Chairman, and Mr. C. Hedley Briggs, M.C., D.F.C., as Vice-Chairman, both officers formerly in the R.A.F. And from what one saw of their work at the opening ceremony, they certainly combine the qualities of business men and practical aviators, for seldom has one seen a meeting better organised or better run.

The Club already has a very neat and comfortable Club House, of the wooden bungalow type, and a wooden shed just big enough for its one Moth. This first Moth was acquired very largely through the generosity and encouragement of the President, Mr. Everard, and it has been named the Quorn—as a compliment, and as an encouragement, to the biggest of the hunts in the vicinity. The Pytchley and the Atherstone are near neighbours, so there are hopes that they may come in, too.

In this connection one remembers that in the very early days of Service Aviation one Captain Burke, of the Royal Irish Regiment, who was one of our first Army aviators, went over to Ireland on leave, and at a dinner party endeavoured to make the local sporting crowd take some interest in flying. He described the joys and risks of flying without drawing much interest, and at the finish one sportsman remarked: "Well, anyhow, it must be grand practice for the huntin',—in the Summer!"

Perhaps the hunting people in the Shires may be induced to take at any rate so much interest. The Club has been fortunate in acquiring Flt. Lt. R. L. Bateman as its instructor and Mr. T. Warren as its ground engineer. Both of them have had a great deal of experience of aviation both in war and as civilians.

The Club certainly drew a goodly attendance of aircraft for its Meeting. There must have been 25 or 30 there when one arrived, rather late, by road, at about 16.00 hours—having been unable to get away from London till about 14.00 hours.

The R.A.F. had kindly lent a flight of Siskins from Grantham to do a demonstration, and there were most of the people whom one is accustomed to see at these meetings, including Flt. Lt. Rose, of the Anglo-American Co., Mr. Ballantyne and Mr. Malcolm, of De Havillands, and Mr. Penrose, of the Westland Company, and Mr. Tapper, of the Automobile Association, who, as usual, made excellent arrangements for parking. Also Miss Spooner, with her

THE OPENING CEREMONY.—Mr. Frederick Montague in middle (with hat) and the organisers of the Leicestershire Club.—*("Aeroplane" photograph.)*

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small niece, came up from Wokingham, and Miss Slade, from the Heston Air-Park. And, of course, the brothers Linnell came over from Northampton. Whether a meeting is ten miles away or a few hundred miles away, they always seem to go there most sportingly.

One thoroughly good effort was the formation which came from Teignmouth, led by Mr. Parkhouse, and including the Honourable Richard Westenra and Mr. F. S. Lee, of Exeter. The Rev. S. A. Simpson, of Trinity College, Cambridge, was down on the programme as a competitor, but not having the pleasure of knowing him, one cannot vouch for his having been there. Mr. Gordon Selfridge, Junior, also appeared on the programme.

There was a goodly crowd of spectators. Even allowing for the fact that the aerodrome is on the small side, there were so many people all the way round it that there cannot well have been less than 12,000 present. The Club were, perhaps, a trifle ambitious in having a half-guinea enclosure. But there were quite a good few cars in it, even though probably most of them belonged to members. The lower-priced enclosures were packed, and, of course, there were the usual thousands of hedge-guests who would not even pay the lowest price.

The competitions were run in that delightfully sporting garden-party spirit which makes such affairs so much jollier. For example, the winner of the second prize in the Rally did not even know that there was a Rally on. He arrived at the Meeting, saw a Very light, or some sort of signal, landed, and found that he was second. Flt. Lt. Trench in a very smart Avian (Hermes) won first prize.

Likewise, there was a prize for the first woman pilot to arrive. And that was won by Miss Slade, who had no intention of competing. In fact, when she was called to receive the prize, she could not at first be found—as some criminal remarked, she seemed to have been mislaid.

The spirit of the meeting is rather well shown by the comments in the programme under each event. For example, apropos the Rally, there is a note: "We are asked officially to deny the rumour that our Scottish visitors have been hovering over Leicester all night."

There were the usual displays of individual aerobatics.

At 14.15 hours or thereabouts there was a parade of aircraft, with the note on the programme: "We are in a quandary what type of machine to buy next. Can you help us to choose?" That is an excellent reason why makers of aircraft should send representatives to all the Club meetings.

After that our thoroughly sporting Under-Secretary of State for Air, Mr Frederick Montague, who had arrived by air on the new Moth which has been lent to the Department of Civil Aviation by the De Havilland Co., formally opened the Aerodrome.

Thereafter Mr. Tranum, as the programme says, "Calmly steps out into mid-air, drops a thousand feet, then decides to open his parachute. We strongly recommend this quick and easy means of getting down for tea (providing we don't have to do it)."

As a matter of fact, Mr. Tranum was making his first drop with a brand-new type of Russell parachute, so he opened it as soon as he stepped out of the machine at about 2,000 feet. As usual he had timed it exactly, and he came down plumb in the middle of the aerodrome.

The new parachute is the same weight as the old one, and uses exactly the same amount of material, but it is cut differently, so that it is flatter and less cup-shaped, and the rate of descent is very noticeably slower. Mr. Tranum says that it is a great improvement, and he ought to know if anybody does.

PRETTY WORK.—Mr. Penrose showing how neatly and how safely a Widgeon (Cirrus) can be flown.—Mr. Penrose is becoming one of the best pilots of to-day.

There was a balloon-bursting competition, but the balloons were a bit soggy, and kept low, and did not provide at all good sport.

There was a landing competition, in which, as the programme says, "any competitor landing upside down, or failing to land at all, is disqualified." The competitors did not seem very clear whether they had to land on top of a row of flags or to land just over it, or just short of it. Anyhow, Mr. Talbot-Lehmann dropped the tail of his N.F.S. machine right on top of the flags, and was duly declared the winner.

The Siskin formation from Grantham gave a really fine display of formation stunting. And after that there were joy-ride flights till dusk.

One pilot from Grantham made an infernal nuisance of himself by diving continually straight at, and zooming over, the official group when the prizes were being presented. Not only was he a nuisance, but he scared people, and he was definitely flying in a manner which endangered the King's property and the King's subjects. Any error on his part would have killed a lot of people,—and the majority of accidents *are* caused by errors of judgment.

Incidentally, both the management and the crowd deserve complimenting. When the flying was officially declared over, an announcement was made through the loud-speakers

THE NEW TOY.—Mr. Tranum making the first drop in the new type Russell Parachute.—(*"Aeroplane" photograph.*)

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which were disposed all round the aerodrome that joy-ride flights could be booked at the Club House, and that people could come over for them. Naturally, the crowd proceeded to walk to the Club House straight across the aerodrome. Somebody promptly went to the microphone and told the crowd several times to keep off the aerodrome and come round by the ropes in the interests of their own safety. And the crowd cleared off the aerodrome in a most amazingly obedient way. Either the people of Leicester are unusually intelligent, or else as a nation we really are becoming airminded enough to realise that an aeroplane must have room in which to land.

Altogether, the Leicestershire Club deserve congratulations on their opening Meeting, and one would like to thank Mr. Winn and the Committee for their hospitality and friendliness. The list of those who were responsible for the Meeting deserve to be recorded. They are as follow:

Mr. R. C. Winn, Chairman of Committee; Mr. C. E. Hirst, O/C Flying; Mr. C. Hedley Briggs, Announcer; Mr. N. W. R. Mawle, Ground Officer; Dr. R. Johnston Tait, Ground Medical Officer; Flt. Lt. F. H. Stewart David, Special Duties; Mr. R. C. Johnson, Liaison Officer; Mr. H. A. Browett, Traffic Officer; Mr. J. T. L. Baxter, Traffic Officer; Mr. B. Franklin, Financial Secretary; Mr. K. K. Knight, Ticket Secretary; Flt. Lt. R. L. Bateman, Competitors' Steward; Mr. H. P. Lavender, Fire Officer; Mr. A. E. Coltman, Timekeeper; Mr. E. Clifford Kendall, Timekeeper; Mr. C. A. Peat, Special Duties; Mr. E. A. Goodman, Press Steward; Mr. D. F. Murmann, Special Duties; and Mr. E. A. Underwood, Liaison Officer.

One hopes that the Club will increase and multiply during the Winter, and that it may have many other and even more successful meetings.—C. G. G.

DE HAVILLAND ACTIVITIES.

An interesting addition to the large number of Governments and Air Services who already use Moths for official and training purposes is the Portuguese Naval Air Service. The De Havilland Aircraft Company Ltd. has just received a contract worth about £7,000 for the supply of four Gipsy Moth seaplanes, three spare engines and a large assortment of various gear, spares and other impedimenta.

These Gipsy Moth seaplanes are to be used for instruction in advanced aerobatics and to this end two Portuguese pilots have arrived at the De Havilland School of Flying to take a course in aerobatics with Messrs. Reeve and Pike, chief and second instructors respectively.

An order has also been received for the supply of four Gipsy Moth seaplanes to the Naval Section of the Yugo-Slavian Air Force, for training.

A complete list of Air Forces now using the Gipsy Moth for training purposes is of particular interest:—

The British Royal Air Force, the Royal Australian Air Force, the Royal Canadian Air Force, the South African Air Force, the Irish Free State Army Air Corps, the New Zealand Ministry of Defence, the Chilean Military Air Force, the Italian Royal Air Force, the Royal Danish Flying Corps and Naval Air Service, the Greek Naval Air Service, the United States Army and Navy, the Portuguese Naval Air Service, and the Yugo-Slavian Naval Section.

Service in Germany.

The De Havilland Company is fortunate in possessing a particularly live agent in Germany in the person of Herr Friedrich, who has a very distinguished record in the German Air Force during the War. Now that Moths are being supplied in increasing quantities to Germany, Herr Friedrich has established a full-sized Moth Service Station at the Tempelhof Aerodrome, outside Berlin.

Moth owners can obtain all attendance, petrol and oil, any spare parts which they may require, and repairs are done at short notice. For this purpose an excellent workshop has been set up equipped with the most modern machine tools.

Herr Friedrich is very anxious that all owners of Moths, actual and prospective, should have these facilities brought to their notice,—and would like them to note that a complete new Gipsy Moth is always in stock.

Moths and Cloths.

More and more business houses are realising the saving of time effected by the use of the Moth, and the greatly increased range of personal communication with branches that becomes possible. Two directors of Horne Bros., the multiple clothing emporium, Messrs. Leslie and Cecil Horne, recently learned to fly at The London Aeroplane Club, and both now own Gipsy Moths.

In these they visit their branches in Liverpool, Leeds, Manchester, Wolverhampton, and elsewhere, complete a full day's business, and return the same evening. They are emphatic about the advantages of air travel for their business, and find their Moths invaluable for the journeys for buying, which they constantly make, to nearly all the large manufacturing centres at home and on the Continent.

At week-ends they use their machines for pleasure and they were recently due to leave in them for the Orkney Islands on their holidays, for the shooting and fishing.

The Queensland Aerial Derby.

The Queensland Aerial Derby, just flown, was won by Mr. Leslie Brain, the Chief Pilot of Queensland and Northern Territory Aerial Services Ltd., in a Moth.

Second and third places in a field of 30 competitors also taken by Moths.

A Moth for Sir Philip Sassoon.

Sir Philip Sassoon, President of the Royal Aero Club, has placed an order for a metal Gipsy Moth landplane. This will be specially finished and very fully equipped.

The Moth in Yugo-Slavia.

The Aero Club of Zagreb, Yugo-Slavia, has placed an order for a Gipsy Moth to inaugurate instruction on the Club. This machine is now on its way to Zagreb, flown by Mr. Riley, of the De Havilland School of Flying. There is interest in noting that the De Havilland Agent in Yugo-Slavia is Mr. T. Mapplebeck, late R.F.C.

Misplaced Zeal.

The De Havilland Company recently received a wire from one of its agents to the effect that an important personality in aviation circles in the agent's country would leave that day by air for Croydon and that it would be in the interests of the Company to meet the gentleman concerned. Accordingly, a responsible official of the Company awaited the arrival of the air liner at Croydon and succeeded in meeting at the barrier the gentleman bearing the name given by the agent. Everything went very smoothly and the foreign visitor driven to London in the Company's car.

After having fixed up his new acquaintance with a suitable hotel in London, and having asked him out to dinner, the De Havilland representative asked his new acquaintance what he thought of the Moth. He then made the disturbing discovery that his friend had just made his first trip by air, and was, in fact, a theatrical person on a visit to see a play from his own country done in London.

The wholly unnatural explanation was that the foreign agent, having inspected the air line company's bookings and having seen the name, at once jumped to the conclusion that it was the aviator who was visiting this country. The D.H. firm still have hopes of making the recipient of its hospitality a convert to the Moth.

AVIANS IN THE FAR EAST.

The Far East Aviation Co.—the principal of which is Mr. F. Vaughan Fowler, late R.A.F.—has bought an Avro Avian seaplane (Cirrus Hermes engine) for use in Hong Kong.

This machine, which is due to arrive in the colony in November, will be used for general taxi work, and to enable the company's representative in Hong Kong to get about with speed and comfort. It will carry the registration VR-HAA, the first of a series recently allotted to Hong Kong.

The Hong Kong Flying Club has decided to buy an Avro Avian-Hermes seaplane.

THREE LIGHT AEROPLANE RECORDS.

On Sept. 5 M. Fauvel flying the Mauboussin single-seat cabin monoplane (40 h.p. A.B.C. Scorpion engine) reached a height of 5,300 m. (17,380 ft.).

Thereafter he covered a distance of 700 kms. (434.7 miles) over the circuit Le Bourgêt—Vanciennes—Le Bourgêt beating the previous record for distance covered over a closed circuit by 50 kms. During the course of this flight M. Fauvel beat the speed record over 100 kms. with 140 km.p.h. (86.94 m.p.h.).

All these three performances are—subject to homologation—World's Records for light aircraft weighing less than 200 kgs. (440 lbs.).

The Mauboussin monoplane was described in THE AEROPLANE on Feb. 13, 1929.

THE AERO CLUB OF N.S.W.

The Aero Club of New South Wales is going strong, and the Committee expect a record year. For its third period of twelve months' flying operations the Club has trained 55 pilots to "A" License, with still a fortnight to go, against 28 and 43 the previous years.

The Club has 11 machines—8 Moths, 2 Avians, and 1 Westland, and recently completed 9,000 hours' flying to date. It has a workshop, fully equipped with up-to-date machinery, on its own freehold ground just off the Aerodrome, and does all its own reconditioning and rebuilding, etc., which save a considerable amount of money.

That beats any English club handsomely.

A REPROOF.

The following note has been received:—

re s.s. *Prince of Wales*:—

THE AEROPLANE, current issue, p. 689, para. 2 [foot].

"Packed with *TRIPPERS*."

You've dropped an awful brick this time. Dammit, they were THE HAMPSHIRE AEROPLANE CLUB.

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COMMERCIAL AERONAUTICS.

ANOTHER IMPERIAL AIRWAYS DIVIDEND.

The Directors of Imperial Airways announce that the nett profit for the year ended March 31, 1929, after providing £36,175 pounds for obsolescence, amounted to £78,861, —which together with the carry-forward from the previous year of £4,049 leaves available an amount of £82,910.

Out of this amount there has been written off the balance of the preliminary expenses and underwriting commission amounting to £20,663, and £20,000 has been appropriated for additional obsolescence reserve.

The Directors recommend the payment of a dividend of 7½% (seven and one half per cent.) on the Ordinary Share Capital, which will with tax absorb £35,558, leaving to be carried forward to the current year a balance of £6,689.

PROGRESS AT HULL.

Hull has been having a little bother over the site for the new municipal aerodrome. The site had been purchased when the Corporation was informed that the Air Ministry could not license the aerodrome for commercial use on account of the threatened erection of gas-works on an adjoining site.

On Sept. 12 the Corporation decided by 23 votes to 8 to confirm the arrangement made with the East Hull Gas Company whereby the Corporation provided the Company with an alternative site of 20 acres free of cost and purchased the 14 acres previously acquired by the gas company. The total cost to the Corporation is estimated to be about £4,000.

On Oct. 10 H.R.H. Prince George will inaugurate the Hull Empire and Civic Week; he will at the same time open the municipal aerodrome. Prince George will arrive and depart by aeroplane.

Among others who have accepted the City's invitation to be present is the Secretary of State for Air, Lord Thomson.

A fine programme for an Air Display has been arranged. A squadron of R.A.F. Fighters will be the principal attraction. Many well-known civilian aviators have promised to attend. There is to be a race for light aeroplanes over a thirty-mile course and a special display is to be given by an N.F.S. formation. (National Flying Services Ltd. are leasing the aerodrome from the Corporation.)

The Committee extend an invitation to all civil aviators, who will be the guests of the Corporation. The Lord and Lady Mayoress are arranging a ball for the visitors.

Further information may be had from the Hon. Secretary, Aerial Pageant, *Evening News*, Hull.

THE INDIAN AIR MAIL DISASTER.

The following letter deserves consideration:—

Sir,—In the many Press references to this disaster the "Holt Landing Light," or as it is sometimes called "wing-tip flare," is stated to be the cause of the fire.

Without in any way desiring to minimise the terrible nature of this accident and still less to attempt to anticipate the result of the inquiry, I would like with your permission to give the record of this device.

A powerful light of some sort to illuminate the ground must be carried on machines at night in case of forced landings away from an aerodrome. When I submitted the Landing Light to the Flying Corps in 1914 it was regarded with grave suspicion. Not till 12 months later was I even allowed to try it on a machine. As the result of this scepticism, there is probably no device in use in the Air Force that has been tried and tested so searchingly as this.

By the end of the War my Company had supplied Holt Landing Light equipment for 17,000 machines, every night-flying machine in the British and Allied Armies being equipped with it. At the present time it is in use in practically every country in the world, where any night flying is done (many thousands being in use) and till now I have never heard of any accident being caused by its use, here or abroad. On the other hand there are many instances of pilots and machines being saved by it.

It is difficult to understand why even if the wing-tip caught fire, the fire should have reached the fuselage so quickly, unless as suggested there was a leak of petrol,—a wholly abnormal condition and a deadly peril to any machine by night or day.

I hope I may express my deep sympathy with the relatives of the victims. (Signed) H. S. Holt, Lt.-Col.

[The only possible explanation seems to be that, owing to some defect in fitting, the flare burned back into the wing itself. Possibly a flare kept long in stock might change its chemical characteristics, as gun ammunition does, and might burst instead of burning, and throw burning particles onto the wing. If the wing-tip (and aileron) were burned the machine would necessarily drop on that side, and the petrol-tanks would burst when it crashed. Evidently the fire happened close to the ground, or two of the crew and part of the mails could not have been saved.—C. G. G.]

SALVAGE FROM JASK.

A *Times* report from Karachi states that the postmaster of that city has announced the salvage of certain mails from the City of Jerusalem, which was destroyed by fire at Jask on Sept. 6. These mails will arrive in Karachi by the next air mail. All the mails were originally believed to have been burnt.

THIS AIRSHIP BUSINESS.

There has been a lot of talk in the Press lately about the two British airships, the R.101 and the R.100, which are rumoured to be taking the air shortly.

When all the tests are completed and the airships actually take the air the event will be duly recorded in The Aeroplane.

Meantime, as so much experimental work has to be done to assure safety when the ships come out, and as those responsible for them are going steadily about their jobs without worrying about the pressure of the Press, the dates of their launching are uncertain.—C. G. G.

FRENCH AIRCRAFT FOR ROUMANIA.

A report in *The Times* of Sept. 4 states that the Roumanian Government is negotiating with a French firm for the purchase of 100 new aeroplanes for the Air Force.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 18; Monday, 33; Tuesday, 32; Wednesday, 37; Thursday, 39; Friday, 37; Saturday, 33.

Imperial Airways Ltd.:
London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 81, passengers 637, freight 301 lbs. India Mail: inward, 4 passengers, mail 796 lbs.; outward, 5 passengers, mail 796 lbs.

Air Union:
Paris—London and return: Machines 67, passengers 342, freight 23 tons.

K.L.M.:
Amsterdam—Rotterdam—London and return: Machines 26, passengers 194, freight 14¾ tons.

Sabena:
Brussels—London and return: Machines 12, passengers 72, freight 2 tons.

Deutsche Luft Hansa A.G.:
Amsterdam—London and return: Machines 26, passengers 61, freight 7¼ tons.

Miscellaneous:
British Machines, 13, passengers 16.
Foreign Machines 4, passengers 5.
Total number of trips by British Machines, 94, carrying 853 passengers. Foreign Machines, 135, carrying 679 passengers.

COMPARATIVE FIGURES.

Week ending Sept. 14:
Machines, 229; Passengers, 1,532; Crews, 518; Total personnel, 2,050.
Corresponding week, 1928:
Machines, 192; Passengers, 1,150; Crews, 367; Total personnel, 1,517.
Corresponding week, 1927:
Machines, 161; Passengers, 972; Crews, 295; Total personnel, 1,267.
Corresponding week, 1926:
Machines, 114; Passengers, 537; Crews, 145; Total personnel, 682.
Corresponding week, 1925:
Machines, 122; Passengers, 572; Crews, 163; Total personnel, 735.
Corresponding week, 1924:
Machines, 146; Passengers, 601; Crews, 177; Total personnel, 778.
Corresponding week, 1923:
Machines, 109; Passengers, 379; Crews, 172; Total personnel, 551.
Corresponding week, 1922:
Machines, 98; Passengers, 337; Crews, 184; Total personnel, 501.
Corresponding week, 1921:
Machines, 66; Passengers, 154; Crews, 84; Total personnel, 238.
Corresponding week, 1920:
Machines, 100; Passengers, 261; Crews, 123; Total personnel, 384.
Corresponding week, 1919:
Machines, 16; Passengers, 54; Crews, 18; Total personnel, 172.

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A CHANCE FOR GOOD MEN.

Two first-class pilots are wanted.

One is for South Africa. He must be an absolutely first-class instructor with full R.A.F. qualifications in present day methods. Also he must have organising ability. Flying Club experience is desirable. The basic salary is £1 per flying hour with extras and a minimum of £30 per month is guaranteed. The pilot will have to agree to remain in South Africa for a year. The salary may seem low but the job can be developed into a very good one.

The other job is for a pilot in the Further East. It involves a good deal of flying over dangerous country. The pilot must have experience of light aeroplanes and of big machines, and for choice should have experience of low-wing monoplanes. The job is worth £900 a year.

Applications should be sent to the Editor of The Aeroplane in such form that they can be forwarded to the employers without transcription.—C. G. G.

RECEIVERSHIP.

Wings Publications Ltd.—R. S. Andrews, C.A., of 448, Strand, W.C.2, was appointed Receiver on Sept. 2, under powers contained in debentures dated Mar. 21 and May 1, 1929.

PERSONAL NOTICES.

Deaths.

LUCAS.—On Sept. 10, at Upavon, as the result of a flying accident, L. E. J. Lucas, Plt. Off., R.A.F., second son of Cdr. Lucas of Kevor, Falmouth.

Mr. Lucas was posted to No. 17 (Fighter) Squadron on graduating from the R.A.F. College, Cranwell, on July 27, 1929.

WOODBRIDGE.—At Jask, on Sept. 6, in a night landing accident, Albert Edward Woodbridge, Flt. Lt., R.A.F.O.

One who was his friend writes:—

The death of Albert Edward Woodbridge must have come as the most profound shock to all those who were fortunate enough to know him. To those of us who were with him in 58 Squadron it has caused a gap which can never be filled. His quiet manner made the idea of his ever having a fatal crash seem an impossibility.

Like the late Sq. Ldr. Walter Longton he had that virtue—perhaps born of long association with flying, and perhaps due to an indefinable something in his make-up—which gave one complete confidence in his being able to come safely out of the worst situation.

Although he never professed to be anything more than a normally good pilot, he was, in his quiet way, something rather out of the ordinary. It is doubtful whether there ever was anybody who could tackle a flying job in the same imperturbable way, deal with the unexpected in the same calm manner and carry it through to what, with him, was always a natural and successful conclusion.

He never lost his temper—he was always just, and above all things, however trying the conditions, he never "spun." A more admirable Flight Commander there could not be.

It is difficult to believe that we shall not see "Woodie" again. The loss of friends is always hard: sometimes Time is more successful in healing the gap than at others: but I do not think that the years will ever dim the memories that we hold of "Woodie," nor shall we ever forget that quiet personality which meant so much to those of us who knew him well.—C. C.

Marriages.

BARLOW—ALLEN.—On Sept. 10, at Bromley, Flt. Lt. E. C. Barlow, R.A.F., to Barbara, daughter of Brig.-General C. B. Norton, C.M.G., D.S.O., and Mrs. Norton, Windsor.

CLAYSON—THORNTON.—On Sept. 7, at Our Lady of Victories Church, Kensington, Flt. Lt. Percy Jack Clayson, M.C., D.F.C. (retired), son of the late Mr. and Mrs. John H. Clayson, of Beccles, to Kathleen, daughter of Mr. and Mrs. William Thornton, of Kelvingrove, Glasgow.

Forthcoming Marriages.

CLIFFORD—BLACK.—The engagement is announced between Flt. Lt. George R. M. Clifford, R.A.F., elder son of the Rev. R. F. M. and Mrs. Clifford, of Chillenden, Kent, and Miss Dorothy Gordon Black, youngest daughter of Mrs. Black, of Chapel, Kingskettle.

GEDDES—LEACH.—A marriage is arranged, and will take place in October, between Andrew James Wray Geddes, R.A. and R.A.F., only son of the late Major M. H. B. Geddes, Indian Army, and Mrs. Geddes, Seaford, Sussex, and Anstice Wynter, elder daughter of the Rev. A. W. and Mrs. Leach, Leasingham Rectory, Sleaford.

McDIARMID—GARDENER.—The engagement is announced between Flg. Off. Duncan Gardiner McDiarmid, R.A.F., Altrincham, Cheshire, only son of John McDiarmid, of Stirling, Scotland, and Dulcia Kathleen, second daughter of the late Norman Gardener, of Ash, Kent.

MULHOLLAND—McCONNELL.—The marriage between Sq. Ldr. Denis O. Mulholland, A.F.C., and Mrs. Félice McConnell will take place at St. Columba's Church, Pont Street, on Sept. 25.

YEATMAN—WRIGHT.—The engagement is announced between Harry Morgan, eldest son of the late Mr. and Mrs. H. O. Yeatman, and Sylvia Marguerite, only daughter of Mr. and Mrs. R. H. Giraud Wright.

Births.

BLOFELD.—On Sept. 15, at a Nursing Home, Alverstoke, to Dorothy, wife of Flt. Lt. Bernard L. Blofeld, R.A.F., Lee-on-Solent—a daughter.

BRODIE.—On Aug. 31, at Lower Topa, Murree, Punjab, India, to Mary (*née* Coates), wife of Flt. Lt. Ian E. Brodie, R.A.F.—a daughter.

WHEATLEY.—On Sept. 13, at a nursing home, to Dorothy, the wife of E. S. Wheatley, D.F.C.—a son (stillborn).

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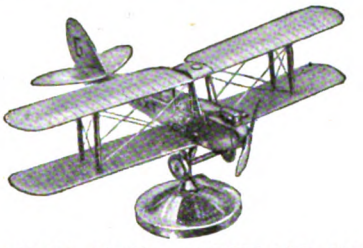

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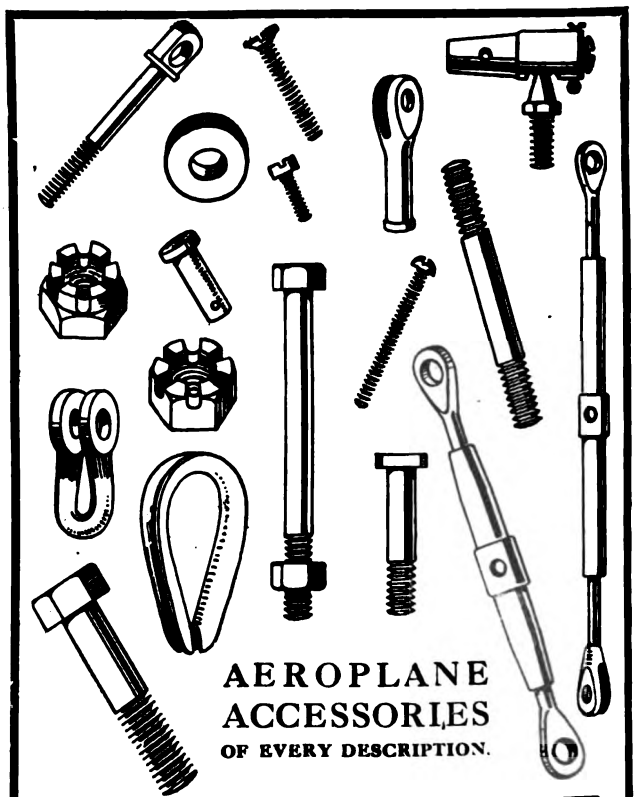

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For the convenience of Advertisers, replies can be received at the office of THE AEROPLANE, Cannon House, Pilgrim Street, London, E.C.4.

Special PREPAID Rate—18 words 4/6, 3d. per word after; 13 insertions, 18 words, 4/-; 26 insertions, 18 words, 3/6; 52 insertions, 18 words, 3/-, 2d. per word after. Situations Wanted ONLY—18 words 1/-.

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AIR SURVEY.

Air Survey Co. Ltd., 39, Grosvenor Place, S.W.1 (Sloane 6048), Dum Dum, Calcutta, and Monkey Point, Rangoon.

The Aircraft Operating Co. Ltd., 8, New Square, Lincoln's Inn, London (Holborn 8131), and Bulawayo, Southern Rhodesia; Cairo, Egypt; Rio de Janeiro, South America: Contractors to the Ordnance Survey. Laboratories and Subsidiary Company for aerial photography in the British Isles. Aerofilms Ltd., Colindale Avenue, Hendon (Colindale 6183 and 6184).

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AEROPLANE PHOTOGRAPHS.

Copies of Aeroplane Photographs (indicated as such in the inscriptions under the pictures) may be had from:—THE AEROPLANE Office, 175, Piccadilly, London, W.1. Single prints, 6 in.×8 in. cost 2s. 6d. each, and 1s. 6d. per print for three or more. Larger sizes or larger quantities may be had at special prices.

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THE AEROPLANE

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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C.G.Grey

THE HAWKER HART.

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ON THE TURN:—A striking view of the Hawker Hart two-seat Fleet Reconnaissance Fighter [Rolls-Royce "F" engine] turning in front of the main sheds at Brooklands.—*("Aeroplane" photograph.)*

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

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SEPT. 25, 1929.

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Incorporating
Aeronautical Engineering

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ON GETTING BACK TO WORK.—II.

Now that we have the Winter before us in which to think out plans and do a bit of flying in between, with an eye to real business next year, we may find advantage in seeing what other people are doing and what sort of ideas other people have on various phases of aviation. So let us just discuss anything that happens to crop up at the moment.

The kind of material that you find in the editorial notes of high-brow magazines, under the title "Musings without Method," or something of that sort, very often gives people ideas. When you are looking for one thing you are quite apt to strike another. Which presumably is our only excuse for our national unmethodical habit of spending vast sums of money on basic research, in the hopes that something may turn up, instead of concentrating all our money on methodical *ad hoc* research looking for some specific object until we find it, as do the Americans.

Still, as basic research is so essentially English in its lack of method, and as, in spite of our lack of method, we do sometimes discover things that other people don't, and as we always muddle through to victory somehow,—there may be something to be said for muddle-headed thinking.

Two Ways of Looking at It.

First of all, a lot of people lately have been accusing this paper of being too blatantly pro-American. And on the other side of the Atlantic sundry American papers have been cursing THE AEROPLANE heartily for being anti-American, and putting on an English air of superiority and being generally high-hatted. That is all very satisfactory, because it gives us on the Staff of THE AEROPLANE complete assurance that we are being absolutely impartial.

Just by way of showing that when THE AEROPLANE runs down English obstinacy and English stupidity and English Conservatism it is not the only institution in the world which endeavours to stir up its own people by telling them their faults, here is a quotation from America's greatest philosopher, Mr. Will Rogers. In his daily spasm of philosophy in an American paper he writes thus:—

"AMERICAN LIVES FAST,
MOVES SLOW."—WILL.
(Special to *Times-Despatch*.)
Beverly Hills (Cal.), Sept. 11.

So we are the nation that travels so fast, and think all the other countries are still in a covered wagon. Well, some Englishman just went 355 miles an hour in a 'plane yesterday, and almost wept because it was foggy and misty and he was not able to open it up. If you remember, one come over here and run an automobile faster than we can even wreck one, so when it comes to speed we are not exactly what you would call sitting on top of the world. Englishmen live slow and move fast; we live fast and move slow.

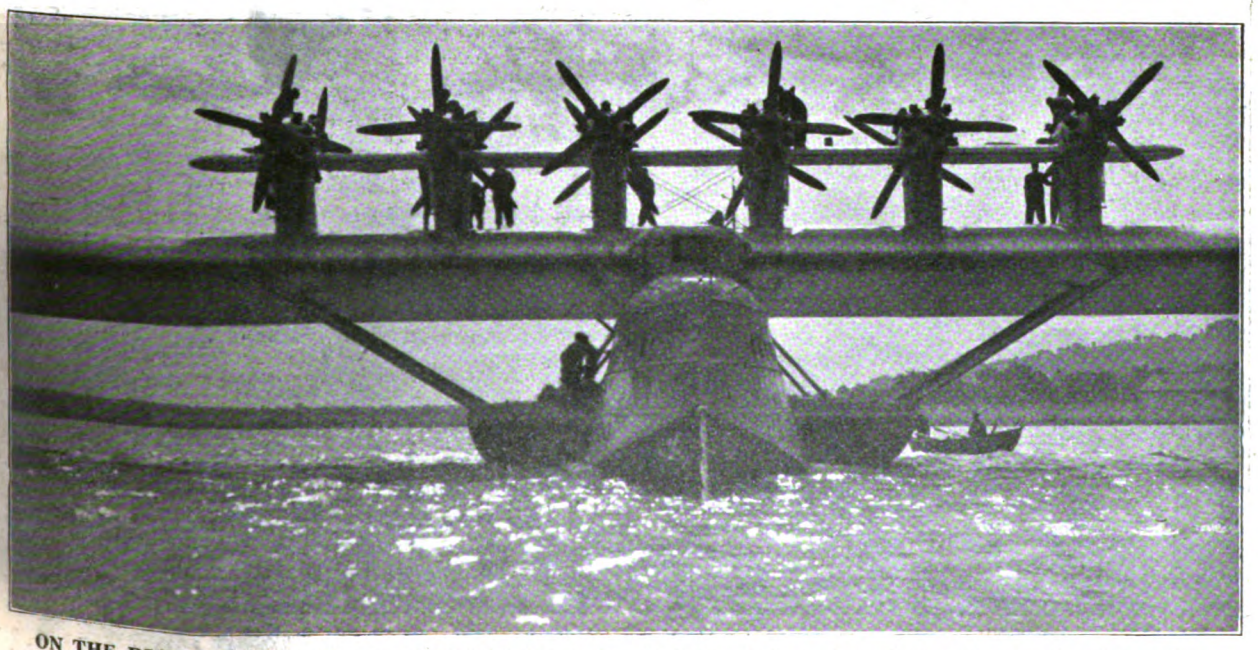
Yours,
WILL ROGERS.

The idea of inventing fog and mist on the day when Sq.-Ldr. Orlebar broke the Speed Record, just to make the English performance sound better and to uphold the world-wide legend that our climate is always foggy and misty, is a pleasing touch which is in itself essentially English. It only shows how frightfully English the English-American is.

One of our most essentially national forms of joke is to ascribe a peculiarity to a whole nation and insist on rubbing it in on every possible occasion. Only within the last few years have we ceased to jest on the assumption that every Frenchman lives entirely on frogs—and we have only given up the joke because some of us have discovered that frogs as eaten in France are extraordinarily good.

That this particular type of joke still persists is shown by the rumour that as the result of having Italian cooks at Calshot the Mess cat had been found strangled in spaghetti. And we still retain the legend that every American talks through his nose, in spite of the insistent proof of the "Talkies" that every American talks through the front teeth that he has not got.

"YOU MORTAL ENGINES, WHOSE RUDE THROATS THE IMMORTAL JOVE'S DREAD CLAMOURS COUNTERFEIT."
(SHAKSPEARE—*Othello*.)



ON THE RIGHT ROAD.—The great Dornier Do.*x*.—in which the designer has shown one way of using engine-power efficiently.

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Leg-Pulling.

Anyhow, if Mr. Will Rogers is going to crack up England and at the same time pull our leg about our climate, when in fact the Solent on Schneider Day proved definitely to all our foreign visitors that we have quite the most perfect climate in the world, even those of our American friends who suffer from the worst kind of aeronautical indigestion must allow us to pull their legs in a friendly way.

On the other hand, our good old-fashioned stolid English manufacturers must stand having their defects exposed, and having their legs pulled, because, in their own interests, they must realise that there is a younger generation growing up which has been brought up on Movies and Talkies and American literature, and expects to be amused as well as educated when it is reading its own particular aviation paper. Dulness does not necessarily carry with it either knowledge or dignity.

Apropos which, somebody who is rather anti-The Aeroplane, and has good reason for being so, remarked the other day that people do not take The Aeroplane seriously, they just read it and laugh and throw it away. Whereupon the bright member of the Staff said that, anyhow, that was better than being thrown away without either being read or providing a laugh—which is what happens with some aviation papers. Moreover, a thing which gives a laugh is more likely to remain pleasantly in the memory than is a lot of dull stuff which one forgets as soon as it has been read, or sends one to sleep when one is reading it.

The Finger On the Trigger.

Incidentally, Mr. Will Rogers, besides being America's greatest philosopher, is also one of America's greatest influences, and that jibe against his fellow-countrymen that they live fast and move slowly may be just the pull of the trigger which will start up a big movement in the States to win back the Schneider Trophy from us two years hence.

America can very well afford to challenge us. Mr. C. M. Keys, who is regarded in the States as being to Air Transport what Harriman was to the development of American Railways, is the moving spirit in a little group of aircraft firms which is capitalised on the Wall Street market at about £35,000,000. So that group alone can very well spare half a million or so to polish up America's somewhat smudged shield. Therefore, remembering Mr. Ramsay MacDonald's definite pledge that we shall defend the Trophy when challenged, somebody had better set to work now thinking about new speed machines for the next Contest.

One knows that Mr. R. J. Mitchell has plenty of ideas for increased speed, even without increasing power very much. And there must be lots of bright young designers in the aircraft business who can give even him a run for his money if only someone will give them a chance.

High-Speed Transport.

Talking of speed, we ought to begin looking over our air transport propositions with an eye to putting them on something like an efficient basis. When the aforesaid Mr. C. M. Keys was over here a week or two before the Schneider Trophy Contest, he told one something about his ideas on air transport. The greatest pity in the world is that he is not running an unsubsidised air-line from England to Australia on the same schemes that he has for American air transport.

When one was in the States five years ago, the American Post Office itself was already running the trans-Continental air mail between New York and San Francisco at an average speed of 100 miles an hour. Every day a machine left New York simultaneously with a machine from San Francisco. And, flying short stages of between 200 and 300 miles, changing over to relief machines and pilots at each stage, Uncle Sam's mails crossed the 3,000 miles of Continent in 30 hours. Now they are going to do it in 20 hours at 150 m.p.hr.

The line had been organised by one of the few really big men one has ever met, one Colonel Paul Henderson, who was then Assistant-Postmaster-General. Paul Henderson then laid down the axiom that the success of an air line lies on the ground. And that statement is as true to-day as it was when he started the Trans-Continental in 1923.

Right up to 1926 or 1927 the American trans-Continental mail was carried by old war-time machines which were a kind of modified D.H.4, with Liberty engines. Those old things could cruise at 100 miles an hour with a goodly load of mail. But they depended for their regularity on the marvellous lighting arrangements and signalling arrangements of the air route, and on the fact that they had a landing ground every three miles into which they could get without killing anybody.

There are still English humorists of the Victorian type who say: "You don't catch me going up in an aeroplane unless I can fly with one foot on the ground." Paraphrase

MORE PROGRESS.—Filton Aerodrome, Bristol, at the Club's farewell party. The buildings at the back are now the quarters of an R.A.F. Squadron.—("Aeroplane" photograph.)

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that by saying that all flying should be organised with one eye on the ground, and you have plain common sense of the kind that makes money.

Our Conservatives.

We, with all our Government subsidies and modern science, are still content with air liners which cruise at about 80 miles an hour. We make no attempt to provide a really efficient mail service. We do not advertise our air mails. And we do not even issue an air mail stamp to encourage the young to persuade their elders to use the air mail. And we trust to luck, so far as ground organisation goes.

We do not even try to make our air lines a comfortable method of travel, for we still insist on using the most uncomfortable chairs that were ever invented, just out of sheer obstinacy. After all, even in an Argosy there are only twenty chairs, and they could be replaced by comfortable chairs at a cost of about 17s. 6d. each—which is nothing on the price of a machine which probably costs about £20,000.

One result of using slow machines is that instead of finishing their journeys in daylight, they are constantly being caught in the dark on the Cairo-Karachi route. Some readers will remember a vivid description by Air Vice-Marshal Sir Geoffrey Salmond, at the Middle East Dinner, of the beauties of Baghdad at night when seen from the brilliantly lighted saloon of an Imperial air-liner. It may have been very beautiful. But the whole point is that the thing never ought to have been flying at night over an unlighted route without frequent landing-grounds.

The Jask Affair.

That fatal accident at Jask the other day is another example of our muddled and inefficient way of doing things. If we had been using faster machines there would not have been any night landing, and there would not have been any wing-tip flares. Whatever may be the result of the official inquiry, that fact cannot be denied.

Whether the flare burst in the air and set fire to the wing-tip, or whether, landing on flat featureless desert, the pilot, in spite of being one of the best on the line, misjudged his height and crashed the machine before the flare had gone out, and so set it alight, does not matter in the least. The point is that the thing ought never to have been landing by its own lights.

Either it ought to have been landing by daylight, as a faster machine would have been, or else, if there is going to be any night flying at all, it ought to be done as organised night-flying over a properly lighted route, with proper flood-lights and beacons on the aerodromes, and with emergency landing-grounds, each with an automatic flicker-light every four or five miles, just as they have had in America for the past six or seven years.

The Channel Accident.

That instance of the old Handley Page machine which sat down in the Channel and drowned seven people is another example of our muddled methods in acting and thinking. The official inquiry showed that the prime cause of the accident was the breaking of the bolts of one of the big-ends of one of the connecting-rods of one of the twelve cylinders of one of the two engines. The engine stopped. And the machine could not keep its height on one engine.

The breakage happened fifteen miles out at sea on a thirty-mile crossing of the Channel. The pilot made a gallant effort to get back to the English coast. He got within three miles of it, which shows that he was highly skilful. And apparently he did what hundreds of first-class pilots have done, he misjudged his height over a glassy, calm sea, stalled the machine, and went in nose first, hard enough to throw him out of the cockpit and to stun a number of the passengers inside so that they were drowned instead of getting out of the door at the back of the cabin.

Some people blame the engine-makers for not using the right steel in their connecting-rod bolts. That is nonsense, because there is nothing the matter with Napier material. Nobody uses any better, because there is none better to be had.

Some people blame the maintenance staff of Imperial Airways because, they say, they ought to know by experience that the life of a connecting-rod bolt is so many hundreds of hours, and they ought to be replaced before that time arrives. That is nonsense, because even the best of material may have a flaw in it, and one of those bolts might have burst after a perfectly new engine had been flying for an hour or so. And, according to the latest metallurgical theory, unless there is a flaw to begin with, fatigue in metal simply does not happen. The modern high-brow metallurgist regards the fatigue of metals as a kind of old-fashioned religion—and probably he is just as wrong as the people who do believe in fatigue.

Some people blame the builders of the machine, Handley Page, Ltd., for not having their own slots on their own machine. They say that if the machine had had slots it might have pancaked into the water, but it could not have stalled and dived into the water. That is true up to a point, but when that machine was built, automatic slots had not been developed—at any rate for big aeroplanes.

Some people blame the pilot for stalling the machine. They say that even if he could not see the surface of the water, he had, at any rate, a fishing-boat close by to give him some sort of idea of his height. That is equally nonsense. Probably the boat was not where he could see it, although it was quite close. And when you have been holding a soggy machine in the air for twelve miles, flying it with one engine and holding it up with the rudder against the engine, you are not particularly likely to be sensitive to the fine line between sinking and stalling.

Some people say that Imperial Airways ought not to have had a twin-engined machine on the route at all. That is nonsense, for several reasons. A properly designed twin-engined machine ought to be much more efficient than a three-engined machine, in that, not having a third engine, there is no third engine to waste most of its power in pushing its slipstream past an enormous fuselage.

A three-engined machine with one engine in the nose is probably the most inefficient method possible of using power. But it will take the world at least another three or four years to realise that interesting economic fact. We have got the three-engine craze, and it just has to burn itself out. Merely because we have become accustomed to the silly inefficient single-engined tractor machine we cannot get away from the idea that if we have three engines one of them must be stuck in front of the fuselage regardless of the size of the fuselage.

Some people say that every twin-engined machine ought to be able to climb and fly on one engine. That is probably right. But before we can make a machine of that sort we have got to learn a great deal more about how to use our power efficiently. With full load the American-built amphibian Sikorski flies, and is said to climb, on one of its two engines—at any rate, so long as it is new. But it does it because of light structure-weight, and not because of any aerodynamic novelty. It could easily be improved in that direction.

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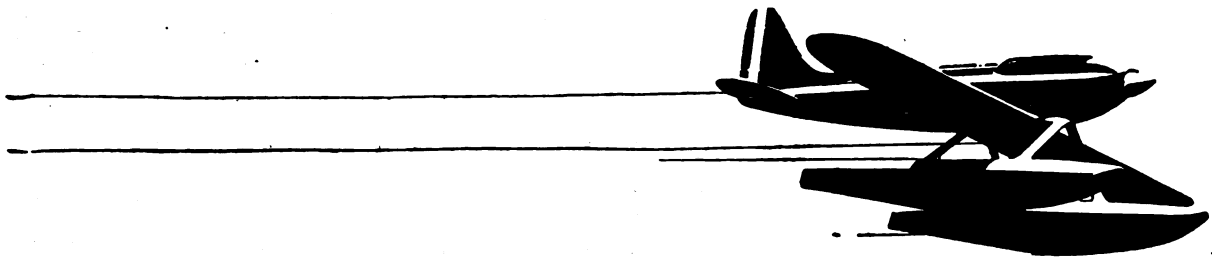

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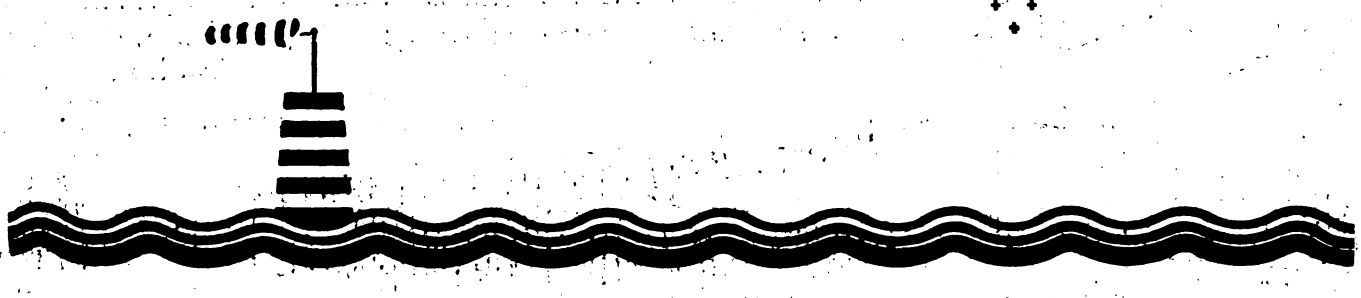

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The first thing we must do is to give up using tractor-screws and take to pushers. And then must put our pusher-screws where they do not get in the way of anything. Doctor Dornier and Doctor Rohrbach taught us years ago one way of doing the job. Mr. Koolhoven showed us quite an interesting way some few years ago of using a third engine economically. The only machine in this country that goes anywhere near using its twin engines economically is the little Saro Cutty Sark.

All existing methods of placing airscrews could almost certainly be improved vastly by the expenditure of a very few thousand pounds on experimenting with shaft drives. The cost of such experiments would probably be paid for in twelve months by the saving in the petrol bill of one big air-liner. But we simply will not do it, because we are so beastly obstinate and so infernally stupid.

A Matter of Organisation.

Still, these arguments about that Channel accident do not really cut any ice. If the thing had had five engines they *might* all have stopped at once. Three engines are no kind of a guarantee of safety. In fact, as Mr. Grover Loening is so fond of arguing, they merely increase the fire-risk. And in some ways they increase the risk of accident through error of judgment on the part of the pilot.

When we get down to hard facts, the cause of that accident was purely and simply bad ground organisation. No land machine ought ever to be out at sea.

If that particular machine had been on its proper course between Dover and Calais, the stoppage of one engine would not have mattered. Although he was not high up, because of low clouds, the pilot showed that with his one engine he could get back twelve miles out of fifteen. So, even if his engine had packed-up exactly half-way in the twenty miles between Dover and Calais, he would still have had two miles to spare whichever way he went. And if it had happened at fifteen miles out, as it did, he would only have had five miles to go to reach the beach on the French side. But, on the other hand, both of his engines might have stopped at once, as Mr. Glen Kidston's three engines did in the middle of Africa.

The cause of the accident as an accident does not matter a scrap. There are so many tens of thousands of little things which *can* happen in any transport vehicle in the world to stop it suddenly, that we are merely fooling our selves and trying to fool the rest of the world if we pretend that we can assure safety either by infallibility of our power plant or by multiplicity of engines. *The only way to assure safety in air transport is to assure that when a machine has got to come down it can come down safely.*

Water-Craft.

If an aeroplane has to fly over miles of water, then it must either be a seaplane proper, or an amphibian, or it must be like those French Naval machines, made by M. Levasseur, which drop their undercarriages and alight on a boat-bottom with a comparatively water-tight fuselage.

We are still a long way from the ideal amphibian. Our good friend Mr. Grover Loening probably knows more about amphibians than anybody else in the world. He has produced an amphibian which is very little heavier than any standard tractor biplane of its size and power, and it has an almost identical performance. But, all the same, it is not pretty, and it might easily be improved, because it is an ordinary tractor biplane with masses of centre-section struts and bracing-wire and things, and its fuselage comes down direct onto its floats, which definitely cuts the slip-stream in two at a critical place.

There are vast opportunities for really good amphibian flying-boats. But so far everybody has gone about designing such craft with too much of the idea of a motor-car designer trying to design a new chassis.

Years ago the Fairey Company designed a seaplane in which a wheel could be protruded at will through the bottom of each float. That idea has never been developed for big seaplanes. And one believes that even a better job could be made by adapting that same notion to a flying-boat.

Retraction.

After all, a flying-boat ought to be very much more efficient than a land machine of the same capacity, even though it may be a bit heavier. Any land machine, as at present designed, must have wheels and a long ugly undercarriage sticking out, all of which increase head resistance immensely. The retractable undercarriage as an idea is as old as the hills, but nobody has ever thought the development of it to be worth while.

Personally, one believes that one of the most promising lines of development, especially for machines of moderate size, up to, say, the six- or eight-seater cabin job, would be a float machine with a wheel in each float, after the manner of the Fairey Pintail, or the new Loening, but so designed that the floats can be retracted up against the bottom of the fuselage, thus making the fuselage and floats into one very respectable streamline body which could be pushed through the air with much less work.

Chances for Somebody.

Anyhow, there are those ideas free gratis for any intelligent young aircraft designer to work them out for himself. Of course, nearly all the senior designers in this country will just laugh at them and go on making their old-fashioned ideas till ultimately they retire on a pension, or die of cerebro-sclerosis, otherwise hardening of the brain—which is one degree worse than softening of the brain. But some of the youngsters who have intelligence may work something out of these notions, and when some of the senior designers of some of the older firms die off they may have a chance to develop them.

Or, better still, they may get a chance when some of the young firms which are now starting up develop into something big, and begin pushing the old firms out of the market. That is what happened in the cycle trade, and what happened in the motor trade, and it has happened in the soap trade and the tobacco trade and every other trade. Old firms stick to their old ideas and the young ones come along and push them out.

(*To be continued.*)

THE ROYAL AERONAUTICAL SOCIETY.

The following is the programme of lectures to be given before the Royal Aeronautical Society:—

Thursday, Oct. 10.—Mr. C. R. Fairey, M.B.E., F.R.Ae.S., "The Range of Aircraft." Oct. 24.—Capt. N. MacMillan, M.C., A.F.C., A.F.R.Ae.S., A.M.I.Ae.E., "The Art of Flying Land and Sea Machines."

Nov. 7.—Dr. A. E. Dunstan, "Recent Developments of Fuels and Dopes for Aircraft Engines." Nov. 21.—Mr. L. W. Johnson, "The Inspection of Materials." Nov. 28.—Sq. Ldr. H. M. Probyn, D.S.O., "Flying and Maintenance from the Owner's Point of View."

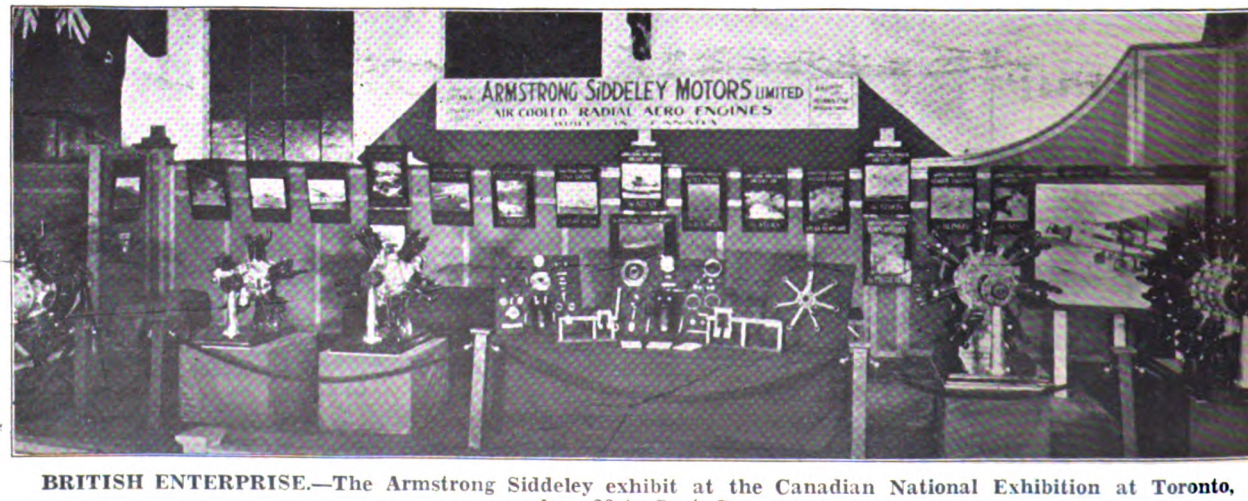
Dec. 5.—Senr. J. de la Cierva, "Recent Work on the Autogiro." Dec. 12.—Dr. W. Rosenhain, D.Sc., F.R.S., "The Development of Materials for Aircraft Purposes."

The lectures in all cases will be delivered in the Lecture Hall of the Royal Society of Arts, 18, John Street, W.C.2. They will begin at 6.30 p.m., with the exception of the lecture on Nov. 21, which will begin at 7.45 p.m. and will be a joint meeting with the Institution of Automobile Engineers.

Visitors are admitted to any lecture on signing the visitors' book with their full name and address.

MORE PEACEFUL PENETRATION.

The Travel Air Manufacturing Co. of Wichita, Kansas, one of the best known manufacturers of commercial aircraft in the United States, is establishing a factory near Montreal, Quebec.



BRITISH ENTERPRISE.—The Armstrong Siddeley exhibit at the Canadian National Exhibition at Toronto, Aug. 23 to Sept. 7.

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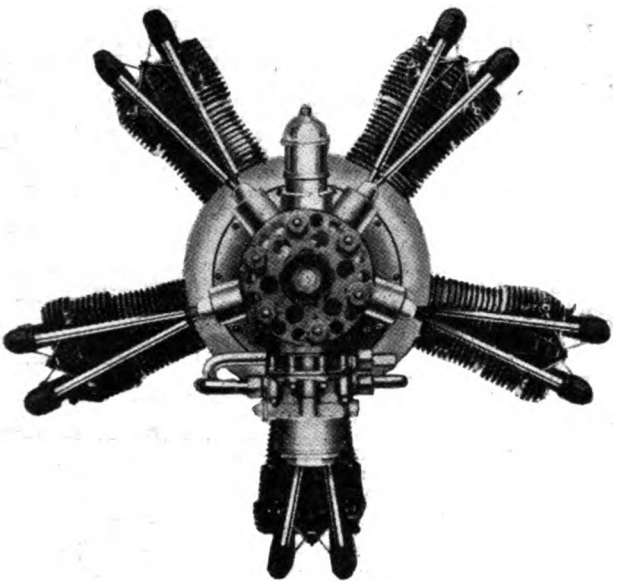
A New Armstrong Siddeley Engine —the GENET MAJOR



Front view showing the enclosed Valve Gear and streamline rocker covers.

THE 100-110 h.p. Genet Major represents the results of ten years' continuous progress in the design and manufacture of air cooled radial engines. It embraces many of the most successful features of the latest Jaguar, Lynx and Mongoose engines and is specially suitable for powering light aircraft and multi-engined aeroplanes.

LEADING FEATURES:

5 cylinders 4.25" or 108 mm. x 4.5" or 114.3 mm. 319 cubic inches or 5.23 litres. Compression ratio 5.23 to 1. Normal r.p.m. 2200. Rated normal B.H.P. at sea level 100, actual 103. Maximum B.H.P. at sea level 110. Weight complete with two magnetos, carburettor, air intake, propeller hub and tachometer drive 250 lbs. or 113.5 k.g. Overall measurements: diameter 38" or .95 m., length 36.2" or .905 m.

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THE ROYAL AIR FORCE.

The London Gazette.

Sept. 17.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—The following are granted perm. comns. as Plt. Offs. with effect from Sept. 7, and with seniority of Sept. 7, 1928:—F. J. St. G. Braithwaite, H. P. Fraser, R. Harston, G. J. C. Paul. R. C. Noble is granted a S.S. comn. as a Plt. Off. on probation with effect from Sept. 9 and with seniority of Aug. 30.

The following are granted temp. comns. as Flg. Offs. on attachment for duty with the R.A.F. (Sept. 8):—LTS., R.N.—T. G. Carey, K. Williamson. SUB-LTS., R.N.—A. J. Tillard, C. D'O. Umfreville, D. A. H. Hornell. MATE, R.N.—H. H. Gardner. LT., R.M.—G. K. Martyn.

The following Plt. Offs. on probation are confirmed in rank:—J. A. Easton (Aug. 7); J. E. Beynon, C. C. C. Manson, C. Ray (Sept. 14). The following Plt. Offs. are promoted to the rank of Flg. Off.:—E. R. White (July 9); O. I. Gilson (Sept. 16).

Sq. Ldr. H. E. M. Watkins, A.F.C., R.D., is placed on the retired list and is granted permission to retain the rank of Wing Cdr. (Sept. 15).

The following are transferred to the Reserve:—CLASS A.—Flt. Lt. J. J. Nolan, Flg. Off. W. F. Rimmer, Flg. Off. C. W. Switzer (Sept. 15); Flg. Off. F. T. Stacey (Sept. 18). CLASS C.—Flg. Off. J. A. C. Florence, Flg. Off. L. R. Mizen, Flg. Off. R. J. Stevens (Sept. 15).

Flg. Off. G. B. Collet relinquishes his S.S. comn. on account of ill-health (Sept. 15). The S.S. comns. of the following Plt. Offs. on probation are terminated on cessation of duty:—F. R. Bevan, G. R. O'C. Lempriere (Sept. 13); K. R. Garle (Sept. 17). Flg. Off. P. N. R. Hallward (Lt., The Border Regt.) relinquishes his temp. comn. on return to Army duty (Sept. 12).

MEDICAL BRANCH.—Flt. Lt. J. Hill, M.B., is granted a perm. comn. in this rank (Sept. 18); Flg. Off. G. T. O'Brien is promoted to the rank of Flt. Lt. (Sept. 8); Sq. Ldr. J. H. Peek, M.D., D.P.H., relinquishes his S.S. comn. on account of ill-health and is permitted to retain his rank (June 19). (Substituted for the notification in the *Gazette* of June 21).

CHAPLAINS BRANCH.—The Rev. C. P. N. Rowband is granted a S.S. comn. as a Chaplain with the relative rank of Sq. Ldr. (Sept. 6).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—The following are granted comns. in Class AA (ii) as Plt. Offs. on probation:—P. E. Hudson (Sept. 2); L. E. Hunt (Sept. 4). The following Plt. Offs. are promoted to the rank of Flg. Off.:—D. Price, C. R. F. Wintringham (Sept. 14); H. St. G. Burke, R. W. Burkitt, R. W. H. Knight (Sept. 15); E. D. Mills (Sept. 16).

Plt. Off. A. G. Douglas is transferred from Class AA (ii) to Class C (Sept. 15); Plt. Off. H. Clive-Smith is transferred from Class C to Class AA (ii) (Aug. 9). The following relinquish their comns. on appointment to perm. comns. in the R.A.F. (Sept. 7):—Flg. Off. H. P. Fraser, Flg. Off. G. J. C. Paul, Plt. Off. F. J. St. G. Braithwaite, Plt. Off. R. Harston. Plt. Off. F. O. Ticknell resigns his comn. (Sept. 9).

Appointments.

Week ending Sept. 23.

GENERAL DUTIES BRANCH.—Air Vice-Marshal H. C. T. Dowding, C.B., C.M.G., to H.Q., R.A.F., Transjordan and Palestine, on appointment as Air Officer Commanding, 7/9.

Group Captain C. T. Maclean, D.S.O., M.C., to H.Q., Aden Command, to command, 5/9.

Wing Commanders R. Leckie, D.S.O., D.S.C., D.F.C., to Station H.Q., Bircham Newton, to command, 5/9. T. O'B. Hubbard, M.C., A.F.C., to H.Q., 'Iraq Command, for duty as Station Commander, 13/9. J. K. Wells, A.F.C., to No. 15 Sqdn., Martlesham Heath, to command, 2/9.

Squadron Leaders C. E. H. James, M.C., to H.Q., Inland Area, Stanmore, 2/9. G. W. Bentley, D.F.C., to R.A.F. Depot, Uxbridge, 23/9. E. F. Turner, A.F.C., to H.Q., Coastal Area, 9/9. H. G. R. Malet, to No. 4 F.T.S., Middle East, 13/9. F. Workman, M.C., to R.A.F. Depot, Middle East, 13/9. A. N. Gallehawk, A.F.C., to H.Q., R.A.F., Transjordan and Palestine, 7/9. W. H. Dolphin, to R.A.F. Depot, Uxbridge, 24/8.

Flight Lieutenants A. H. Paull, to R.A.F. Depot, Uxbridge, 5/9. H. M. Whittle, to H.Q., R.A.F., Mediterranean, 1/9. R. Whitaker, M.B.E., to No. 3 F.T.S., Grantham, 2/9. E. G. Hilton, D.F.C., A.F.C., to No. 216 Sqdn., Middle East, 14/9. E. Drudge, M.B.E., to H.Q., 'Iraq Command, 13/9. F. H. Woolliams, to No. 14 Sqdn., Palestine, 13/9. N. W. F. Mason, to No. 504 Sqdn., Nottingham, 16/9. J. E. Butler, to No. 3 F.T.S., Grantham, 9/9. A. King-Lewis, to A. and G. School, Eastchurch, 4/9.

Flying Officers N. A. West, to No. 4 F.T.S., Middle East, 13/9. C. E. Galpin, to No. 4 F.T.S., Middle East, 13/9. N. C. Odbert, to No. 20 Sqdn., Middle East, 13/9. B. W. Figgins, to No. 208 Sqdn., Middle East, 13/9. C. P. Barker, to R.A.F. Base, Gosport, 9/9. F. Townsend, to R.A.F. Depot, Uxbridge, 31/8. W. Anderson, to R.A.F. Practice Camp, North Coates Fitties, 13/9. R. L. Edward, to No. 2 F.T.S., Digby, 2/9. E. L. Wilson, to A. and G. School, Eastchurch, 9/9. W. J. Coadwell, D.S.M., to E. and W. School, Cranwell, 13/9. J. E. Edwardes Jones, to No. 1 F.T.S., Netheravon, 10/9. R. S. Darbishire, to R.A.F. Depot, Uxbridge, 1/9. T. L. Harrison, to No. 504 Sqdn., Nottingham, 10/9.

Pilot Officers C. W. Black, to No. 2 F.T.S., Digby, 9/9. F. J. St. G. Braithwaite, H. P. Fraser, R. Harston, and G. J. C. Paul, to No. 1 F.T.S., Netheravon, on appointment to Perm. Comns., with effect from 7/9. R. C. Noble, to R.A.F. Depot, Uxbridge, on appointment to a S.S. Comn., on probation, 9/9. A. G. M. Cary, to No. 70 Sqdn., 'Iraq, 6/9. F. A. Wardell, to No. 70 Sqdn., 'Iraq, 6/9. R. V. Redpath, to R.A.F. Base, Gosport, 16/9. R. C. Jordan, to R.A.F. Base, Gosport, 9/9. J. C. Allan, to R.A.F. Base, Gosport, 9/9. A. L. Franks, to No. 14 Sqdn., Palestine, 13/9. The undermentioned Pilot Officers are posted to No. 4 F.T.S., Middle East, with effect from 14/9:—K. M. Cass, H. R. Clay, L. A. Cubitt, G. G. Dixon, G. D. W. Frayling, D. W. H. Heath, R. J. B. Hitchen-Kemp, H. de M. Middleton, R. J. Parkhouse, A. C. Richardson, J. B. Tatnall, H. Travis, R. C. Noble. The undermentioned Pilot Officers are posted to No. 1 F.T.S., Netheravon, with effect from 8/9:—R. B. Abraham, M. J. Adam, J. C. Atkins, A. C. Bailey, J. L. C. Banks, D. Barclay, D. Carr, R. J. Cowen, N. Kirkham, A. N. Luxmoore, J. E. C. McClure, R. M. Noblston, A. W. B. Page, M. E. Pickford, W. J. Scott, W. B. J. Sharp, G. E. B. Stoney, G. R. Stroud, L. Watson, R. L. West, A. M. Wood, E. Poole.

MEDICAL BRANCH.—Flight Lieutenants E. J. Jenkins, to Palestine General Hospital, 27/8. J. E. Foran, M.B., to R.A.F. Depot, Uxbridge, 22/8. G. P. O'Connell, M.B., to No. 28 Sqdn., India, 16/8, instead of to H.Q., R.A.F., India, as previously notified. H. C. S. Pimblett, M.B., to H.Q., 'Iraq Command, 13/9. A. E. Vawser, to H.Q., 'Iraq Command, 13/9.

STORES BRANCH.—Flight Lieutenants A. B. Wiggin, to Supply and Transport Services, 'Iraq, 13/9. A. E. Sutton-Jones, to H.Q., R.A.F., Middle East, 13/9.

Flying Officers R. M. Thomas, to R.A.F. Depot, Middle East, 13/9. M. J. Scott, to R.A.F. Depot, Middle East, 13/9.

ACCOUNTANT BRANCH.—Squadron Leader P. A. Simmons, to H.Q., Fighting Area, Uxbridge, 3/9.

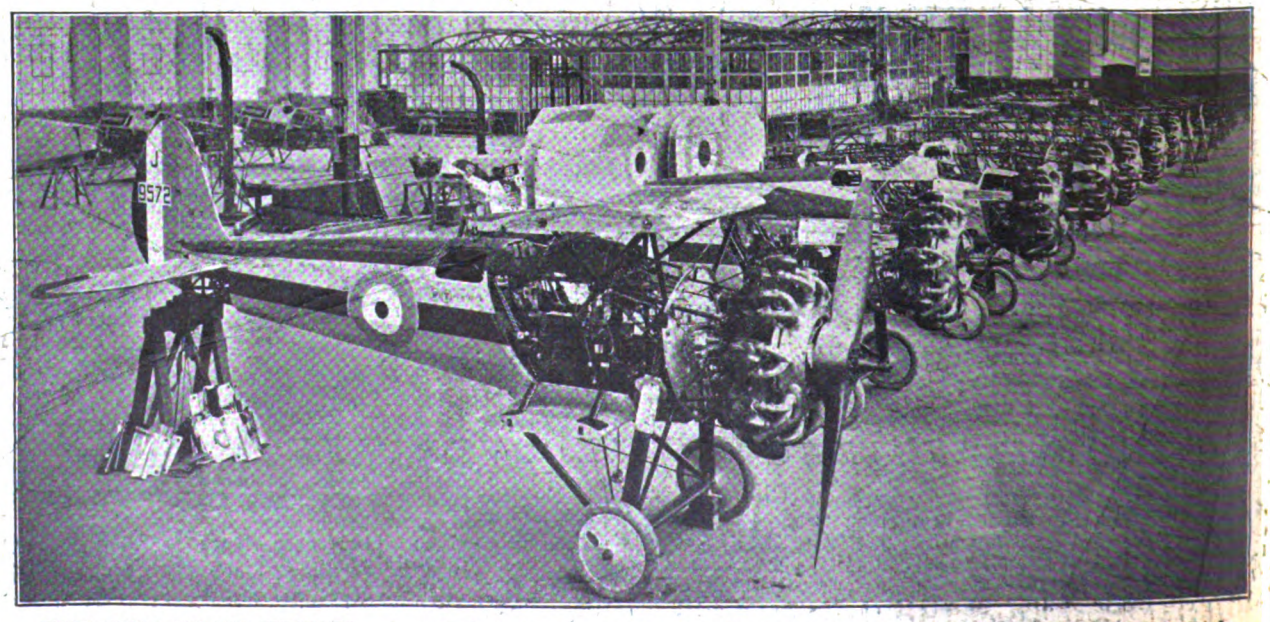
Flight Lieutenant E. C. Green, to H.Q., 'Iraq Command, 13/9.

CHAPLAINS BRANCH.—The Rev. W. R. Marsh, B.D., to R.A.F. Depot, Middle East, 13/9.

ERRATUM.—With reference to General Duties Branch of R.A.F. Intelligence, for Flying Officer N. B. Morris, week ending Sept. 10, read Flying Officer N. B. Norris.

Operations in 'Iraq.

The King has approved of the General Service Medal with clasp "Southern Desert, 'Iraq," being granted, provided the claims are approved by the Army Council, to the British and Indian military forces employed in the operations against the Akhwan in the Southern Desert, 'Iraq, under the command of Air Commodore T. C. R. Higgins, C.B., C.M.G., Royal Air Force, between January 8 and 22, 1928, both dates inclusive, or Wing Commander (now Group Captain) E. R.



THE BULL-DOG'S KENNEL.—A series of Jupiter-engined fighters coming through the works of the Bristol Aeroplane Co. Ltd. These machines are the standard equipment of No. 3 (Fighter) Squadron.

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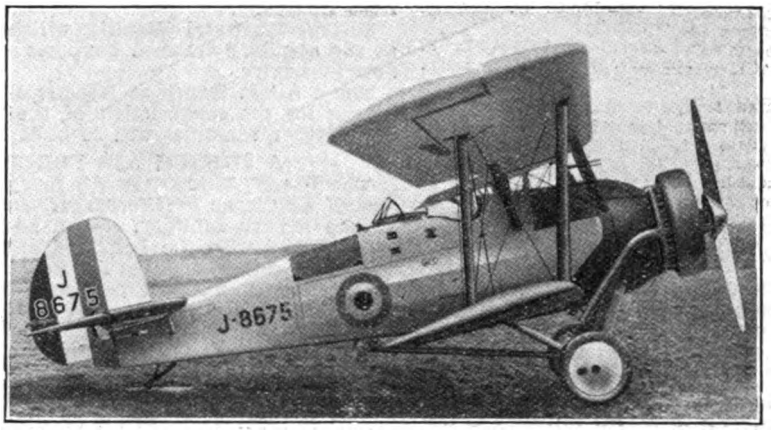
ARMSTRONG WHITWORTH
AIRCRAFT



THE ALL STEEL ATLAS

(ON WHEELS, FLOATS OR SKIS)

THE all-steel Atlas is the best aircraft for land or sea reconnaissance.

It is the standard Army Co-operation two-seater of the Royal Air Force.

Its steel construction accounts for its unrivalled durability and ease of maintenance. Fitted with the world-famous Armstrong Siddeley Jaguar engine (plain or geared type), its speed, climb and ceiling fulfil the severest Service requirements. It is produced on the grand scale by the best equipped aircraft works in Europe.

PERFORMANCE FIGURES

ATLAS WITH JAGUAR ENGINE AND TOWNEND RING

Fuel, 75 gallons (337 litres). Oil, 7 gallons (32 litres). Military Load, 880 lbs. (400 kgs.)

	Plain Engine.	Geared Engine
Approx. total weight	4000 lbs.	4115 lbs.
	1820 kgs.	1870 kgs.
Speed at ground level	143.5 m.p.h.	149 m.p.h.
	231 km.p.h.	240 km.p.h.
" " 5000 ft.	139.5 m.p.h.	145 m.p.h.
" " 10000 ft.	134 m.p.h.	140 m.p.h.
" " 15000 ft.	125 m.p.h.	131 m.p.h.
" " 1000 metres	226 km.p.h.	236 km.p.h.
" " 3000 metres	216 km.p.h.	225 km.p.h.
" " 5000 metres	193 km.p.h.	204 km.p.h.

	Plain Engine.	Geared Engine.
Time to 5000 ft.	5.25 minutes	4.25 minutes
" " 10000 ft.	12.5 "	10.5 "
" " 15000 ft.	26 "	21.75 "
" " 1000 mtrs.	3.5 "	2.5 "
" " 3000 "	12.5 "	10.25 "
" " 5000 "	34 "	27.5 "
Absolute Ceiling	19000 ft.	19100 ft.
	5800 metres	5830 metres
Service Ceiling	17300 ft.	17700 ft.
	5280 metres	5400 metres

Maximum allowable R.P.M. 2200. Normal R.P.M. 2000

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C. Nanson, C.B.E., D.S.C., A.F.C., Royal Air Force, between January 22, 1928, and June 3, 1928, both dates inclusive.

Individuals already awarded the medal will receive the clasp only. The grant of the medal or clasp will not be made in respect of visits to the sphere of operations or of service of a temporary nature.

Extensions of Service.

The following officers have been selected for extensions of the active list period of their short-service commissions as indicated. These extensions are in substitution of any previously notified:—

General Duties Branch (Supplementary List).—*Extension to six years*: Flt. Lt. E. J. Howes.

Stores Branch.—*Extension to nine years*: Flt. Lt. G. W. Longstaff.

Stores Branch (Supplementary List).—*Extension to seven years*: Sq. Ldr. A. Davidson, M.C.

Medical Branch.—*Extension to five years*: Flt. Lt. G. W. McAleer, M.B. *Extension to four years*: Flt. Lt. C. W. Coffey.

Chaplains Branch.—*Extension to eight years*: The Rev. D. F. Stephens, M.A. *Extension to six years*: The Rev. W. P. Hughes, L.Th., The Rev. G. H. Piercy, M.A.

Prize Cadetships.

The Air Ministry announces that the Air Council have awarded Prize Cadetships to the following successful candidates at the examination held in June last for entry into the Royal Air Force College, Cranwell:—

W. E. Oulton (Technical College, Cardiff, University College of South Wales); P. G. A. Diack (Westminster School); P. E. Drew (Marlborough College); H. W. A. Chesterman (Marlborough College); A. C. Johnstone (Edinburgh Academy); E. C. Ingham (Eton College).

Flying Officer H. R. D. Waghorn, A.F.C.

The London Gazette of Sept. 20 announces the award of the Air Force Cross to Flying Officer Henry Richard Danvers Waghorn in recognition of his achievement in winning the Schneider Trophy Contest.

Landing at Cranwell.

The notice of all pilots is drawn to an Air Ministry Order which states that all aircraft visiting Cranwell are to land on the southern aerodrome, on which the duty pilot's cabin is situated.

A Service Contemporary.

The Planesman, a monthly journal for the Royal Air Force, gives all the latest news from R.A.F. Stations at home and abroad. It also gives comprehensive accounts of sports and athletics and has illustrated articles of topical and general interest. It only costs 6d. a month, and those officers and airmen of the R.A.F. who cannot buy it in their Unit should apply to the Editor, *The Planesman*, R.A.F., Eastchurch, Kent.

THE LATE JAMES WINTER.

A fund was organised, at the time of his death in April last, to help the widow of the late James Winter (better known as "Old Jim"), who was a rigger at the R.A.E. He had been connected with aviation since 1905 and was well known to, and respected by, many of the pioneers of Service and Civil aeronautics.

The amount realised so far is £28 11s. This has been handed over to the widow with a list of the donors' names.

Mrs. Winter has asked the treasurers of the Fund,—Sq. Ldr. J. S. T. Fall, D.S.C., A.F.C., R.A.F., and Mr. H. V. Webster, to convey to the contributors to this fund her grateful thanks for their sympathy and help.

Any of the old friends of the late Mr. Winter, who have not as yet heard of this fund, and would like to show their respect for Old Jim, are invited to send along their contributions to the above-named Treasurers at the R.A.E., Farnborough, Hants.

THE SOUTH AFRICAN AIR FORCE.

The South African Air Force has decided to adopt the Avro Avian (Genet Major engine) as their standard training machine, and an order for twenty has been placed with the Avro Company.

Several Westland Wapitis, which type has been chosen as the standard General Purposes type by the S.A.A.F., are now in service.

The S.A.A.F. Depot at Roberts Heights has acquired the licence for the construction of the Wapiti in South Africa, and further examples will be built there.

A FRENCH AIR FORCE MAGAZINE.

The French Ministry of Air has just issued the first number of *La Revue des Forces Aériennes*, which is the organ of the French Military, Naval, and Colonial aviation, and is published with the help and approval of the Air Ministry. This review replaces *La Revue de l'Aéronautique Militaire*, which has ceased to appear since Jan. 1, 1929.

Those who are interested in procuring copies of *La Revue des Forces Aériennes* should communicate with "M. le Général Directeur Général des Forces Aériennes, 3e Bureau, 35, Rue Saint-Didier, Paris (16e.)."

A BLINDING GLIMPSE OF THE OBVIOUS.

This is from *The Patriot* of Sept. 19:—

Sein Fein Bombers.

Sir,—A disgraceful act of anti-British treachery is just announced by the new Socialist Government. It is stated that persons belonging to the so-called Irish Free State's Air Force—which is commanded by ex-gunmen notoriously hostile to this country—are to be allowed to train at the Hanworth air training centre. They are to mix with young British flying men, among whom their presence is undesirable, as tending to seditious disloyalty.

These Sinn Fein airmen are to be allowed to fly over and in the vicinity of London, so gaining local knowledge valuable for attack, such as would not be permitted to the air force of a European Power.

In August, 1928, *The Patriot* announced that a number of fast Fairey Napier daylight bombing aeroplanes had been delivered to the Sinn Fein Government. Its object is clearly to attack London and other British cities from the air. Since then there has been steady increase in bombing aeroplanes, which are not intended, and could not be used except against this country.

Ever since the 1921 Surrender, the so-called Irish Free State has been arming against Great Britain. Mr. Ramsay MacDonald is now clamouring for British disarmament.—Yours, etc.,

R. H. G.

[And we in The Aeroplane office are still wondering whether R. H. G. is a humorist intentionally.—C. G. G.]

WATCHING A PUFF SHOOT.—The Governor-General of Australia, Lord Stonehaven, watching Army Co-operation by No. 3 Squadron, Royal Australian Air Force. Standing is Flt. Lt. C. T. Anderson, D.F.C., Officer Commanding the Army Co-operation Flight of the Squadron.

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THE WORLD'S MOST RELIABLE LIGHT AERO ENGINES.

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¶ There are more different types of Light Aircraft of Foreign manufacture fitted with Cirrus engines than with any other power unit.

¶ Cirrus engined aircraft won the King's Cup in 1926 and 1927 and the Siddeley Trophy in 1928 and 1929.

¶ Cirrus engines are in use by the British Royal Air Force and are standardised by National Flying Services Ltd.

¶ Cirrus engines are now fitted in over 40 different types of British and Foreign Aircraft.

¶ Cirrus Hermes engines are now fitted in 19 different types of British and Foreign Aircraft.

¶ The record of Cirrus engines in World Flights, International Competitions, Racing, and in every other activity in which Light Aircraft are employed cannot be approached by any other type of British or Foreign low powered engine.

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AERONAUTICAL ENGINEERING

SUPPLEMENT TO "THE AEROPLANE"

LIGHTER-THAN-AIR CRAFT.

BY L. HOWARD FLANDERS.

Interest in aeronautical circles is gradually orientating to the view that lighter-than-air craft have a useful field of operation. This is a distinct change in viewpoint from that of a few years ago when any mention of airships was looked on as pure gas.

The change has been to a great extent produced by the repeated failures of aeroplanes to cross the Atlantic from east to west, and the realisation that an aircraft, with all its disposable load in the form of fuel, and a zero pay-load, is not a money-making proposition.

One of the causes of the general aversion to airships was, without doubt, the fear that a fragile and very large structure would not be durable or be capable of weathering the climatic conditions which must be met, even if the meteorological information available is absolutely reliable, in all parts of the World.

Many of the earlier rigid airships were designed to carry concentrated loads when floating in a fairly uniform body of air, and no provision was made for the aerodynamic forces caused by manœuvring at high speeds, or by passing from one form of air conditions to another. A common question was "What will happen to the craft when she strikes a live squall?"

The voyage of the *Graf Zeppelin* has inspired some confidence because that purely experimental and rather small airship has proved itself capable of a World tour.

Aerodynamic research has shown that the form of maximum rigidity and strength is also the form of minimum drag, consequently we may turn our attention to asking questions about certain very important problems which have to be solved before lighter-than-air craft can enter the field of useful transport.

BUOYANCY AND FUEL.

The relation of buoyancy to fuel-load is an essential likely to promote questions.

There are two alternative gases for providing the necessary lift, Hydrogen and Helium, which give a relative buoyancy, when the weights of the containers and aircraft structures are included, of about 13:10. Helium is at present a monopoly of the U.S.A. Though other sources of supply may be available later. (Canada is said to possess helium.)

Fuel is being tried in four forms,—hydrogen, heavy gas (of the same density as air), petrol, and fuel oil.

Of these combinations of fuel and buoyancy gas helium and fuel oil will give a non-inflammable combination. And as far as we know, this combination is not being used in any airship on the stocks or in the air.

The U.S.A. Navy helium airship of 6,500,000 cu. ft. is being constructed for gas fuel, which is carried in envelopes within the hull.

Helium being a very rare gas it is desirable to make provision for conducting all manœuvres without letting out any gas through the valves. This limits the ceiling of the airship to the height at which the helium has filled the containers by expanding as the ship rises into regions of constantly decreasing atmospheric pressure.

One of the advantages put forward for the form of fuel container shown in Fig. 1 is that as the fuel gas is used more space is available for the helium to expand, and thus a higher ceiling is available.

This is of obvious use when a mountain range has to be crossed after several hours' flight, because if there were insufficient space for the helium to fill when expanded it would be necessary to lose a portion of the buoyancy gas through the valves.

On the other hand, if the start of the flight is made from a considerable height the only alternative to the use of the gas valves is an increase of ballast, which can be gained by condensing the water which exists in the form of vapour in the exhaust of the engines. In this the H_2O component of the burnt gas is condensed and run into the ballast tanks. This is, of course, a slow process, and except for a very long flight will not do away with the necessity of wasting helium.

THE FIRE-RISK.

From the point of view of safety from fire it seems that the helium + gas-fuel combination is as great a potential source of danger as is hydrogen + fuel-oil.

On the other hand, if hydrogen gas be used for buoyancy, and provision be made for its use as fuel, if and as required, in combination with a liquid fuel, the use of a ballast-gainer will enable the buoyancy of the aircraft to be adjusted to suit all conditions and the fire-danger is no greater.

A further advantage of hydrogen is the smaller size and cost of the aircraft for a given pay-load:—10: 13.

A great point which has been made in the arguments for the advantage of helium over hydrogen is that helium allows a smoking-room to be provided for the use of passengers. But a heavy inflammable fuel-gas is more likely to penetrate into the passenger accommodation than is hydrogen, which, if it escapes, tends to do so upwards.

R.101 is provided with a smoking-room, which is considered safe because there is no petrol on board; it is not considered safe to smoke on R.100 because there is petrol on board. This shows that the heavy petrol vapour is considered a greater souce of danger than the hydrogen gas.

AIRSCREWS.

To enable changes of altitude to be made without loss of helium gas the U.S. Navy Airship is to be fitted with swiveling airscrews similar to those used in Great Britain by the late E. T. Willows in 1910, and subsequently on the Army Airship *Delta* in 1912. But in the new U.S.A. airship a reverse gear is used, and the screws have only 90° of horizontal rotation, whereas in the earlier example of this mechanism the airscrew centres could be rotated through 360° and thus be used for reversing. The addition of a reverse gear seems a needless increase of dead weight.

GUST DANGERS.

It has been found that in all changes in the velocity or direction of the wind there is a margin of turbulent air, acting as a velocity gradient, which eases the load applied to the airship structure as the craft passes from one atmospheric condition to another. As all modern airships

Various arrangements of airship lifting gas and fuel gas cells. From left to right: Cross-section of the "Graf Zeppelin" showing central corridor between lifting gas and fuel gas cells. An alternative arrangement with fuel gas cells below and on either side of lifting gas cell and with corridor at base of hull. Arrangement with fuel gas cell suspended in the centre and completely surrounded by non-inflammable helium gas cells.

(From the S.A.E. Journal.)

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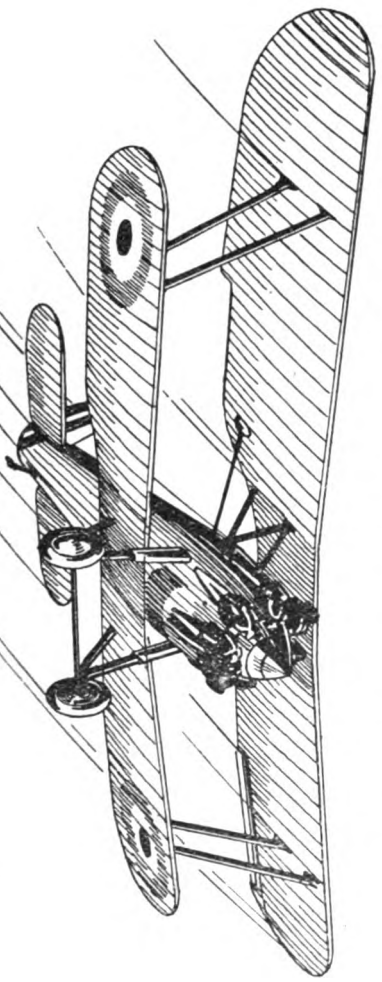
THE "Bristol" BULLDOG



The "Bristol" Bulldog stands out among present-day single-seater fighters as an example of modern steel aircraft construction unequalled in design and workmanship. The performance of the machine is exceptional and its manœuvrability must be seen to be appreciated.

Simplicity is the keynote of the design.

Full military equipment is carried, the arrangement and accessibility of all items having received very careful attention.

"Bristol" aircraft have earned a world-wide reputation for general excellence which has been further enhanced by the advent of the Bulldog single-seater day and night fighter.

THE BRISTOL AEROPLANE CO., LTD.,
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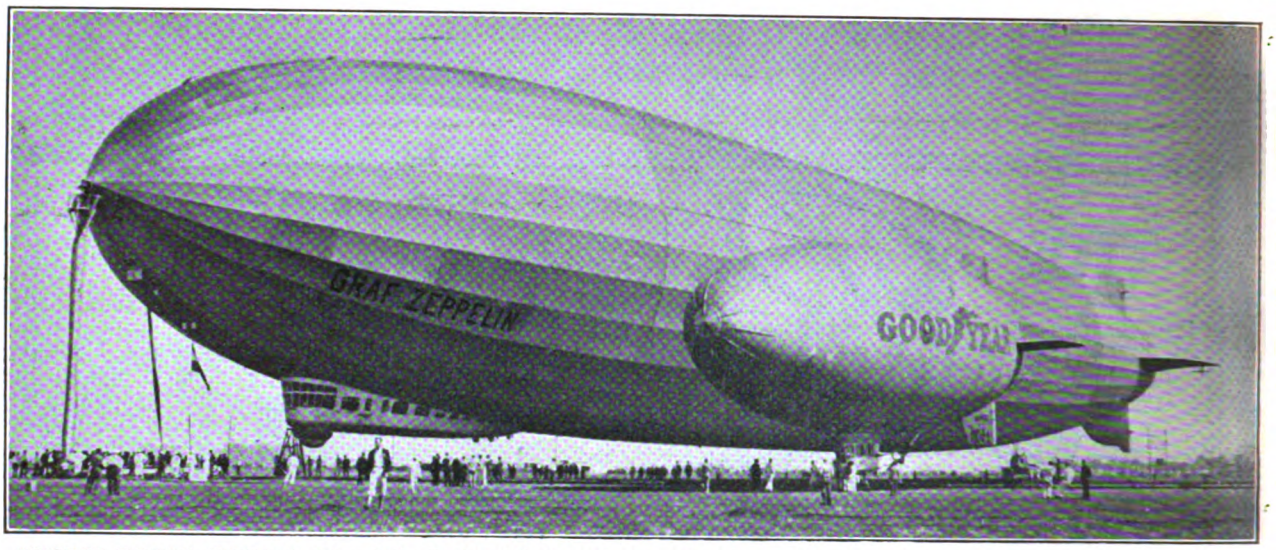
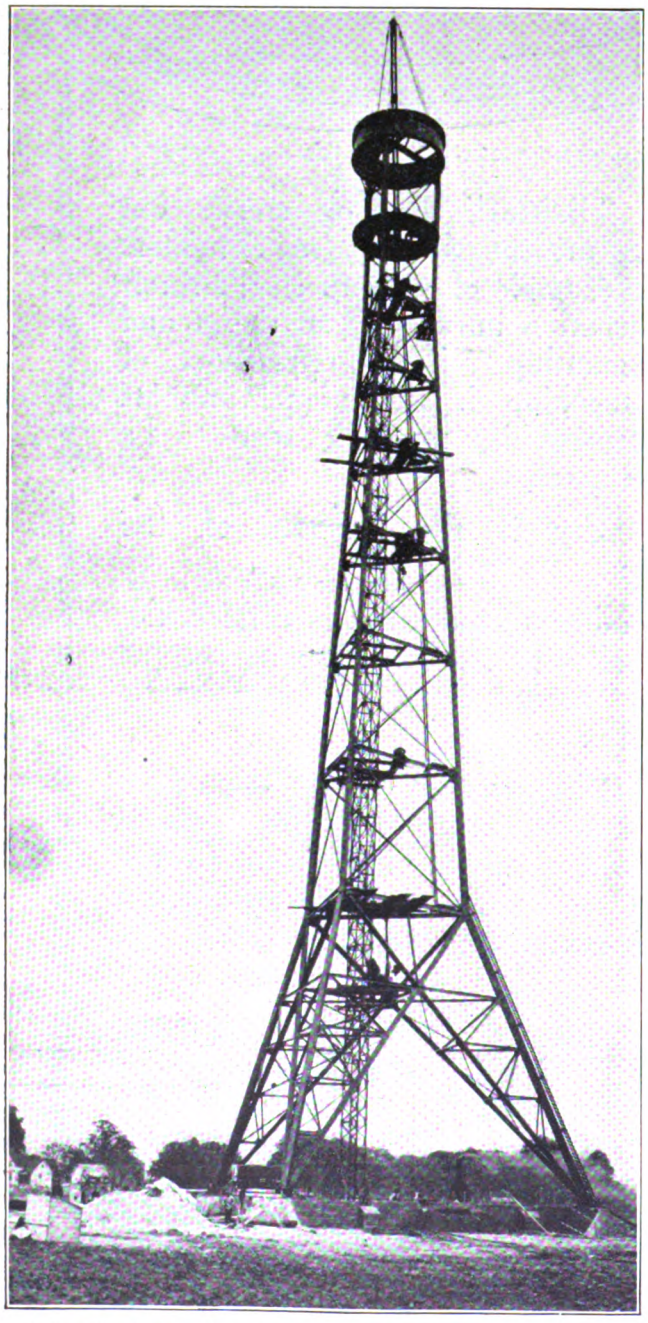


"BOTH DOING WELL."—The "Graf Zeppelin" and the Goodyear "Puritan" at Los Angeles, California.

are designed to withstand a sudden change with a factor of safety of 2, there need be little doubt about their airworthiness in passing through any atmospheric condition which has been recorded.



The Ford Mooring Mast at Dearborn, Michigan.

It must not be forgotten that the velocity of the wind, whatever it may be, constitutes no danger to any aircraft suspended in that wind. Change of velocity (which is called a gust) is the source of danger, especially for a large body some 700 or 800 ft. long travelling at about 75 m.p.h., which will take some 7 or 8 seconds to pass through a given point of atmospheric disturbance.

HANDLING.

The handling of an airship is at present rather an unsolved problem. Ten years ago there were ground crews trained to handle the small airships which were then in use. To-day, at any rate in this country, the crews have dispersed and the airships have increased to many times the size. The mooring mast is considered to overcome this difficulty, and our Air Ministry has adopted the 200 ft., or high mast.

The airship riding at the mast is free to swing to the wind through the full 360° in a horizonal plane. But, unfortunately for the development of aircraft, the wind almost always has a vertical component which may be considerable even at the place chosen for the mast.

The use of a high mast necessitates the keeping of a crew on board continuously, and the elevator controls must be constantly manned. In bad weather any lack of attention on the part of the helmsman may easily result in the stern of the airship crashing on the ground. Moreover, the trim and buoyancy of the craft must be watched and adjusted continuously.

The U.S. Navy has been working at the short or stub mast. This mast, which may be 80 ft. high or less, holds the airship just clear of the ground. A system of anchorage is provided to keep the airship horizontal and at the same time allow it to orientate to the wind direction.

Various systems for anchoring the stern have been tried. One method is a system of chains branching from a single chain to two, again to four, and so on to a considerable number. This trails on the ground, and when the stern of the airship rises it has to lift a progressively increasing load, thus finding a position of equilibrium. But this chain also impedes orientation (or swinging in a circle round the mast).

The system which seems to be most satisfactory is a circular rail-track with a rail car of some 5 tons weight running on the rails. The airship has detachable strengthening struts and bracing attached to the ring carrying the rear engine cars. The rail car thus holds the airship rigidly level while free to orientate.

It remains to be seen whether this method of mooring, which virtually holds the hull rigidly at the ends, while it is loaded throughout its length by air currents and alterations of buoyancy due to temperature changes, will be satisfactory.

A sudden change of temperature might easily cause such a continuous load on the hull that it would break its back. It is possible that some means of mooring may be devised such that a strong girder extends from the mast to the trolley and the airship attached at frequent points to distribute the loads.

There is a proposal to make mobile stub-masts to convey the airships from the mooring mast to the shed, when any repair work is necessary. This should be satisfactory in calm air when the airship is not likely to yaw suddenly.

This summary of the present position of airship development shows that many problems are being handled in a manner which will probably result in rapid evolution.

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BUSINESS MEN ARE TAKING TO THE AIR

To cross London the business man uses his own car and it is now just as practical for him to travel across Europe in his own Avro 5.

The Avro 5 is equipped with three 100 h.p. Armstrong-Siddeley engines and has a cruising speed of 100 m.p.h. Its carpeted cabin contains chairs for four people. It is electrically lighted, and comfortably ventilated. There is, in fact, everything necessary for convenient and pleasurable travelling. The Avro 5 can land in 330 yards and can be left anywhere in all weathers. To own one is to be utterly independent of all public transport arrangements and to be able to travel anywhere at any time with speed, safety and comfort.

AVRO·5

(3 ENGINED MONOPLANE)

Specifications and full particulars of the above, also of the larger Avro-10 (carrying 8 passengers) will be supplied on application. Those interested should write for free catalogue of the famous "Avian" light aeroplane.

A. V. ROE & CO., LTD., 166, PICCADILLY, LONDON, W. 1. WORKS: MANCHESTER AND HAMBLE, SOUTHAMPTON

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THE REPORT OF THE AERONAUTICAL RESEARCH COMMITTEE.

[*Aeronautical Research Committee. Report for the year* 1928-29. Published by H.M. Stationery Office, and obtainable from THE AEROPLANE Book Department, Cannon House, Pilgrim Street, E.C.4., at 2s. 0d.]

The Aeronautical Research Committee, which co-ordinates all the aeronautical research work and investigation throughout this country, has recently published its annual report.

Much of the Committee's work in the immediate future is to be concerned with the reduction of the difference existing between the performance of present-day aircraft and the Ideal. Widespread attention has been drawn to this difference by the published investigations of Professor B. M. Jones.

A further result of these investigations appears to be the need for making the airflow past a model in a wind-tunnel turbulent. "Scale effect," for which an allowance has to be made in the prediction of full-scale resistance from models, is probably due to the fact that the airflow past the model is not turbulent, whereas the flow past the full-size body is in that condition. This question of turbulence and also the method of its introduction into the wind tunnel is to receive further attention as being of primary importance.

The N.P.L. are making a series of experiments to determine how the drag of streamline bodies is affected by the interference of small bodies, or wing roots, attached to the surface of the original body. Such additions appear to have less effect when placed aft of the maximum cross-section.

A lot of work has been done on wing-radiators. Electrically heated platinum strips arranged on a model R.A.F.26 aerofoil have been used for these experiments. As each strip forms part of a separate circuit the dissipation of heat can be determined. Tests made with this apparatus have given results agreeing well with the tests made at the R.A.E. on the full-size Gloster and Supermarine wing radiators. Further experimental work shows that appreciably better cooling is obtained forward of the front spar.

One feels that although the knowledge gained with this apparatus will of course prove useful, it will not help the designers of racing aircraft much as the wing area is already insufficient for the adequate cooling of the racing engine. The next step is surely in the adoption of ethylene-glycol for cooling.

A compressed air tunnel to withstand a pressure of 25 atmospheres and with a working diameter of 6 feet is now being constructed for use at Teddington, where the N.P.L. live.

The Report emphasises the need for a full-size tunnel of about 24 feet diameter. This is a need which THE AEROPLANE heartily endorses and to which Editorial reference has often been made.

Further evidence as to this need, if any were required, is a statement in the Report which says that the overall drag of an air-cooled radial engine can be greatly reduced by the use of helmets over individual cylinders. The overall drag *can* be reduced, but the helmets cause overheating of the cylinders. If the helmets are so modified that the cylinders stay cool, the helmets are not much use for drag-reducing purposes.

The Americans were able to find all this out with comparatively little delay because they could rig a full-sized engine up in their big tunnel and have it running under its own power.

The N.P.L. have found that helmets reduce drag on models but not until full-sized helmets can be tried out on engines will the required modifications for cooling be discovered. What value will the modified helmets have for drag reduction?

The Report suggests that if a full-size wind-tunnel is constructed the Aircraft Industry should assist towards the cost of maintaining and operating it.

The report refers to the device produced by Mr. H. C. H. Townend for the reduction of the drag of air-cooled radial engines. As is now well-known, this device is a ring of streamline section and large diameter placed round or in front of the engine.

This device came out about the same time as the N.A.C.A. cowling, which is certainly having a great success in the United States.

The point of the N.A.C.A. cowling is that not only is there a cowling to improve the airflow past the engine and thus decrease the drag, but that there is a special system of internal cowling and deflectors to ensure adequate cooling.

Furthermore, on radial engines with only three or five cylinders, both the Townend Ring and the N.A.C.A. cowling are found to be a disadvantage, and on engines placed close beneath the wing—as are the wing engines of the tri-motor Ford—the N.A.C.A. cowling slows the machine. A different type of cowling is then necessary.

Airscrews have received a lot of attention. The mutual interference between an airscrew and a body behind it has been investigated. Experiments have been made with airscrews running at high tip speeds—80 and 90 per cent. of the velocity of sound. A symmetrical section R.A.F.27 gave the best results.

The United States of America have been making tests in four of their wind-tunnels of the International R.A.F.15 aerofoil section sent to them by the N.P.L. There is some difference in the technique of testing at the different tunnels and this may account for the differing results. The agreement between the results obtained in the American wind-tunnels is of the same order as that obtained between the tests made in the various tunnels at the R.A.E. and N.P.L.

The Report refers to the theoretical and experimental work which has been done on the subject of Fluid Motion, such as the flow around cylinders, and also around aerofoils, at low wind speed.

No work except of an incidental nature has been done on gyroplanes, generally called Autogiros.

The Stability and Control Sub-Committee have come to the conclusion that the recording apparatus at present used in stability and control tests is too complicated. The next step must be the provision of simpler apparatus.

The Report admits that the problem of an aeroplane which will not come out of a long spin is still incompletely understood. The more the matter is investigated, the more varied the types of spin appear to be that cause trouble on different machines.

There is not much information available about the aerodynamic behaviour of servo controls, so measurements are to be made of relative rudder and servo movements.

A special Sub-Committee (now deceased) has investigated the various problems concerning the airworthiness of rigid and non-rigid airships.

A method of investigating the flutter of aeroplane wings has been evolved. This consists in making cinematograph records of a model wing of reduced elasticity in a wind-tunnel. This apparatus provides a satisfactory means of investigating flutter problems of a wing actually in existence. Further work is being undertaken to find means of preventing flutter. Tail flutter is also being investigated.

The Report mentions the adoption of the Fairey IIIF seaplane as the standard machine for seaplane research. A new high speed tank for trying-out seaplanes and flying-boat models is to be built at the R.A.E. The development of camera guns for timing high-speed machines is noted. Presumably this is the method used for timing the attempts on the World's Speed Record.

Mr. H. Constant, at Cambridge University, has investigated the Torsional Vibration of Crankshafts and a formula for the stiffness of a crankshaft out of bearings has been evolved. The R.A.E. are now engaged in testing the synchronous speeds of as many engines as possible to test the accuracy of the data prepared by Cambridge.

The Report states that Mr. Ricardo in his experimental works at Shoreham has been doing a considerable amount of research based on the compression-ignition engine. Such research has been made on 4-cycle and 2-cycle units of a sleeve-valve type engine. The research has been carried to such a point that the successful development of a complete engine is not far off.

Mr. Ricardo has also been making tests with high-speed sleeve-valve petrol engines. These have been run at 5,000 r.p.m., successfully maintaining a high M.E.P.

One may add that much experimenting on these lines has been done also by Mr. Fedden at Bristol.

Sq. Ldr. Helmore has made a series of experiments at Cambridge with a water-cooled aero-engine using gas fuel and also a combination of gas and liquid fuels. Further work is to be done with the combined fuels.

The R.A.E. have designed a petrol flowmeter which is sufficiently accurate under all conditions of temperature. Accurate measurements of fuel consumption in the air is now possible.

These flowmeters have been used by an R.A.F. squadron flying in formation and showed the possibility of effecting a large reduction in average petrol consumption. At the same time the wide disparity in consumption between aircraft flying in the same formation was reduced.

Various researches concerning the elasticity and fatigue of metals have been made, especially with regard to the fatigue properties of single crystals of metals.

Research in recent years has shown that the fatigue of metals, more especially the light metals such as duralumin, is accelerated by the presence of corrosive agents. The Report points out that the Committee are closely in touch with the American Investigator of this problem.

At Oxford University experiments have been made to determine the effect of the frequency of the alteration of stress upon the fatigue limits of metals. Some of the frequencies investigated were as high as 20,000 per second.

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GLOSTER

INTERNATIONAL AERO EXHIBITION OLYMPIA, 1929.

"The Survey biplane is in complete skeleton form and is an absorbingly interesting example of Gloster metal construction."—"*The Aeroplane.*"

"The companion machine to this was built for the Aircraft Operating Co., Ltd., and is already flying. Altogether it is quite one of the most interesting aircraft in the Show, and is a credit to its constructors in every way."—"*The Aeroplane.*"

"Altogether this is a very fine exhibit, thoroughly expressive of the best type of British aircraft construction and progress."—"*The Aeroplane.*"

THE PIONEERS OF STEEL AIRCRAFT.

GLOSTER AIRCRAFT CO., LTD.,
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THE WESTLAND FOUR.—The latest product of the Westland Company with three Cirrus-Hermes engines which has been bought by Imperial Airways Ltd.—(*"Aeroplane" photograph.*)

One result of the growing popularity of all-metal construction is that the Aircraft Industry wants to know something about the strength of panel bracings for fuselages. Experiments are therefore to be made as to the conditions and manner of failure of rectangular duralumin panels clamped in a pin-jointed frame and subjected to shearing forces.

The Report states that as chill-cast test bars of aluminium alloys give test results higher than those obtained from the actual sand castings, sand-cast test bars are to be used. Work will be done to enable the B.E.S.A. (British Engineering Standards Association) to adopt sand-cast test bars.

An intensive investigation of the properties of magnesium alloys and the prevention of their corrosion is to be undertaken. Commenting here one would point out that the Germans have been using Electron, which is a magnesium alloy, for some considerable time. English visitors to the Berlin Exhibition were much impressed by this material. There was also a British Company at the Aero Show exhibiting magnesium alloys.

A Sub-Committee has been formed to discuss Aircraft noise.—Will this Committee hold its seances in a giant-airliner? Probably not, as no doubt the vibrations both audible and supersonic would induce fatigue.

The Report closes by referring to the cordial relations existing between the A.R.C. and the N.A.C.A., which amity has recently been sealed by an exchange of instruments.

T. J.

AERONAUTICS AT SOUTH KENSINGTON.

The Department of Aeronautics of the Imperial College of Science and Technology, at South Kensington, has now issued a syllabus of the lectures to be delivered during the Session 1928-30.

The officials of the Department of Aeronautics are as follows:—

Zaharoff Professor of Aviation and Director of the Department.—Leonard Bairstow, C.B.E., F.R.S., A.R.C.S.

Professor of Meteorology.—Sir Gilbert T. Walker, C.S.I., Sc.D., Ph.D., F.R.S.

Assistant Professor.—Design and Superintendent of the Drawing Office.—F. T. Hill, F.R.Ae.S., M.I.Ae.E.

Lecturer on Airships.—V. C. Richmond, O.B.E., B.Sc., A.R.C.S., A.F.R.Ae.S.

Lecturer on Air Navigation and Instruments.—A. P. Rowe, A.R.C.S., B.Sc., D.I.C., A.F.R.Ae.S.

Lecturer on Strength of Structures.—W. S. Farren, M.B.E., M.A.

Lecturers on Engine Design.—H. Moss, D.Sc., A.R.C.S., D.I.C.; W. J. Stern, B.Sc., A.R.C.S., D.I.C.

Demonstrators.—E. W. Bliss, M.A., B.Sc., A.Inst.P.; T. Tanner, A.C.G.I., D.I.C.

Professor's Assistants.—Miss B. M. Cave-Browne-Cave, M.B.E., A.F.R.Ae.S.; Miss E. D. Lang, M.A., A.F.R.Ae.S.

Workshop Assistant.—G. A. Locke

Lectures on special subjects will be given by some of the Professors and Lecturers of the College.

The department was established in 1920-21 in part to give effect to the scheme proposed by the Committee on Education and Research in Aeronautics in their Report, dated Dec. 12, 1919, in which the opinion was expressed that "The Imperial College should become the Central School for advanced study in Aeronautical Science."

The Report [Cmd. 554] described the organisation by which this should be done, and in accordance with its recommendations, which were approved by the Government, funds have been placed at the disposal of the College for the purpose.

The School is administered by the Governing Body, with the assistance of an Advisory Committee, which reports to the Executive Committee for the College.

The Advisory Committee consists of 12 members, with Mr. Herbert Wright as Chairman. The members represent the Imperial College, the Air Ministry, the Aeronautical Research Committee, the University of Cambridge, the Royal Aeronautical Society and the Society of British Aircraft Constructors.

The School is in the main a post-graduate one, and students are expected to have passed through a systematic training in Physics, or one of the branches of Engineering, preferably mechanical, including a fairly high standard in Mathematics. They should have graduated A.R.C.S. or B.Sc., or have attained a recognised equivalent standard.

A complete course of lectures and laboratory work is given each year. There are two main branches—aerodynamics, design and construction, or aero-engines, but times are arranged so that all the lectures can be attended.

THE AVRO FIVE.—A three-quarter front view of the four-seat, three-engined cabin monoplane which made its first appearance at the Aero Show. This machine has been sold to Wilson Air Lines, of Nairobi, Kenya Colony.

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Schneider Trophy

Great British Triumph

On September 7th 1929, Flying-Officer Waghorn flying a Supermarine Rolls-Royce S6 Seaplane over a 350-kilometre course, averaged 328·63 miles per hour, thus retaining the Schneider Trophy for Great Britain.

On September 10th 1929, Squadron-Leader Orlebar, A.F.C., also flying a Supermarine Rolls-Royce Seaplane reached the astounding speed of 368 miles per hour over the 3-kilometre speed course. This is the fastest speed ever attained by any aircraft of any nation.

For Speed and Reliability

ROLLS-ROYCE

Engines are the Best in the World

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For students desiring to undertake research in aeronautics facilities and personal supervision are available during a second year.

The following is a syllabus of the course:—

I.—DESIGN AND ENGINEERING.

(1) AERODYNAMICS—BY PROFESSOR BAIRSTOW.

(a) Lectures will be given twice weekly, and Wind Channel experiments once weekly

The Lectures will include:—Fluid motion theory and experiment. Steady motion of aircraft; elementary treatment. General treatment of design data. Airscrew theory. Prediction of aircraft performance. Stability and control.

The aerodynamics laboratory is equipped with a wind tunnel, 4 ft. by 5 ft., in which velocities up to 75 ft. per sec. can be reached and accurately measured. The forces on aerofoils and aeroplane parts are found by means of special balances. There is also a water tank for the visual and photographic study of fluid motion.

(b) MATHEMATICS FOR STUDENTS OF AERODYNAMICS. Lectures to be arranged in conjunction with the Department of Mathematics.

(2) DESIGN LECTURES.

Followed by a class, twice weekly, by Assistant Professor HILL, with Drawing Office work under Professor BAIRSTOW and Assistant Professor HILL at times to be arranged.

The Lectures and Drawing Office work in Aircraft Design will be conducted as far as possible on a system such as is used in a present-day aeroplane designer's office. A typical machine will be divided up into a number of components, and the design of individual parts making up those components discussed from the point of view of the use of particular materials, structural strength, ease of manufacture, interchangeability of spare parts, etc. The design of suitable jigs for the manufacture of such fittings will also be dealt with.

The mechanical detail of various types of modern aeroplanes will be examined and the particular points in each designer's specialities discussed.

(3) MATERIALS OF AIRCRAFT CONSTRUCTION.

Lectures, with class work, by Assistant Professor HILL, once a week.

The Lectures include:—

Consideration of the materials used in aircraft construction from the designer's and constructor's point of view. Steels, steel tubes, streamline wires and swaged rods, steel wire ropes and cables; aluminium and its alloys; copper and tin alloys; timber and glue; rubber; fabric and other coverings. Mechanical testing of materials necessary to investigate properties peculiar to aircraft requirements; applications of proof stress, fatigue range, Brinell, Izod, bend and reverse bend tests. Protection of materials against atmospheric and other deteriorating effects. The B.E.S.A. and D.T.D. specifications for aircraft material.

(4) CONSTRUCTION AND STRENGTH OF AIRCRAFT.

Lectures by Mr. FARREN, twice weekly, followed by class work, laboratory experiments and Drawing Office, under Mr. FARREN and Assistant Professor HILL.

The Lectures include:—The loads on an aeroplane in flight and their distribution in the structure; manœuvres and extreme conditions. Load factor and factor of safety. Materials and specification of strength. Wing structures; type; spar and strut design; fittings. Fuselages, undercarriages, and control surfaces. Redundancy in aeroplane structures. The treatment of structures in three dimensions. The relative importance of weight and head resistance in structural parts. Metal and composite construction in aircraft.

The class work includes:—Numerical examples on the lectures. The circulation of the strength of a typical aeroplane (wing structure and fuselage) in detail.

The drawing office work includes:—The design of spars, struts, etc., for the aeroplane dealt with in the class work.

(5) ENGINE DESIGN.

Lectures, twice weekly, with Laboratory Work by Dr. Moss and Mr. STERN, and Drawing Office under Assistant Professor HILL, followed by class work and Drawing Office under the Lecturers and Assistant Professor HILL.

The Lectures include:—Essential features of a heat cycle; practical limitations; the piston engine; heat and work balance; avoidable and unavoidable losses. Engine accessories; carburettor; ignition system; fuel system. The effect of altitude. Typical aircraft engines. Lines of future development; the injection engine; light alloys and their application. Torque curves of stationary and rotary engines; inertia forces; forces on connecting rod, crank pin, crank shaft, cylinder walls; torsional vibrations; balance. Properties of fuels; mixture strength; volumetric efficiency. Measurement of fuel and air; measurement of I.H.P., B.H.P., and frictional losses.

The Engine Laboratory is well equipped with modern plant and apparatus for the testing of engines and fuels, and for research work. The equipment available to College students by the courtesy of the Air Ministry includes:—

Ricardo 40 h.p. variable compression engine, Ricardo 30 h.p. cross-head supercharger engine, Benz single-cylinder aero-engine, Benz two-stage oil engine, Delco engine with Midgley bouncing pin equipment for fuel standardisation.

Reavell blower for supercharging, Roots' blower with equipment for carburettor testing under normal, altitude and supercharged conditions, centrifugal fan blower.

R.A.E. electrical indicator, optical indicators.

Boys' calorimeter for calorific value of gas, Junkers calorimeter for calorific value of gas and liquid fuels.

Electrical and other air flowmeters.

Exhaust gas analysis apparatus.

Test bed for aero-engine crank-shaft stiffness.

(6) AIRSHIPS.

A course of fifteen weekly lectures by Mr. RICHMOND, with class work and Drawing Office.

The Lectures include:—Aerostatics. The resistance of airships and the manner in which it is affected by their form. The aerodynamical forces acting on an airship in straight or curved flight and the characteristics which result. The loading of airships. Types of non-rigid and semi-rigid airships. Airship fabrics and the manufacture of envelopes and gasbags. The propulsion of airships. Stresses in non-rigid airships. General description of the hull structure of rigid airships and the methods of calculating the stresses set up therein. Generalised methods for calculating primary stresses in rigid hulls. The design of redundant frameworks. The consideration of some secondary stresses in the hull structure.

(7) AIR NAVIGATION AND AIRCRAFT INSTRUMENTS.

Ten weekly lectures and classwork on Air Navigation and Aircraft Instruments, by Mr. ROWE.

These lectures are preceded by a special course of twelve lectures on Meteorology by the Professor of Meteorology.

The lectures on Air Navigation and Aircraft Instruments include:—

Principles of map projection: dead-reckoning navigation; radius of action from stationary and moving bases; aircraft magnetic compass design and installation; distant-reading compasses, including the earth inductor compass and the gyro compass; airspeed indicators, altimeters and drift indicators; bearing plates and course setting sights. Navigation by astronomical observations; graphical methods of reduction. Principles and methods of direction-finding by wireless telegraphy and telephony; reduction of wireless observations. Flying and landing in fog and at night; the gyro turn indicator and the gyro rudder control; landing by the leader cable sytem; methods of determining the height above ground. Principles of engine instruments. General appreciation of aircraft instrument design.

(8) MATHEMATICS.

Classes in Mathematics will be arranged.

II. METEOROLOGY.

By Professor SIR GILBERT WALKER:—

(1) A course of twelve lectures in preparation for the lectures on Air Navigation, including fogs and mists; gradient winds; types of cloud; the vertical distribution of pressure; temperature and density; types of weather, including line-squalls and thunderstorms.

(2) Class work in general meteorology, twice weekly.

(3) Demonstrations in the plotting of maps from information received by wireless, thrice weekly.

(4) Demonstrations in sending up pilot balloons and working out their tracks from observations with a theodolite.

(5) Weekly lectures on dynamical meteorology and the quantitative treatment of weather processes.

(6) Class work in climatology, with special reference to Egypt and 'Iraq, thrice weekly second half-Session.

Meetings are held for the discussion of recent contributions to meteorology, on alternate Mondays at 5 p.m., at the Meteorological Office, by kind permission of the Director.

Students in the Meteorological Division will be expected to have a knowledge of dynamics, and of certain branches of physics—the gaseous laws, specific heat, latent heat and the rudiments of the thermodynamics of gases, vapours and mixtures.

Courses of instruction for R.A.F. Officers detailed for special service are arranged as occasion requires.

TRAINING FOR THE AERONAUTICAL ENGINEER.

As long ago as 1909 the Northampton Engineering College, which is a part of the Northampton Polytechnic Institute, St. John Street, E.C. 1, provided a course in Aeronautical Engineering. In 1910 Mr. Handley Page was appointed to the Staff and designed the wind tunnel which the College constructed in 1911. This tunnel was of the open chamber type, similar to that used by Eiffel in his famous experiments and still used by the French,—as those who went to M. Lapresle's lecture will remember.

The wind-tunnel has been rebuilt and is now of the closed type similar to those in use by the N.P.L.

The college now provides a full-time four-year course in Aeronautical Engineering. During these four years the students spend two terms, each of approximately five months' duration, in works. This is a good scheme, for a student is thereby enabled to get a job more easily because he has actually some knowledge of works' practice, besides a head full of academic theories.

For the first two years the syllabus is the same for all engineering students. After this period the students begin to specialise in their several subjects.

The third-year course comprises an historical survey of the development of Aviation, the study of fluid motion, properties of the atmosphere and meteorology, the simpler cases of flight dynamics, the principle of dynamic similarity, stability, and simple problems in air navigation.

The fourth year course comprises the study of aerodynamics, the economics of flight, the theoretical and experimental investigation of stability, the theory and design of airscrews, the methods of calculating thrust, torque, power and efficiency, the analysis and design of airscrews, their construction, and finally special airscrew problems.

Aero-engines are dealt with in detail in the fourth year.

Aeronautical drawing and design are dealt with in conjunction with the third and fourth year lectures in aeronautics. The third year is confined to detail design, but the fourth year a complete design for a machine is worked out with special reference to metal construction.

Prospective students should be at least 16 years of age and, in order to ensure an adequate standard of preliminary education, must pass an entrance examination, held in July and September.

Students who have matriculated or passed an equivalent examination are excused this preliminary examination, the next of which will be held on Monday, Sept. 30.

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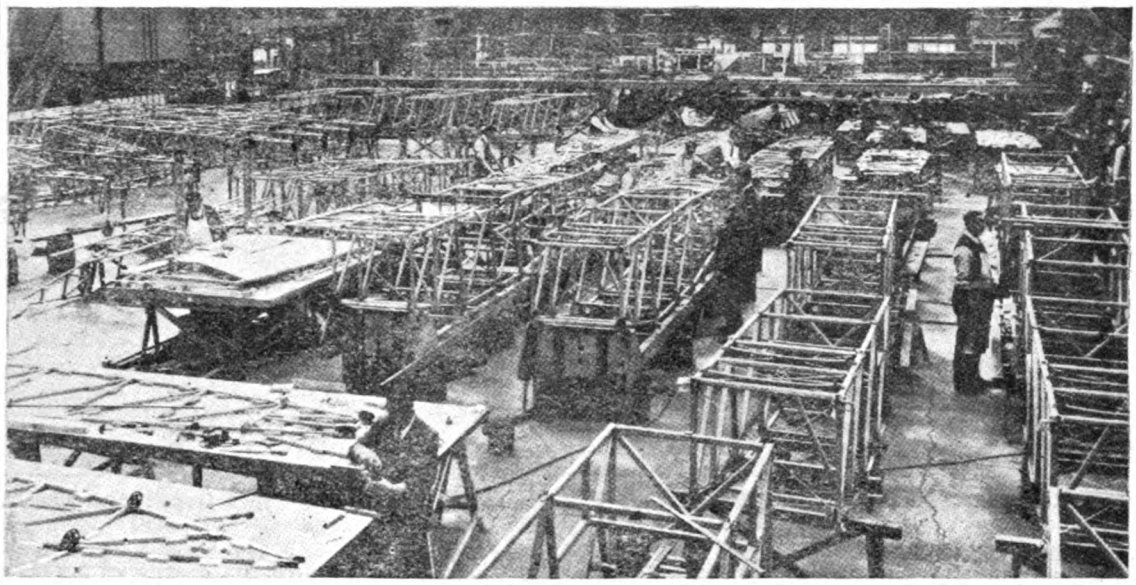

Above—Westland All-metal Wapiti Fuselages under construction.

Below—Cadmium Plating and Anodic Treatment Shop.

WESTLAND AIRCRAFT

Modern Production Methods at Westland Works.

The modern factory of to-day is a very different place from the war-time factory where wooden construction was almost universal. The photographs above give an idea of two shops employed on all-metal construction at Yeovil. In the fuselage assembly shop all tubes for fuselages are cut, fitted and jig drilled, and the various members are assembled into complete units, all riveting being done by pneumatic riveters. The joints are made by means of flat fish plates with hollow rivets, a small amount of clearance being allowed between the end of the various members and the load being taken by the rivets in shear.

The second illustration shows part of the shop where all steel parts are cadmium plated and all aluminium and duralumin parts are anodically treated to protect them from rust and corrosion. Sheets, tubes, tanks and fittings can all be treated.

WESTLAND AIRCRAFT WORKS,

(Branch of Petters Limited).

WESTLAND

Works: YEOVIL, England.

Telephone: 141 YEOVIL.

Telegrams: Aircraft 141 Yeovil.

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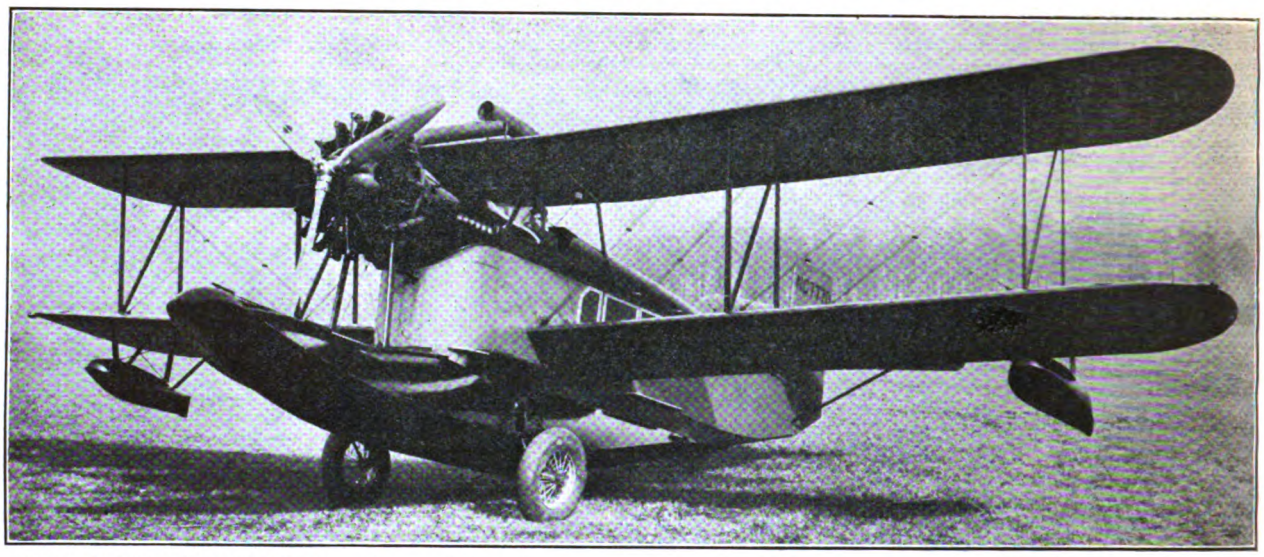
NEW AIRCRAFT AND AEROENGINES.



THE KEYSTONE-LOENING AIR YACHT.—A six-seat cabin amphibian developed from the standard military amphibian.

THE KEYSTONE-LOENING AIR YACHT.

In October, 1928, the Loening Company was acquired by and merged with the Keystone Aircraft Corporation. The Loening organisation is however being operated as an independent division of the Keystone Company.

The first product of the new alliance is the Keystone-Loening Amphibian Air Yacht fitted with the 525 h.p. Wright Cyclone engine. This machine is a commercial development of the military type amphibians which have been supplied to the U.S. Navy and Army Air Services in recent years.

TYPE.—Six-seat cabin amphibian.

WINGS.—Two-bay biplane of equal span. Leoning 10A section aerofoil. Centre-section supported by six steel struts and wire-braced. Two sets of "N" struts on each side of fuselage. Wings built up of two solid spruce rectangular section spars and Alclad ribs, the whole fabric covered. Wings are wired for navigation lights. Ailerons fitted to lower plane only.

FUSELAGE.—The hull is of typical Loening design with a deep fuselage built onto one large central float which extends well forward of the airscrew. Construction is composite with wood members, metal fittings and a duralumin skin. The structure is assembled with bolts instead of rivets. The longitudinals are Warren girders of spruce with transverse bulkheads dividing the hull into water-tight compartments.

TAIL UNIT.—Normal type with adjustable tailplane. Unbalanced elevator in two pieces and horn-balanced rudder. Composite construction. Horizontal surfaces fabric covered. Duralumin covering on vertical surfaces. Strut bracing to lower side of tailplane.

UNDERCARRIAGE.—Lateral stability on the water is provided by small wing-tip floats. On land a retractable undercarriage of standard Loening type is used. The wheels fold up and inwards into pockets on top of the hull. The mechanism is operated by a crank close to the pilot. Time of operation either up or down 15 secs. Oleo shock absorbers fitted.

POWER PLANT.—One 525 h.p. Wright Cyclone nine-cylinder air-cooled radial mounted on extension of fuselage which is supported by two vertical struts to centre float. Fuel capacity 140 U.S. galls. (117 galls. = 530 litres). Oil capacity 10 U.S. galls. (9 galls. = 38 litres). Eclipse electric started fitted as standard. Venturi-type silencers mounted over centre-section.

ACCOMMODATION.—Double side-by-side pilot's cockpit under centre-section with central engine controls and two wheel control columns. Behind pilot's cockpit is passenger cabin, the dimensions of which are 10 ft. × 4 ft. × 5 ft. 6 in. high (3.048m. × 1.219 m. × 1.676 m.). Two doors one on each side of cabin and a third communicating with cockpits. One seat for two people right across fore wall of cabin facing aft. Two swivelling bucket seats in the centre and two bucket seats at the back facing forward. Non-splintering glass windows right along each side of cabin which can be opened and shut. Lavatory accommodation can be provided.

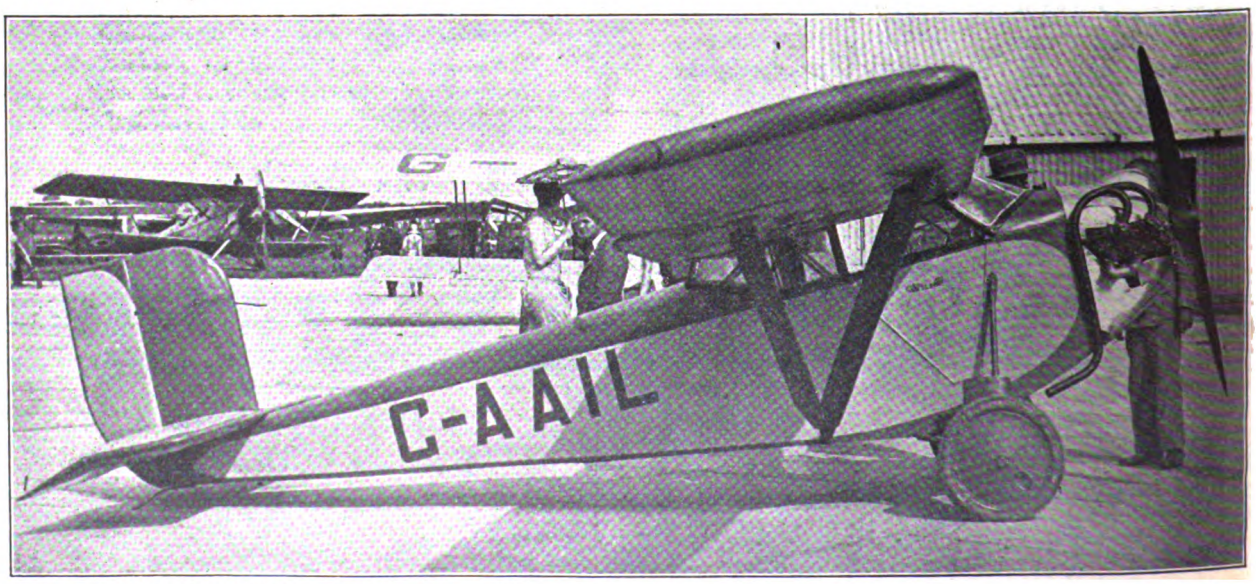
DIMENSIONS.—Span 46 ft. 8 in. (14.22 m.), Chord 6 ft. (1.829 m.), Length 34 ft. 8½ in. (10.57 m.), Height on wheels 13 ft. 2 in. (4.013 m.), Wing area 517 sq. ft. (48 sq. m.).

WEIGHTS AND LOADINGS.—Weight empty 3,900 lbs. (1,791 kgs.), Pay load 1,100 lbs. (500 kgs.), Disposable load 1,950 lbs. (885 kgs.), Full load 5,900 lbs. (2,676 kgs.), Wing loading 11.4 lbs./sq. ft. (55.6 kgs./sq. m.), Power loading 11.25 lbs./sq. ft. (5.1 kgs./h.p.).

PERFORMANCE.—Maximum speed 130 m.p.h. (209 kms.p.h.), 105 m.p.h. (169 km.p.h.), Landing speed 55 m.p.h. (88.5 km.p.h.), Ceiling 15,000 ft. (4,570 m.), Range 550 miles (885 km.).

THE CIVILIAN COUPE.

The Civilian Aircraft Co., of Burton-on-Trent, is one of the latest constructing companies to be formed in this country. Its first product is a small two-seat Coupé monoplane with the 75/85 h.p. A.B.C. Hornet four-cylinder air-cooled horizontally-opposed engine. The machine has many desirable features, including push-and-pull-rod controls all mounted on ball-bearings, windows all round the cabin, including the back, giving a clear view between the wing and the fuselage, and a large door on each side of the cabin allowing either occupant similar ease of access to their seats.



THE CIVILIAN COUPE.—A side view of the first product of the Civilian Aircraft Co. of Burton-on-Trent. The machine has an A.B.C. Hornet (flat opposed 4-cyl.) engine. —(*"Aeroplane" photograph.*)

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TYPE.—Single-engined high-wing cabin monoplane.

WINGS.—Braced monoplane of wooden construction. Wing structure consists of two box spars of spruce and plywood, and a number of main ribs of similar construction. In between these ribs are located a number of intermediate former ribs. The whole wing is covered with plywood. The wings are carried above the upper fuselage longerons, the intervening space between the wing and fuselage being filled with windows. One pair of Vee bracing struts on either side of the fuselage. The wings fold round the rear spar joints and the apices of the bracing Vees. The locking pins on the front spar joints have a double safety catch.

FUSELAGE.—Rectangular structure of spruce longerons and stiffening struts with plywood covering.

TAIL-UNIT.—Monoplane type. Construction similar to that of the wings. The extremity of the fuselage, including the tail-plane, fin, rudder, and tail-skid are built up as a complete unit and bolted to the fuselage by four bolts. All tail surfaces are cantilever.

UNDERCARRIAGE.—Divided type. Each unit consists of a telescopic leg attached high up the side of the fuselage, the bottom end being hinged to the bottom fuselage longeron by a steel tube Vee. All joints to the fuselage are by ball-joints enclosed in grease-proof leather stockings. Springing is by rubber-blocks in compression. A laminated leaf-sprung tail-skid is used.

POWER PLANT.—One 75/85 h.p. A.B.C. Hornet four-cylinder horizontally opposed air-cooled engine. The engine mounting is a steel tube unit which carries the engine, engine controls, and dashboard, with all necessary instruments. The main fuel tank of 16 gals. capacity is in the right-hand wing root giving gravity feed to the engine. Petroflex tubing at the rear spar hinge allows the wing to fold without disconnecting the fuel pipes.

ACCOMMODATION.—Side-by-side seating in totally enclosed cabin. Windows all round upper half of cabin. Two doors, one on either side. Dual control and wheel brakes will be fitted. A luggage locker is located behind the cabin with an outside door on the left side of the fuselage.

DIMENSIONS.—Span 35 ft. 6 in. (10.8 m.), Length 19 ft. 2 in. (5.8 m.), Width folded 11 ft. 2 in. (3.4 m.), Length folded 23 ft. (7.0 m.).

WEIGHT.—Weight loaded (normal C. of A.) 1,500 lb. (680.4 kgs.), weight loaded (aerobatic C. of A.) 1,300 lb. (589.7 kgs.).

PERFORMANCE (estimated).—Speed max. 100 m.p.h. (160.9 km.p.h.), cruising speed 83 m.p.h. (133.6 km.p.h.), stalling speed 40 m.p.h. (64.4 km.p.h.), Climb to 5,000 ft. (1,524 m.) 10 mins., Climb to 10,000 ft. (3,048 m.), 25 mins., Service ceiling 12,000 ft. (3,660 m.).

THE 100-110 H.P. ARMSTRONG SIDDELEY GENET MAJOR ENGINE.

The Genet Major is the latest addition to the well-known range of Armstrong Siddeley air-cooled radial engines. Being rated at 100 h.p. it occupies a position midway between the 80 h.p. Genet and the 150 h.p. Mongoose. It made its first appearance at the 1929 Aero Show at Olympia, where its clean design and sturdy appearance created a most favourable impression. The engine is particularly suitable for the more elaborate type of light aircraft and also for powering three-engined machines of the 4 to 6 seater type.

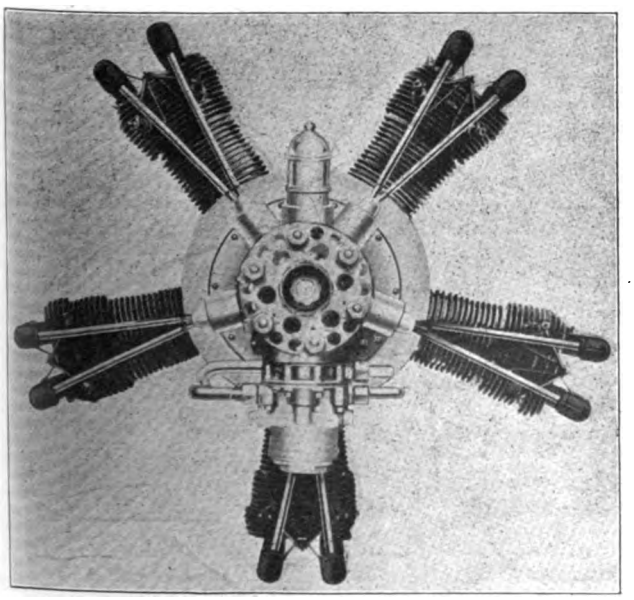
SPECIFICATION.

TYPE.—Five-cylinder radial air-cooled engine with the vertical cylinder at the bottom.

CYLINDERS.—4.25 in. by 4.5 in. bore and stroke. Each cylinder machined with its fins from a steel forging, the lower end being screwed into a steel adapter and located in the aluminium crankcase and locked there with a double cone locking ring and screw. This method of attachment is very quickly undone and also distributes the pressure of the explosion over a large area of the crankcase. The aluminium alloy semi-spherical heads are shrunk, screwed and locked into the cylinders, an external fin providing additional security. This patented method of attaching the head to the barrel ensures a gastight joint and good thermal contact and is standard on all Armstrong Siddeley engines. The bronze bushes for the sparking plugs and valve seats are screwed and shrunk into the head.

VALVE GEAR.—Two inclined valves per cylinder. The inlet valves are of stainless steel and the exhaust valves are made of cobalt chrome steel. The valves are, therefore, not interchangeable. They are returned to their seats by duplex valve springs which enable a spring of small rate to be accommodated in a small space. Each valve is operated by a rocker arm, the necessary means of adjustment for clearance being provided on the arm and locked by a transverse screw, which it is very important to keep tight. The rocker arm is carried on two rows of ball bearings, shims being fitted to take up side-play. These bearings are lubricated by a grease-gun, the arm itself being enclosed in a light pressed case fitted with a spring-on streamlined lid. The rockers are carried on brackets taking their support from the lower part of the cylinder-head and connected by cross pieces which also form guides for the cables. The lower halves of the rocker covers form a support for the bracket and are attached to the head at a point adjacent to the valve ports which are situated at the back of the head. The rocker arms are operated by tubular push-rods which are fitted with case-hardened ends sweated into position. The lower end is ball shaped, and the top end is flat. Screwed into the rocker-arm there is a bush with a loose pad formed of two cylindrical surfaces at right angles to each other, which by providing a universal motion and line contact at this point eliminates wear.

The push-rods are controlled by roller ended tappets and a slow speed cam ring driven at a sixth engine speed from the crankshaft through the medium of two satellite wheels. The inlet and exhaust cams are set parallel on the cam ring, which revolves in the same direction as the crankshaft.



The 100 h.p. Armstrong Siddeley Genet-Major engine.

CRANKCASE.—The crankcase is very substantial and is well-ribbed. It accommodates the mouths for the cylinders and tappet guides and the wall carrying the front main bearing. Its rear face is open and is sealed by the mixing chamber. The latter incorporates ports for accommodating the lower ends of the inlet pipes and the housing for the rear main bearing. The magneto timing-case is located behind the induction chamber, the housing for the ordinary type of worm gear hand-starter where this is fitted being bolted up to the magneto timing-case. The front cover incorporates the faces for the attachment of the oil pump and breather. The breather is mounted on the front cover and consists of a non-return valve, baffles and a vapour passage packed with aluminium shavings which separate the oil from the vapour and allow the former to return to the crankcase.

CRANKSHAFT.—The crankshaft, which is short and stiff, is carried on two roller bearings, the front one being fitted in the crankcase and the rear one in the rear cover, these bearings being situated fore and aft of the webs of the crank. A third dual-purpose bearing is fitted in the front cover to take the thrust of the airscrew. Housings for the two roller bearings are shrunk and locked with nut lugs. Steel balance weights are bolted and rivetted to the crank, thus following Armstrong Siddeley practice.

CONNECTING RODS.—The master-rod and one half of the master ring are formed in one steel forging machined all over. To this rod are attached two of the auxiliary rods which, like the master rod are of "H" section. The cap half of this rod carries two more auxiliary rods. A split flanged steel bush lined inside with white metal constitutes the crankpin bearing and is pegged securely in position. The case-hardened steel wrist pins are located in the master ring by the four master-rod bolts securing the master-rod to the cap half. The lower end of the connecting rods run on fully-floating bronze bushes. The hollow gudgeon pins at their upper ends are similarly equipped and prevented from lateral movement in the "Y" alloy pistons by means of circlips which expand into the piston bosses.

CARBURATION.—One Claudel Hobson A.V.48 carburetter mounted at the rear of the engine. The mixture passes into an annular chamber formed by the rear cover where a fan driven direct from the crankshaft distributes it equally to all five cylinders. The carburetter is fitted with interconnected altitude and throttle controls and is designed to have its parts easily accessible.

IGNITION.—Two B.T.H. G.L.5 magnetos, one being fitted with an impulse-starter. There is a splined coupling between the rear end of the crankshaft and the front end of the rear drive shaft which is housed in the rear cover. A gland is fitted to prevent oil from reaching the rear drive chamber and there is a spiral on the magneto coupling to return oil that works its way past the bearing. The rear drive shaft carries a centre gear wheel which incorporates hand starting dogs. This wheel drives two other gears at 1½ speed, these gears being provided with a fine adjustment coupling for synchronising the timing. There is an oil plug at the top of the timing cover and oil should be filled up until it reaches the level of the drain tap. The centre gear wheel is mounted on a single ball race while the outer gear wheels are fitted with two races each. The magnetos are flange-fitted to the timing case, their contact-breaker ends facing rearwards.

LUBRICATION.—The lubrication system is of the dry-sump type, the pump unit, which is mounted on the front cover in a very accessible position, incorporating the pressure and scavenge pumps which are driven by bevel gearing from the crankshaft. The scavenge pump is of 50% greater capacity than the pressure pump. The suction pump draws the oil from a sump in the crankcase on each side of the bottom cylinder and passes it through a cylindrical filter in the pump itself. The oil then reaches the tank, from which it travels to the pressure pump, through a multiple disc fine gauze filter and then through the centre of the pump driving-spindle and through a hole into the centre of the crank and so to the crankpin. To prevent too great a pressure being built up a release valve is incorporated in the system. The tachometer drive is by worm gear from the pump shaft.

A petrol primer is fitted and connected to a ring pipe on the

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

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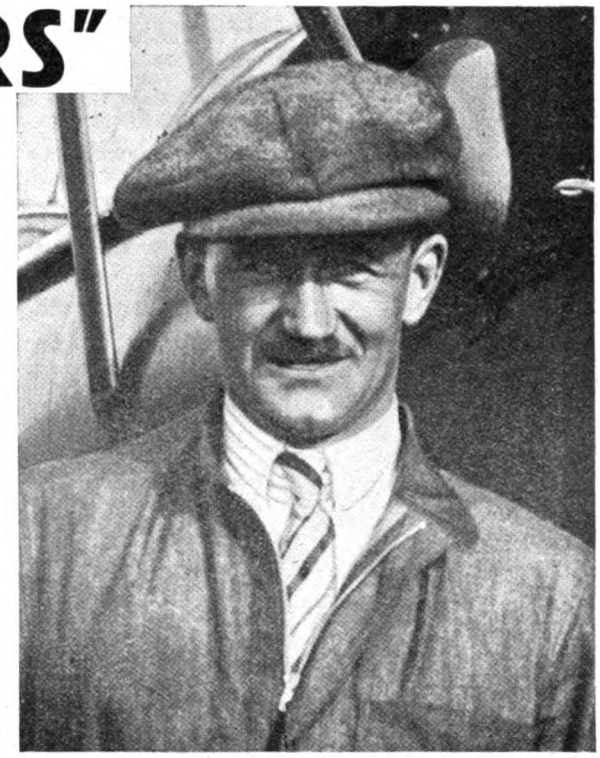
"CANNOT FIND ENOUGH TO CALL FOR A COMPLETE OVERHAUL IN 300 HOURS"



MR. C. HUMPHREY

Ground Engineer to London Aeroplane Club, says

"Since we took delivery of our two Gipsy Moths they have both completed 300 hours running on one top overhaul, in which the only replacements were scraper rings in each case.

On reading your handbook of maintenance schedules for this engine one reads that the engine should be completely overhauled after 300 hours; this does not do justice to your engine for one cannot find enough to call for a complete overhaul.

As a licenced ground engineer, I would have no hesitation in sanctioning a top overhaul every 150 hours and a complete overhaul at 450 hours."

THE DE HAVILLAND AIRCRAFT CO., LIMITED
Stag Lane Aerodrome
Edgware, Middlesex
Telegrams: Havilland-Phone-Edgware
Telephone: Edgware 0171

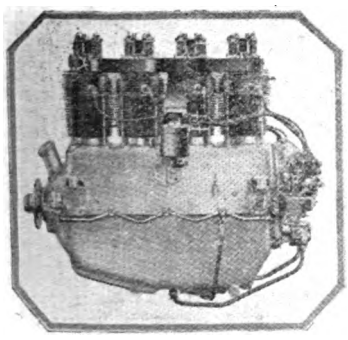
THE WRIGHT AERONAUTICAL CORPORATION
Paterson, New Jersey, U.S.A.

THE DE HAVILLAND AIRCRAFT CO., OF CANADA, LIMITED
Sterling Tower
372 Bay Street, Toronto 2
Canada
Telegrams: Moth, Toronto

THE DE HAVILLAND AIRCRAFT PTY., LIMITED
Whiteman Street, South Melbourne, Australia
Telegrams: Moth, Melbourne

SEALED GIPSY TOUR
600 HOURS UNTOUCHED

This remarkable tour has no parallel in the history of aviation. Since December 29th, 1928, when the test was started, a standard Gipsy engine has flown 51,000 miles and has been treated with complete neglect—attention being confined to the routine cleaning of filters and sparking plugs, the checking of valve clearances and the correction of a minor defect in one magneto.



GIPSY

100 H.P. LIGHT AERO ENGINE

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rear of the engine. Pipes lead from this ring to the induction ports of each cylinder. When the pump is operated by hand, atomised petrol is fed into the ports.

Dimensions.—Diameter 38 in. (.965 m.), Length over airscrew boss 36.15 in. (.918 m.).

Pistons.—The pistons have flat tops and are machined all over. There are two pressure and one scraper ring above the gudgeon pin and one scraper ring below it.

Weight.—(Complete with 2 magnetos, carburetter, air intake, airscrew hub and tachometer drive) 250 lbs. (114 kgs.), Weight per rated h.p. 2.27 lbs. (1.03 kgs.).

Performance.—Rated b.h.p. 100, Actual normal b.h.p. at sea level 103, Fuel consumption 0.575 pts. per b.h.p./hr. (.327 litres per b.h.p./hr.), oil consumption 2 pts per hour (1.14 litres per hr.), Compression ratio 5.2 : 1, Oil pressure 60-80 lbs. per sq. in. (4.2-5.6 kgs. per sq. cm.).

THE B.M.W.-X.

The B.M.W.-X represents the first attempt on the part of the Bayerische Motoren Werke of Munich to produce an engine suitable for light aircraft.

Type.—Five-cylinder geared air-cooled radial.

Cylinders.—Bore 83 mm., stroke 80 mm., steel cylinders with aluminium heads screwed on and shrunk and inserted valve seats of aluminium bronze. Rocker boxes integral with cylinder head casting.

Valve Gear.—Cam drum in the engine nose, tappets, push rods, rocker arms, fully enclosed.

Auxiliaries.—All auxiliaries at the rear of the engine. Magnetos below engine centre line on transverse shaft. Oil pumps on vertical shaft on base of the auxiliary drive case. Hand turning gear at the rear of the engine, to be cranked from the cockpit.

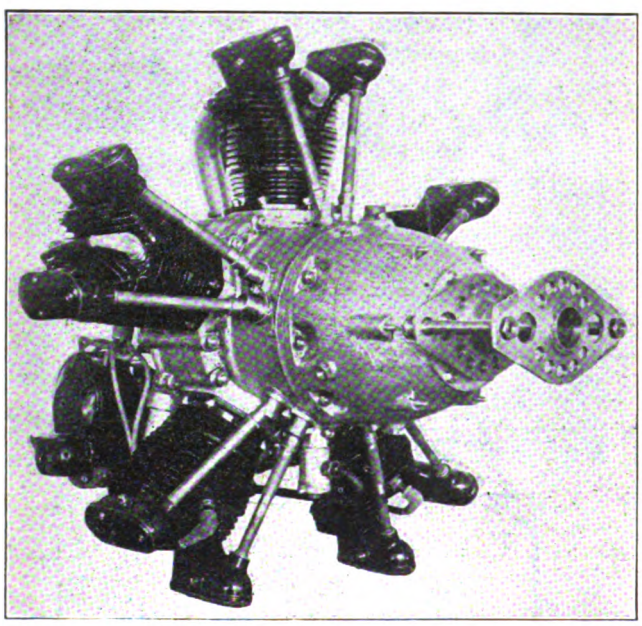
Carburettor.—B.W.M. design, vertical type.

Distribution.—By centrifugal blower, driven by means of spur gears and maximum torque clutch from crankshaft rear end.

Reduction Gear.—B.M.W.-Farman type, ratio 2 : 1.

Weight Dry.—80 kg. (177 lbs.).

Performance.—(6.3 compressed ratio): Maximum output 65 b.h.p. at 3,000 r.p.m. Normal output 60 b.h.p. at 2,900 r.p.m. Fuel consumption 0.235 kg. (0.52 lb.) per h.p./hour.



The 65 h.p. B.M.W.-X geared radial engine.

B.M.W.-XI.

This is the nine-cylinder version of the B.M.W.-X engine. A great number of parts of the B.M.W.-X is identical with the respective parts of the B.M.W.-X.

Weight Dry.—105 kg. (233 lbs.).

Performance.—(6.3 compression ratio): Maximum output 120 b.h.p. at 3,000 r.p.m., Normal output 100 b.h.p. at 2,830 r.p.m., Fuel consumption 0.235 kg. (0.52 lb. per h.p./hour).

A REAL BALLOON TYRE.

The following comes from the U.S.A.:—

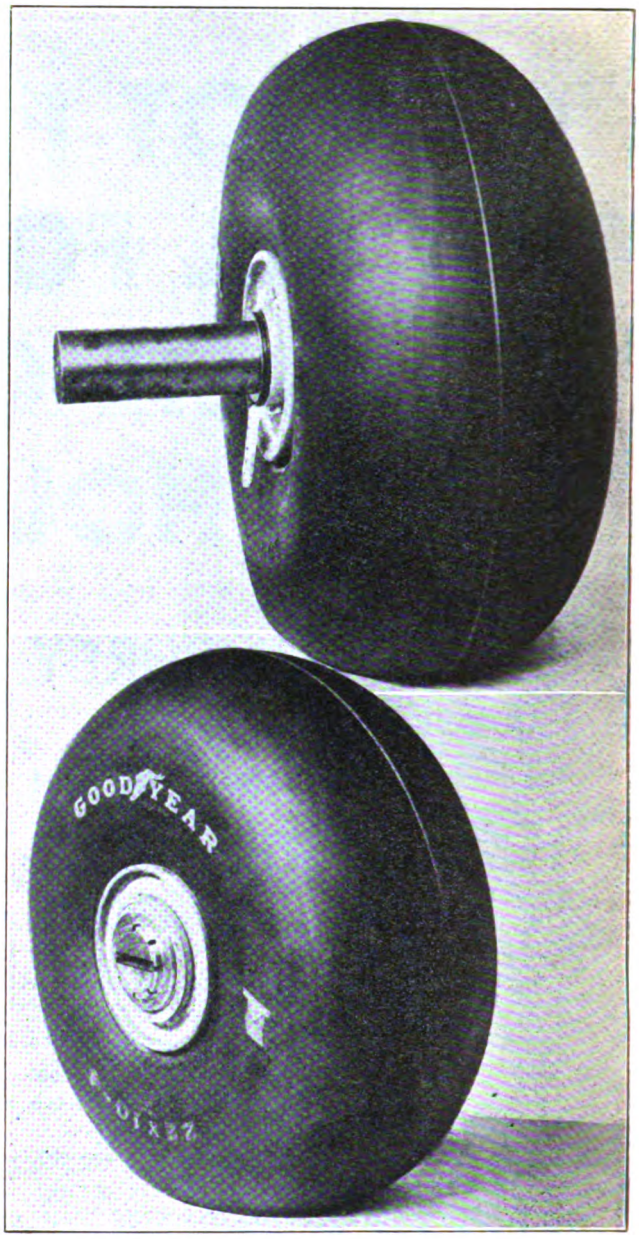
Development of the Goodyear Air Wheel, Musselman type, increasing the safety factor in airplane landings and take-offs is announced by The Goodyear Tyre and Rubber Company. The new tyre is revolutionary in design, a full balloon cover mounted directly on a hub attached to the plane undercarriage, eliminating rim, spoke and wheel. The name is appropriate inasmuch as the cover has the dual function of a tyre and wheel.

Goodyear, pioneer builder of aircraft tyre and accessory equipment, sees in the Air Wheel an opportunity to make costly auxiliary shock absorbers unnecessary, thus adding to the useful load-carrying possibilities of heavier-than-air ships.

Other outstanding advantages claimed for this new type of tyre include extreme cushioning for landings; traction in snow, ice, sand and mud; nearness to perfect streamline; elimination of ordinary ground looping; the greater security in cross-wind and deflated-tyre landings.

The Air Wheel gives larger air volume at extremely low pressure. Extended experiments and tests show it to be capable of sustaining huge loads under ordinary service conditions.

The cover is mounted upon a specially designed hub, furnished



Two views of the Goodyear Air Wheel.

with or without an internal expanding brake, similar to well known standard types. Smooth and efficient braking has been attained in tests, aviation engineers having stressed the desirability of quick automatic action.

Goodyear engineers report the brake tests to date give promise of revolutionary results for airplane use.

Planes have been landed without any perceptible jar or jolt on the new air wheel; test pilots reporting that landings were so soft that it was impossible to tell when the actual contact with the earth took place.

Engineers further point out that such landing cushioning should lengthen the life of the airplane, sparing the framework from straining and wrenching.

Goodyear engineers explain that the secret of anti-bouncing and absorption of shocks in the Air Wheel type of tyre lies in the low pressure and large air volume. The shocks are dissipated in the greater air volume attained in the cover.

The huge sectional diameter of the Air Wheel as compared to its height, produces a flat or web-foot effect when landing, making it possible for a plane to make contact safely on soft ground, snow and rough surfaces where high pressure tyres might cause a crash.

Elimination of the regular wheel takes from the airplane one more element of danger—collapsing wheels. Further safety is claimed for the Musselman Air Wheel inasmuch as tests prove conclusively that the straight sidebeads with steel wire rings prevent the cover from climbing the hub flange.

Planes mounted on the Air Wheel have shown a tendency to take off easier and with less power than when the ordinary high pressure tyre is used. Goodyear engineers explain that this is due to the ability of the plane to rise from two to five inches and still keep contact with the earth through the wheels. Thus it follows that obstructions on the ground or uneven spots will more readily be absorbed by the tyres themselves and not hinder progress of the plane.

Actual production of the new Air Wheel is scheduled to start in the near future, although no definite date has been set.

Everywhere leading airplane manufacturers, pilots and aviation experts are taking a keen interest in the announcement of this revolutionary tyre.

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THE CLEVELAND AERO SHOW.

Concurrently with the National Air Races there was held in the Cleveland Public Auditorium a National Aeronautic Exposition (Aug. 24 to Sept. 2).

Thirty-eight aircraft manufacturers exhibited a total of fifty-six commercial aircraft. These may be analysed as follows:—

Landplanes, 51; seaplanes, 3; amphibians, 2.
Cabin aircraft, 25; open cockpit aircraft, 31.
Single-engined, 49; twin-engined, 2; three-engined, 5.

Aircraft with radial air-cooled engines, 51; aircraft with vertical in-line air-cooled engines, 5.

The exhibition was the first at which the Curtiss OX-5 engine was not represented, and it was also remarkable for the fact that every aircraft was equipped with air-cooled engines. Of the thirty-one aero-engines shown, only one, the Curtiss Conqueror, was water-cooled.

Of aeroplanes of British design, the Moth Aircraft Corporation showed a Gipsy-Moth and the Whittelsey Aircraft Corporation an Avian. Of engines of British design, the American Cirrus was the best represented. Four aircraft, the Avian, the Great Lakes 2T-1, and the 4A-1, the latter a twin-engined amphibian flying-boat, and the Emsco monoplane, all had Cirrus engines. The Moth had a Wright Gipsy engine. On engine stands the American Cirrus, the Wright Gipsy, and the Bliss Jupiter were exhibited.

Nothing of revolutionary design was shown. The most interesting features were in the nature of refinements in design. N.A.C.A. low-drag cowling and streamline fairings for landing wheels, were two of the most notable features tending towards increase in speed. With regard to the low-drag cowling, one American firm, the Hill Auto Body Company, has already begun the manufacture of standardised sizes for American radial engines.

The most interesting new types were the type 107 Mail Transport sesquiplane, built by the General Airplanes Corporation of Buffalo, N.Y., the Great Lakes 4A-1 amphibian, built by the Great Lakes Aircraft Corporation of Cleveland, Ohio, the Emsco light monoplane, built by the Emsco Aircraft Corporation of Downey, Cal., the Travel Air "Mystery" monoplane, and the McCarroll twin-engined amphibian, built by the Cadillac Aircraft Corporation, Dearborn, Mich.

The type 107 Mailplane, built by the General Airplanes Corporation, was designed on the tabulated results of a *questionnaire* sent to a large number of air mail operators.

It is a sesquiplane with a rivetted aluminium alloy monocoque fuselage, wings built up of spruce spars, metal ribs, and fabric-covered, and a geared Pratt and Whitney Wasp engine. The engine is enclosed in an N.A.C.A. cowling which has an oil-tank and exhaust collector ring built in. On an empty weight of 3,152lb. it has a pay-load capacity of 2,000lb. and a normal loaded weight of 6,250lb.

The Great Lakes 4A-1 is a four-seat cabin amphibian flying-boat with two American Cirrus engines mounted midway between the equal-span biplane wings. The engines are very neatly cowled-in and drive tractor airscrews. The hull is of the two-step type, reminiscent of that used on the old Vickers Viking, but it is of all-metal construction. The framework and covering of the hull is aluminium alloy. The landing-gear, which disappears into a recess in the side of the hull, is operated by cables. There are two side-by-side seats in front of the wings and a passageway between the wheel recesses leads to two more seats aft of the wings. The wings are of the single-bay type, with one set of "N" struts on either side of the engines. Its empty weight is 1,900 lb., and the loaded weight is 3,200lb.

The Emsco light monoplane is of what is known in America as a wire-braced "centre-wing" monoplane—that is, the wing is placed on the thrust line of the engine. This machine is copiously streamlined. The Cirrus engine is cowled in and the cowling is carried right aft to the fin. The wings are streamlined with the fuselage, and the fairing provides space for two 15-gallon fuel tanks. The wheels are almost completely enclosed in streamline casings. It has an empty weight of 1,090lb., a loaded weight of 1,640lb., a maximum speed of 130 m.p.h., and a cruising speed of 100 m.p.h.

The Travel Air "Mystery" monoplane was, unfortunately, not ready in time for the exhibition. Two examples were, however, present at the National Air Races held concurrently with the Show, one with a Wright J-6 radial engine and N.A.C.A. cowling, and one with the new six-cylinder-in-line air-cooled inverted Chevrolair engine.

The McCarroll amphibian is a cantilever monoplane flying-boat with two 165 h.p. Wright J-6 five-cylinder air-cooled radial engines, faired with the top surface of the wing, driving tractor airscrews. The single-step hull has a wood framework with a covering of aluminium sheet rivetted on. The two units of the landing gear are hinged to the sides of the hull, and are raised by drum and cable mechanism operated from the pilot's cockpit. The empty weight is 2,975lb. and the loaded weight is 4,100lb.

Among the new engines the Curtiss Crusader was by far the most interesting. This is a six-cylinder inverted air-cooled engine developing 120 h.p. at 1,800 r.p.m. Each cylinder is made up of a forged steel sleeve machined all over and screwed, with an aluminium head shrunk onto it. The head has integral cooling fins and one inlet and one exhaust valve. The cylinders are attached to the crankcase by clamps instead of the usual holding-down studs.

An "underhead" camshaft of the automobile type is driven by a vertical shaft through bevel gearing at the rear end of the engine. The bore and stroke of the cylinders are 4⅛in. by 5½in.

A dry sump system of lubrication is used, and when the engine is in operation, the pistons are continually throwing oil upward into the crankcase. The pistons have two compression and three scraper rings. For cooling, an air-scoop on the exhaust side of the engine deflects air onto the cylinders.

The overall length of the engine is 4ft. 8 13/16in., and the overall height is 2ft. 8 49/64in. The weight is 345lb.

Another interesting engine was the Dayton Grant, an eight-cylinder air-cooled "flat" engine, built by the Dayton Airplane Engine Co., of Dayton, Ohio, which company already makes a four-cylinder in-line air-cooled engine known as the Dayton Bear. The new engine has two banks of four cylinders set at an angle of 180 degrees, and develops 225 h.p.

Two super-chargers for commercial use were shown. One, of the Roots type, was on the American Cirrus stand, and has been designed for use with the American Cirrus engine.

The other, of the turbo or Rateau type, was shown by the General Electric Company, and can be supplied for use with various standard type engines.

The proportion of accessory exhibits was larger than at any previous exhibition of importance. The Goodyear "Air Wheel," which is a species of overgrown balloon tyre mounted direct onto the axle, the range of Eclipse inertia starters, which now includes one for light engines of approximately 100 h.p., a variable and reversible pitch airscrew exhibited by Paragon Engineers, Inc., airscrews in wood, micarta, and metal by various manufacturers, standardised seaplane floats by the Edo Aircraft Corporation, to mention but a few, represent but a small proportion of the accessories shown. Also there were striking exhibits of Air Port equipment and machine tools.

STILL THEY COME.

Negotiations are proceeding under the auspices of prominent U.S. banking interests for the merging of yet more aircraft manufacturing and aviation concerns of international repute. One British, one American, and two French companies with combined assets of over £1,400,000 are involved in the latest deal.

Mr. A. J. Love, a member of the banking firm of Love, Bryan and Company, of New York and St. Louis, who has been prominently associated with the negotiations, is chairman of Allied Aviation Industries and a director of the Fokker Aircraft Company and a number of other leading U.S. industrial corporations. He has been in Europe for several months, studying industrial conditions, and particularly the position of leading aviation companies.

In an interview recently he said:—"One of the most powerful influences for the prevention of war is the rapid progress now being made in international industrial consolidations, and the exchange of capital stock between the World Powers. War is really militant commercialism. Internationalise commercial and industrial interests and peace will be on a surer foundation."

THE AIRCRAFT OPERATING COMPANY.

The directors of the Messina Copper Mine in the Northern Transvaal have arranged for the Aircraft Operating Company, Ltd., to photograph the mine for the purpose of illustrating their annual report.

Perhaps this marks the beginning of an era when no mining directors' report will be complete without aerial photographs, which would be a fine thing for such concerns as the Aircraft Operating Company, who have pioneered air survey work right round the world.

MORE PEACEFUL PENETRATION.

A company known as the Bellanca Aircraft of Canada Ltd. has been appointed the Canadian distributors for the American Bellanca Aircraft Corporation.

This company has offices at 4221, St. Catherine Street, W. Montreal, and it has taken delivery of a Bellanca seaplane (300 h.p. Wright J-6 engine) of the latest type for demonstration purposes.

The business manager of the Bellanca Co. in the States is Mr. Robert Noorduyn, late of the Fokker Co., and before that of the B.A.T. Co., with Sir Samuel (now Lord) Waring.

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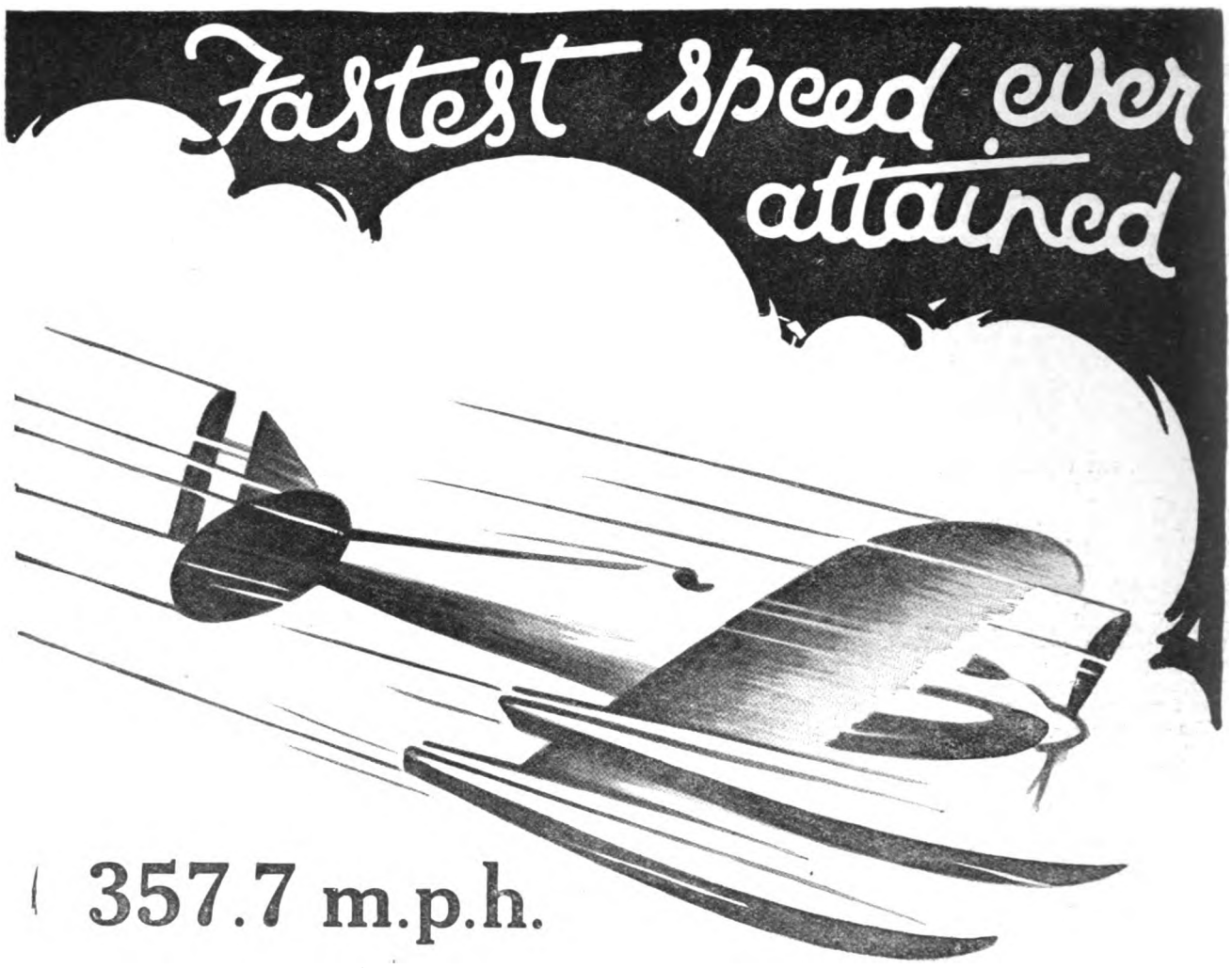

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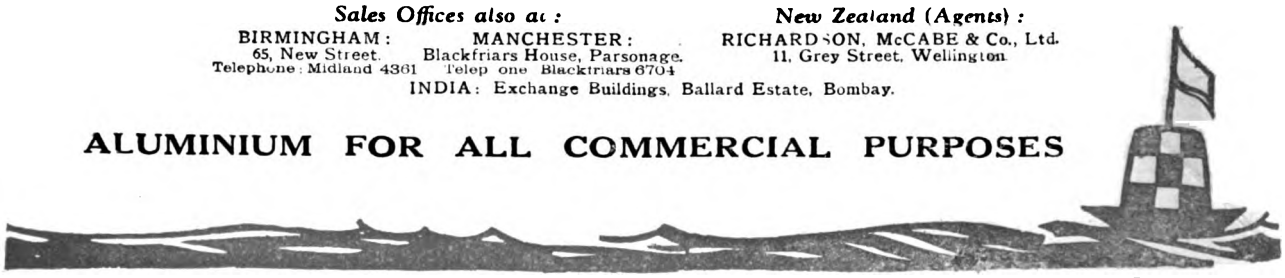

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

A ROYAL MOTH.

H.R.H. the Prince of Wales has bought a D.H. Gipsy-Moth for his private use. This machine, whose registration marking is G-AALG, is upholstered in scarlet leather and is painted in the red and blue colours of the Household Brigade Flying Club.

So that H.R.H. may fly to and from his new residence at Fort Belvedere in Windsor Great Park a landing ground has been prepared at Canadian Camp.

Canadian Camp is close to Virginia Water and was originally known as Smith's Lawn. The name was changed, at the request of H.M. the King, out of compliment to a detachment of the Canadian Forestry Corps, who were encamped there during the War.

THE HALDON AIR RALLYE.

For sheer cussedness the English weather takes some beating. Encouraged by the long spell of fine weather the small band of air enthusiasts at the Haldon School of Flying, Teignmouth, Devon, arranged an air rallye for Saturday last.

The meeting was widely advertised throughout the county, and at Teignmouth one found it the topic of the day. All the local charabanc concerns were running special services to the aerodrome, and there seemed every prospect of a highly successful meeting.

On arrival at the aerodrome, which is situated high up on the moors, one found half a gale blowing, which increased in velocity as the day advanced. Fortunately this fact was not known in the surrounding towns, and there was quite a good attendance. Admission to the aerodrome was free, but the local Red Cross Society reaped a good harvest by a collection.

Doubt was expressed as to whether any visiting aircraft would brave the elements, but punctually at zero hour, 12.30 hours, three machines were sighted. The first to land was a Westland Four, EBXX, piloted by Mr. Louis Paget. Next came the familiar Moth, EDCA, piloted by Mr. Norman Brooks, who brought, as the registration letters indicate, our *E*nergetic *D*irector of *C*ivil *A*viation, Sir Sefton Brancker. The third machine was Mr. Penrose's Widgeon, JF.

Between 13.30 and 14.40 hours quite a lot of things happened. First there was a procession of Gipsy Moths, which arrived, KJ, flown by Flt. Lt. Rose, of the Anglo Co., IM, flown by Mr. Shaw of the Shell Mex Organisation, and Mr. Jackaman in DX. Following these came Mr. Clarke in the Junkers F.13 from Croydon.

Then came calamity. The microphone informed us that the Auto Giro was in sight. This news was received with the greatest interest, and we all watched the machine approaching. She came in to land in fine style, and seemed thoroughly stable after the buffetings which the other machines suffered. When about twenty feet from the ground, Mr. Rawson, the pilot, lost his engine, and the machine hovered and might have made a good landing had it not been caught by a gust of wind which turned it right over. The pilot escaped without injury, but the machine was completely wrecked.

It was the worst piece of bad luck. Had the engine been running the rotors could have been accelerated, and a safe landing made.

Soon after this we were informed that Flt. Lt. Le Poer Trench had forced-landed in his Hermes Avian near Lyme Regis. It seemed, as if Fate had turned against aviation, but he arrived at 14.30. His forced landing was due to his having run out of petrol.

By this time the gale was at its height, and as each machine landed it was quickly picketed down. It was obvious that the very excellent programme could not be fulfilled. However the crowd was in a good humour and was intensely interested in the machines, which were closely inspected.

Dust was blowing across the aerodrome in clouds, and an enterprising person could have earned a small fortune by selling goggles. Everyone who possessed them was wearing them to the envy of those without.

At 15.15 hours the Westland Four returned to Yeovil, and shortly after a Southampton Flying-Boat from Mount Batten cruised around the aerodrome.

The wind kindly consented to throttle down, and so Mr. Norman Brooks and Flt. Lt. Rose went up in Moths, and gave a demonstration of aerobatics. This was a real "Mother's" meeting, there being no less than 14 on the aerodrome. Lady Bailey and Mr. Hubert Broad flew over and joined the family, the latter giving a very fine show of aerobatics which earned a storm of applause when he landed. His flick and slow rolls and inverted flying were a very praiseworthy performance considering the weather upstairs.

Flight-Lieut. Scroggs later joined the party of very sporting pilots who defied the elements in his D.H.53. Further flying was then abandoned.

The organisers of the meeting, headed by Mr. Parkhouse,

"LESS THAN THE DUST."—Mr. Broad's Moth struggling to get down in the dust-storm at Haldon.
("Aeroplane" photograph.)

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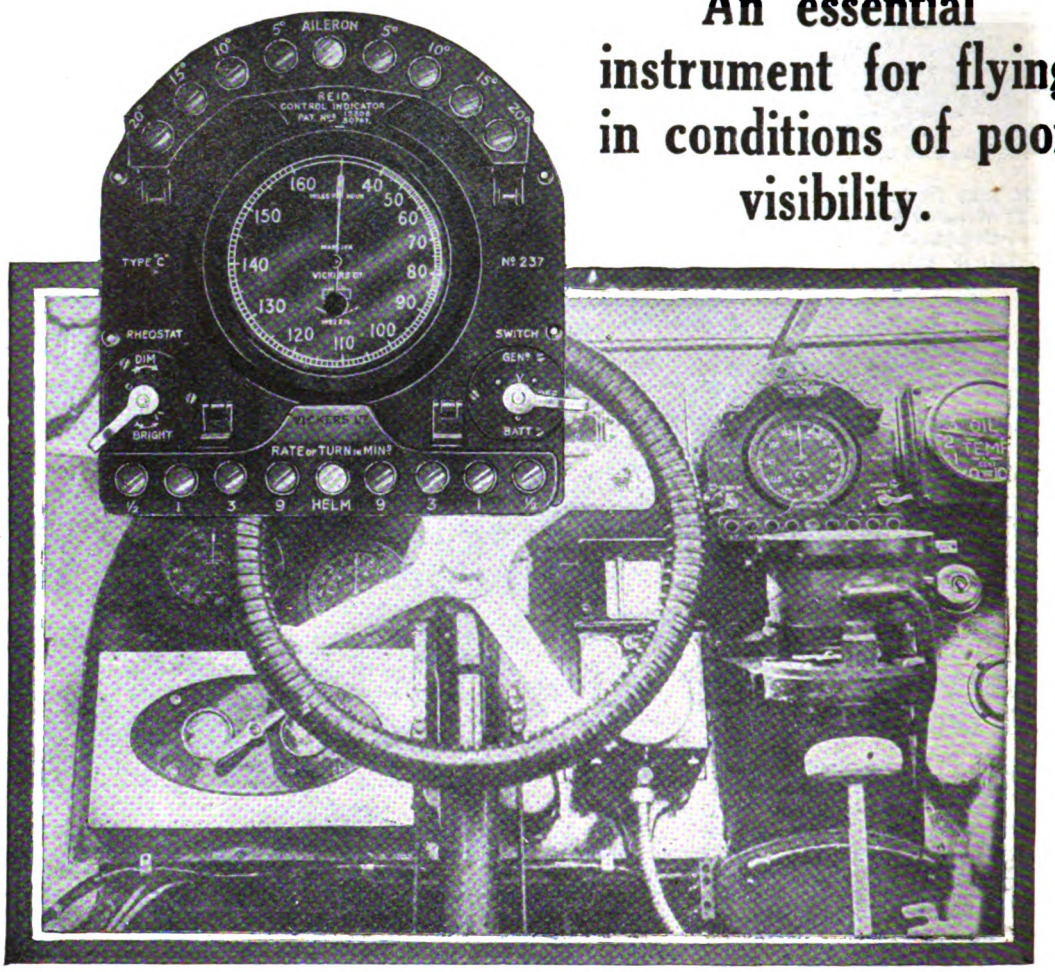

Captain C. D. Barnard, who in seven days with Her Grace The Duchess of Bedford, recently flew from England to India (Karachi) and back writes :—

"**The Reid Control Indicator was invaluable** - especially considering the fact that a great deal of **the journey was flown in clouds or in dust storms, it worked perfectly** and I should insist upon a 'Reid' being fitted to any machine if I were to contemplate a similar flight on it."

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AT HALDON.—The Visiting Machines picketed down. Mr. Trost's Junkers on the right.—(*"Aeroplane" photograph.*)

deserve the fullest sympathy for the failure of the meeting after all the hard work they had put in. They had counted on the meeting giving an added interest in the School.

From an æsthetic point of view the aerodrome is ideally situated. It is on high moorland, with magnificent views all round, but the exposed position and surrounding hills do not make for ideal flying under such conditions as those of Saturday. The aerodrome is large and has a good surface, and there is ample accommodation for several machines.—M. S.

FAREWELL TO FILTON.

The farewell aerial garden party on Sunday, Sept. 22, of the Bristol and Wessex Aeroplane Club was an unqualified success. The weather was all that could be desired, and fully atoned for its misbehaviour at Teignmouth on the previous day.

This was the last meeting of the Club at Filton Aerodrome, which they have used since August 1927. A move will shortly be made to the new Municipal Aerodrome at Whitchurch, which is only a ten minutes run from Bristol. A very fine Club House is in course of erection, and will comprise a lounge, dining room, dance hall, bar, kitchen, changing rooms, etc. A flat roof is being provided from which to watch the flying, and it is hoped that tennis courts will be laid down, as well as an attractive garden.

Since its inauguration the Club has made rapid progress, and it is hoped that in its new surroundings it will forge ahead still further. Starting two years ago with one Moth, the Club now owns three Moths, a Bristol Brownie, and a Parnall Pixie, and two full-time instructors are employed. There are now over 250 members, and 50 have learned to fly.

Arriving at the aerodrome at mid-day one found an array of machines which had arrived during the morning. Many of them had flown up from the Teignmouth meeting,—including Mr. Parkhouse himself.

Among the early arrivals was Sir Sefton Brancker, in his Moth, G-EDCA; Flt. Lt. Le Poer Trench, in his Hermes Avian; Mr. Talbot Lehmann, in an N.F.S. Spartan, and several members of the Gipsy-Moth clan, including Flg. Off. P. P. Grey, with Mr. McClure as passenger; Mr. and Mrs. A. Muntz, Flt. Lt. Rose, the Hon. Lady Bailey, Mr. Hubert Broad, Mr. R. Malcolm, of De Havillands, and Mr. Jackaman.

Mr. Wheatley brought over his Golden Shell Moth, Mr. Low arrived in a Cirrus Moth, and Mr. Hanstock flew down in the Anglo Co.'s Widgeon.

At 15.00 hours Mr. E. B. W. Bartlett, the Bristol Club's chief instructor, went up in a Gipsy Moth and gave an exhibition of aerobatics. By this time quite a large crowd had assembled on all sides of the aerodrome, and cars were parked in every available space.

Event No. 2 should have been a demonstration of the Auto-Giro, but this machine having been blown over in the gale at Teignmouth it had perforce to be abandoned.

Several more machines began to arrive, the first being an Avian, EBXO, from the Hampshire Aeroplane Club. Some diversion was then caused by the arrival of the Glenny and Henderson Gadfly, piloted by Mr. O. Greig, who is the firm's agent at Okehampton.

Mr. Penrose next joined the party in his Widgeon, and was followed by Mr. Louis Paget in the Westland Four.

A Gipsy Widgeon was the next arrival, flown by Mr. Napier, followed by Mr. Wallace in a Gipsy Moth, and Mr. Nigel Norman in a Coupé Moth.

Mr. H. S. Broad then took up his Moth and treated us to one of his usual excellent displays of aerobatics.

The next event was a bombing competition for the White-

IN THE WEST COUNTRY.—The Director of Civil Aviation recently inaugurated a new Aerodrome at Roborough, five miles from Plymouth, for the newly-formed Plymouth Aero Club. The Mayor of Plymouth, Councillor Andrews, is here seen greeting Mr. W. R. Parkhouse, of Teignmouth, whose Moth was the first aeroplane to alight on the new aerodrome.

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ley Challenge Cup, for which there were a large number of entries. During this event demonstration flights were given by various types of visiting aircraft.

The star turn of the display was provided by Mr. C. F. Uwins, the Bristol Aeroplane Company's test pilot, who showed us what could be done with a Bristol Bulldog. This machine bore the red Swastika markings of Latvia on its wings and fuselage.

Here followed the tea interval, after which several pilots contributed items to the programme as it took their fancy.

Altogether it was a very enjoyable and well arranged show, and a fitting finale to Filton, and one looks forward to even better things at the Club's new home.—M. S.

THE HOUSEHOLD BRIGADE FLYING CLUB.

Considering that the number of eligible prospective members is strictly limited, the Household Brigade Flying Club has been remarkably active since it settled down at the Heston Air Park with its own premises in July last.

The Club bought a Gipsy-Moth—G-AAIP—on Aug. 15, and the flying time by members from August up to the present date amounts to 60 hours,—31 hr. 45 min. Dual, and 28 hr. 15 min. Solo.

The following members qualified for their "A" Licences during this period:—Lieut. E. L. Donner (Irish Guards), Lieut. Sir Robert Throckmorton, Bt. (Grenadier Guards), The Lord Amherst (late Coldstream Guards), Captain the Hon. F. E. Guest (late Life Guards).

THE NORTHAMPTONSHIRE AERO CLUB.

During August there has been a distinct improvement in the flying time of the Northampton Club. It includes the holiday period, but the aerodrome was also shut down for one week. The week ending Aug. 31 was a record week with 25 hours.

For the whole month the figures were:—Dual Instruction, 29 hr. 15 min.; Solos, 10 hr. 15 min.; Passengers, 16 hr. 20 min.; Tests, 7 hr. 40 min. Total, 63 hr. 30 min. On which the instructor, Mr. E. F. Palmer, and the Ground Engineer, Mr. J. B. Gallagher, deserve congratulations.

During the month Mr. Eales and Mr. Bayes made their first solos, on the 13th and 18th respectively. Mr. S. P. Tyzack, who was the first member to go solo, has distinguished himself by being the first club member to perform aerobatics.

On Sept. 28 the Club will hold a week-end flying meeting, at which all other Club members and private owners are welcome. Accommodation on the Saturday night will be arranged if required, and intending visitors should communicate with the Secretary, Mr. P. Hayward, 19, Market Square, Northampton.

The meeting will include a novelty competition, which is being arranged by Mr. Broad, and a competition for private owners, for which cups are being presented by members of the Club.

THE HAMPSHIRE AEROPLANE CLUB.

The Hampshire Aeroplane Club well maintains its reputation as one of the most active flying clubs in this country. The times for the month ending Aug. 30 were:—Total time, 195 hr. 30 min.; Dual instruction, 98 hr. 25 min.; Soloists, 15 hr. 20 min.; "A" Pilots, 74 hr. 15 min.; Instructors' Solos and Passengers, 7 hr. 30 min.

Thirty-one new members joined the Club during August,—which is very good indeed.

Messrs. Angus, Vernon and Turner did the tests for their "A" Licences.

The Club much regrets to lose the services of Flt. Lt. Swoffer, who has accepted an appointment with Wilson Air Lines in Kenya. During his period as Chief Instructor at this Club, since January 1928, Club aircraft have been flown for over 2,500 hours and 46 members have qualified for "A" Licences. Flt. Lt. Swoffer was presented with a suitably inscribed silver cigarette-box by the Club.

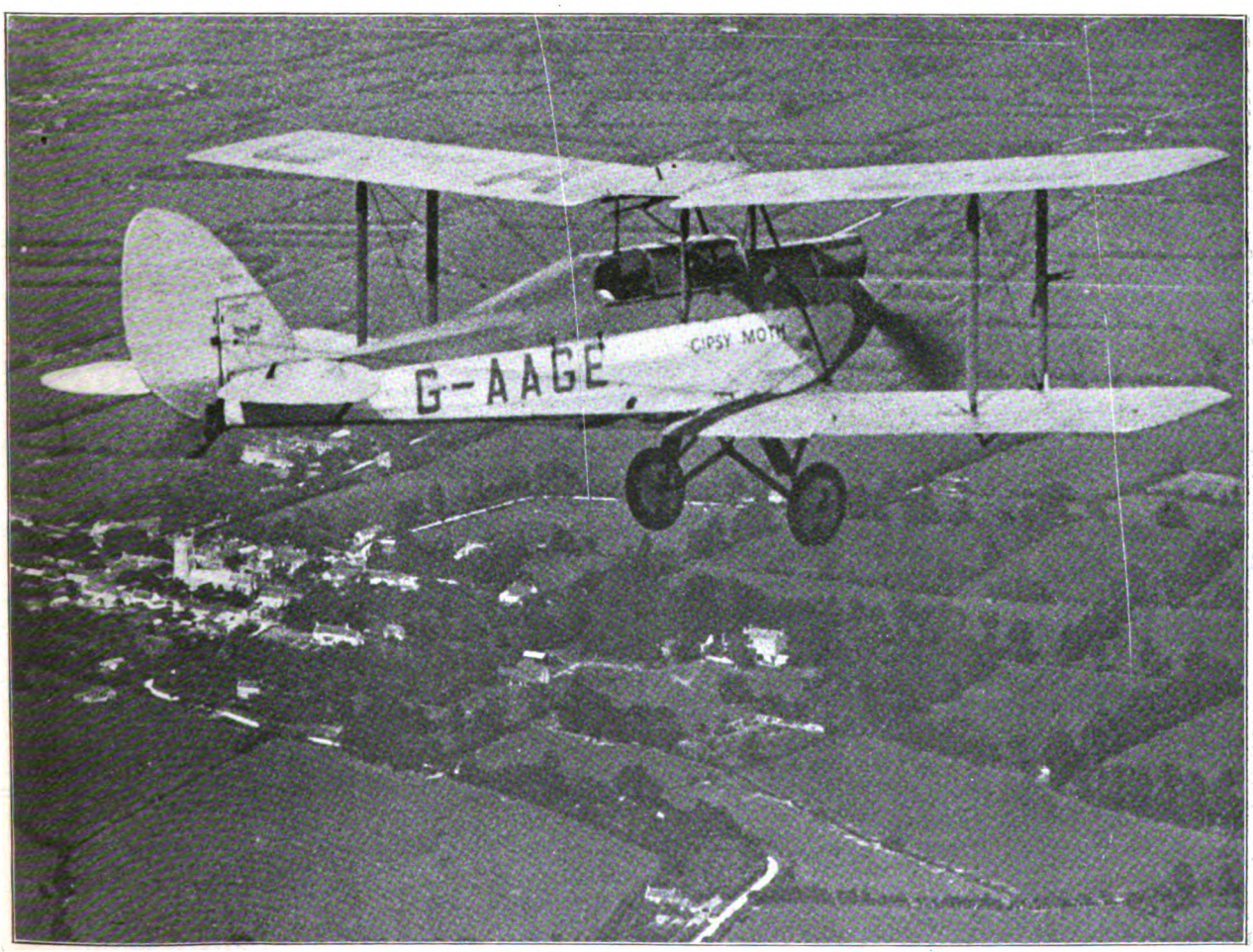
Mr. Dudley will carry on single-handed for the Winter, but a second instructor will be wanted in the Spring of 1930.

A Gipsy Moth has now been acquired by the Club, mainly owing to the generosity of members, who subscribed a large sum towards its purchase. It has proved very popular with members, and is in consequence being worked hard.

AN AERONAUTICAL OCCASION AT MORECAMBE.

The Lancashire Aero Club gave a display on Sept. 23 at Morecambe during the local Carnival.

Lady Bailey flew her Gipsy Moth coupé up to Morecambe and was afterwards the guest of honour at a civic lunch, when the Mayor of Lancaster suggested a joint municipal aerodrome scheme for Morecambe and Lancaster.



HOMEWARD BOUND.—The Demonstration Moth, photographed near Bridgewater on the way back from the dust of Teignmouth to the fresh air of Filton.—(*"Aeroplane" photograph.*)

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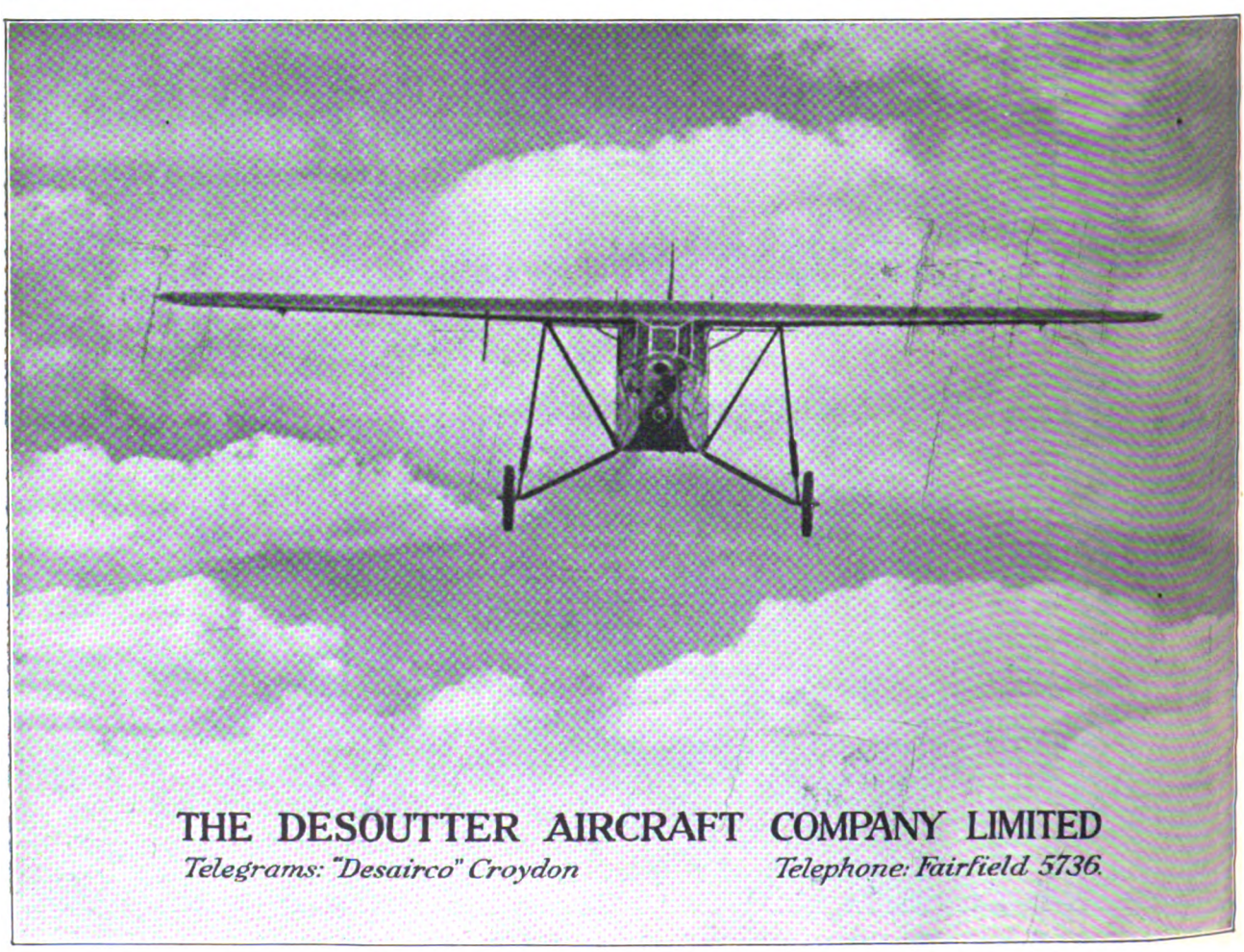

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HANWORTH NOTES.

The results of the first two weeks at the Hanworth Club have just been issued. The routine work of instruction began immediately after the opening on Aug. 31. The only difficulty was the shortage of aircraft. Twenty or more machines would have been none too many. Of the flying members of the Club 100 have begun their course, and the ten Moths available have been kept continuously busy. In the first two weeks 17 members were sent up solo, nine of whom qualified for their "A" licences.

Altogether, 368 hours of flying were done during the first fifteen days of operation, with an average of eight machines per day.

The first *ab initio* member (Miss Sale-Barker excepted) was Dr. Petit. He is 45 years of age, and his performance is a complete refutation of the "too old to fly at 40" theory. Another member of the same age is Mr. Eggar, who is a Government Advocate in Burma, and intends to start a Burmese Flying Club on his return to the East.

Besides instructional flying, a total distance of about 4,000 miles was flown in air-taxi operations. The result is regarded as promising, for no particular effort was made to get business, as the two-passenger Desoutter cabin-monoplanes which will be used as the standard taxi-machines have not yet arrived.

A number of members are living at the Club-house and are putting in some two or three hours of flying a day. Altogether 985 meals were served in the fortnight.

The levelling and rolling of the south aerodrome is nearly complete. The Club shed and petrol station on that side are ready for service, and as soon as the levelling work is finished the south aerodrome will be used for Club flying, leaving the north aerodrome free for commercial operations.

N.F.S. AND THE NORTH.

The Yorkshire Aeroplane Club has decided at its recent annual meeting to co-operate with National Flying Services.

Lord Brotherton, who is President of the Yorkshire Club, is giving a lunch on Oct. 11 to celebrate the occasion.

N.F.S. is at present negotiating with the Leeds Corporation for the establishment of an aerodrome at Yeadon. Should this come about, N.F.S. would probably not care to have two aerodromes in the district so that the closing down of Sherburn-in-Elmet seems likely. Such an eventuality might result in the urbanisation of the club at the expense of its county interests.

A SLIGHT ARGUMENT.

The following letter, and the reply thereto, may be entertaining and informative:—

My dear C. G. G.—Conflicting feelings render my present task both difficult and unpleasant. There is, on the one hand, my regard for you as an old and trusted friend, on the other my resentment as one of your long-suffering readers, whose patience has been strained to breaking point.

In this latter capacity, I propose to attack you wholeheartedly and with no more regard for your personal feelings than you are in the habit of showing for those of your victims. In doing so I am voicing the feelings of a large number of other readers, and I therefore hope that you will publish this letter.

Your article entitled "An African Adventure" in THE AEROPLANE of last week makes, directly or by implication, the following reflections on the policy and management of National Flying Services Limited.

1. It is said that N.F.S. have not "achieved anything tangible in this country beyond the somewhat luxurious furnishings of an extra-suburban mansion and the laying-out of an aerodrome round it."

2. It is stated that "The subsidy was granted to N.F.S. distinctly on the understanding that it was for the development of aviation in Great Britain."

3. A large part of the article is based on the admittedly hypothetical assumption that the African venture will not be separately financed and will absorb part of the resources of the Company.

4. There are veiled insinuations to the effect that the proposed activities of Captain Guest and his associates amount to poaching on the preserves of others.

This is all nonsense. In the first place, besides establishing the only really attractive club for those interested in flying, N.F.S. have, during their short existence, acquired more machines, flown more hours per week, and have at present more pupils under instruction than any other flying school or club in the country. They have also established the cheapest and best equipped aeroplane hire service.

Secondly, a State subsidy is not granted on any "understanding" but on specific conditions which have to be, and, in this case, are, being complied with.

Thirdly, a simple telephone call would have enabled you to discover, had you wished to do so (as I did), that the African venture is financed and organised by Captain Guest personally. N.F.S. stand to lose nothing by its failure, but will gain greatly by its success.

Lastly, any suggestion of poaching on the preserves of others is sheer piffle, for the simple reason that there are, at the moment, no others, and no preserves. The early explorers in this field who have not so far chosen to follow up their first efforts are obviously free to do so, and, in the words of the Prophet, "Competition is good for trade."

Your statements and insinuations are thus manifestly absurd and, in fact, the whole article is a tissue of false implications. Had the article in question been an isolated case of ill-informed and biassed criticism, it would scarcely have called for comments of this nature. It forms, however, part of a settled policy of unreasoning hostility towards N.F.S. Ltd. which I and many others have noted with growing resentment.

Here we have, for the first time, an organisation which brings a really adequate supply of capital to the service of Private Flying, and which is capable of attracting the general public to aviation. Anyone who is genuinely keen on flying must see the urgent necessity for and vast potentialities of such an organisation. Yet N.F.S., which needs and deserves the support and encouragement of the whole aeronautical community, excites in you, who are supposed to be one of its spokesmen, nothing but thinly-veiled and petty antagonism.

I have too long known and respected your immense unreasonableness to hope that, by flatly refuting you, I can induce you for once to be rational. It has been obvious for many years to readers of THE AEROPLANE that you are utterly incapable of dispassionate thinking, but *can* only like or dislike excessively. As a result your THE AEROPLANE suffers from catastrophic instability; on the slightest provocation it either stalls or nose-dives.

I have, however, some faint hope of inducing you to do a little "straight flying," and thus reduce the growing volume of irritation among those of your readers to whom fair and well-informed criticism is more entertaining than personal bias and journalistic stunts. To that end, I have drawn your attention with certain emphasis to the fact that views as strong as yours, as good as yours, and diametrically opposed to yours, are occasionally held by people who do not suffer from your temperamental disabilities.

In conclusion I may point out that beyond enjoying the privilege of membership of the Hanworth Club, I have no financial interest in N.F.S.

(Signed) M. L. BRAMSON.

[The Navy itself has a saying that the three stages of a Ward Room argument are (A) Unsupported assertion (B) Flat contradiction and (C) Personal abuse. Mr. Bramson seems to have reached the third stage without the preliminaries. Which makes quite a good start, according to the well-worn legal axiom,—"When you have a weak case abuse the opposition lawyer." Having been abused equally by both sides in practically every controversy in which one has taken part, one's belief in one's impartiality remains unshaken,—though one admits to having been perhaps a shade too enthusiastic on occasion, in praise of promising but unproven ideas.

Without admitting the accuracy of the imputations in the four numbered paragraphs in Mr. Bramson's letter, one may answer those of his statements which are based on them.

Whether the mansion at Hanworth is the "only really attractive club" is purely a matter of taste. With some people congenial company counts for more than creature comforts.

The statement that N.F.S. have acquired more machines than any other club, seems likely to be true, seeing that they have had more capital to spend. And having more machines they ought to have done more flying in the same time. The true measure of efficiency would be whether they have done more flying for their capital expenditure than have a number of the other clubs whose combined capitals would add up to the same amount. This would be difficult to discover. Quite possibly the combined capital of *all* the other subsidised clubs might not equal that of N.F.S.

Another way of measuring efficiency would be to discover whether N.F.S. have done as much flying per available machine as have the other clubs.

The figures from Hanworth show 368 hrs. in 15 days with 8 machines, or less than 3 hrs. per day per machine, which is frequently beaten by many clubs.

Whether N.F.S. have the cheapest and best equipped aeroplane hire service also demands proof. The lowest price is not necessarily the cheapest. And such firms as Air Taxis Ltd., Surrey Flying Services, Northern Air Lines, and a few more unsubsidised firms might offer competitive terms and accommodation.

Mr. Bramson's "Secondly" has still to be proved. The conditions included, if one remembers rightly, the opening of a specified number of aerodromes in this country by the end of the year. We shall be able to discuss this point better on Jan. 1, 1930.

As concerns "Thirdly,"—if Mr. Bramson can bring himself to read THE AEROPLANE again he will see the phrase "Possibly this side-line, as it were, (*i.e.*, the African Adventure) may be a venture quite apart from the firm's main operations and may be separately financed."

The situation did not seem to demand "a simple telephone call." The article to which he objects was written on the strength of a communiqué from N.F.S. If the Adventure is not an activity of the firm then why did the firm issue a communiqué about it? But all the same one took care to suggest that possibly N.F.S. capital was not involved in the Adventure.

And, lastly, for Mr. Bramson's "Lastly,"—If Mr. Bramson chooses to regard the Adventure as poaching he is at liberty to do so. But personally one congratulated the directors—or should one have said "the Chairman" only?—on their shrewdness in adventuring on well-prepared ground. Less shrewd adventurers might have gone out into the blue as the Belgians did in the Congo, or the Germans in Colombia, or the Aircraft Operating Co. in Rhodesia, or the Air Survey Co. in Sarawak, or the Australians in Queensland and West Australia, where there were no aerodromes and no ready-made converts to flying. That would have shown far less commercial sense.

The World is full of poverty-stricken pioneers. The people who make money are those who follow in their foot-steps. And N.F.S. was formed, one hopes, with the idea of making money. Mr. Bramson must not let his sympathy with poor pioneers run away with his commercial acumen.

One's reason for suggesting mildly that the wisdom of N.F.S.—or perhaps of their Chairman with separate finance—might conceivably be questioned in undertaking this African Adventure was simply that N.F.S. appear to be of National importance, and that any diffusion of capital, or alternatively of energy (such as the absence of their distinguished Chairman on this Adventure) would hinder the fulfilment of their plans to make England a country fit for those who are not heroes to fly in. And that would be a National calamity far removed from a National flying service.—C. G. G.]

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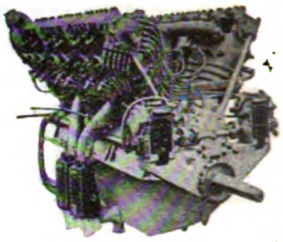

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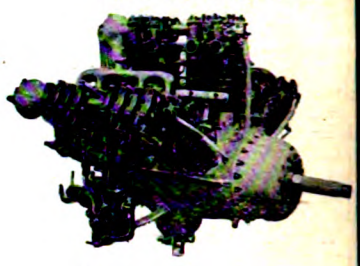

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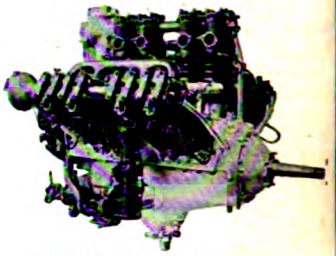

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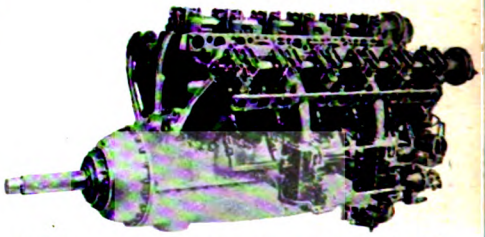

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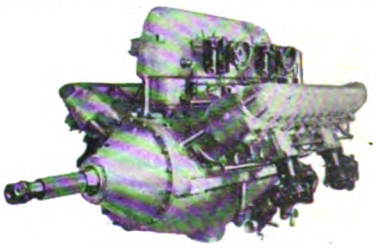
MOTEURS D'AVIATION

LORRAINE

AERO ENGINES.



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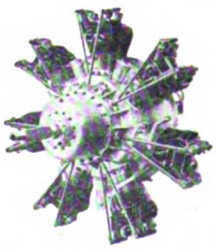
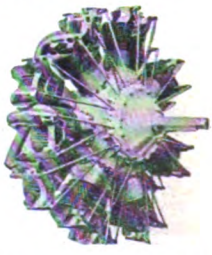
100/120 h.p. 5 Cyl. Radial.

240/270 h.p 7 Cyl. Radial.



240/270 h.p. Geared.



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AN APOLOGY AND AN INDICATION.

THE AEROPLANE owes an apology to all three pilots who came over to the Leicestershire Club Meeting from Grantham on Sept. 14. The R.A.F. pilot on a Siskin who made himself a nuisance during the closing ceremony of the Meeting was not one of the three from Grantham. They had already started for home when he did his remarkably bad show.

One may add that his proceedings were not approved by experienced pilots on the Committee of the Leicester Club. No doubt the Air Ministry can discover his identity by making inquiries in the proper quarter, and discovering who, other than the approved Flight from Grantham, visited Desford in a Service Siskin.—C. G. G.

THE SCOTTISH FLYING CLUB.

The first number of *The Scottish Flyer*, the official journal of the Scottish Flying Club Ltd., has just been published. The journal is to take the place of, and to supplement, the Monthly Bulletin Letter of the Club. This issue gives an account of how the Scottish Club began and a sketch of its activities. There is an article on Engine Running and some useful hints to First Soloists and Beginners. There are also Flying sub-Committee notes and a chart of the monthly flying times since the opening of the Club. The Editor is Mr. G. F. Yuill, of 326, West George Street, Glasgow, C.2.

THE MONTREAL CLUB.

The total flying time of the Montreal Light Aeroplane Club during the month of August was approximately 134 hours. This included 48 hours' dual instruction, 18 hours' test and 64 hours' solo flights by members. The Club would like to see soloists putting in more practice.

The Airmanship Trophy Competition was held on Aug. 3. This competition is based on the Royal Air Force Cross-Country or Pin-pointing Competition, and points are given for course-finding, accuracy in dropping message-bags, and for landing. There were nine entries, but only two competitors succeeded in flying an accurate course and finding the points without loss of time.

The result was: E. W. Mellen, 76 points; M. M. Foss, 73½ points, and J. B. Forrest, 62½ points. Mr. Foss flew the best course, but had forgotten how to land by the time he got back.

Only four entries were received for the Webster Landing Trophy, but the standard was very much higher than in the last competition. The winner was S. J. Bailey.

Three cross-country flights were held during the month. On Aug. 8 two machines went to Sherbrooke and back; on Aug. 15 three machines went to Valleyfield and returned *via* the Curtiss-Reid Airport, and on Aug. 22 three machines went to Trois Rivieres and back by Granby.

On Aug. 21 Mr. R. H. Foss made an altitude test and reached 18,400 ft. in 50 minutes.

THE VOICE OF EXPERIENCE.

The De Havilland Aircraft Co. Ltd. recently received in the form of a letter the following entirely unsolicited testimonial from Mr. C. Humphreys, the ground engineer to the London Aeroplane Club:—

Since we took delivery of our two Gipsy-Moths they have both completed 300 hours' running on one top overhaul, in which the only replacements were scraper-rings in each case.

On reading your handbook on maintenance schedules for this engine one reads that the engine should be completely overhauled after 300 hours; this does not do justice to your engine for one cannot find enough to call for a complete overhaul.

As a licensed ground engineer I would have no hesitation in sanctioning a top overhaul every 150 hours, and a complete overhaul at 450 hours.

Naturally the D.H. people value his expression of opinion very highly, but, of course, the 150 and 300 hours schedules are advised in their handbook merely to cater for the careless Moth-owner who is liable to ignore the advisability of cleaning his plugs, checking his tappet clearances, etc., until these little points of routine maintenance patently require attention.

THE AUSTRALIAN AERO CLUB.

The following letter, which is of Imperial interest, has been received from Mr. J. Churchill-Smith, Secretary of the South Australian Section of The Australian Aero Club:—

Sir,—It is with great interest that we in the Southern Hemisphere read your various issues of THE AEROPLANE which are regularly received by us, and we take this opportunity of congratulating you upon reporting to a certain degree in your 1st May issue on the activities of flying in Australia.

We cannot, however, allow the occasion to pass without seriously commenting on your "Notes from Australia," where you have commenced by stating "Looking first at the N.S.W. Club" without afterwards reviewing the activities of the other Clubs except as regards certain fatal crashes experienced by them.

Later on in your "Notes" you mention the changing of the name of the N.S.W. Section, adding "the members feel that the rather nebulous bodies in some of the other States are of the nature of a hindrance to the general progress." Such a remark coming from the daily papers looking for something sensational to print could be passed over, but from a paper desirous of advancing Civil Aviation in the British Empire, such remarks are liable to mislead.

The South Australian Section of the Australian Aero Club is a very live body with a membership of nearly 450, including approximately 100 members of the Flying Section. "A" Pilots total 55, and pupils under training at the moment total 23.

In order to show the progress made, we invite your consideration of the following:—

	At 31/1/28.	At 30/11/28.	At 31/5/29.
Number of Flights ..	1,238	2,784	4,761
Dual Instruction ..	88 hr. 44 min.	245 hr. 54 min.	500 hr. 54 min.
Pupils Solo Flying ..	19 hr. 18 min.	107 hr. 57 min.	208 hr. 37 min.
Miscellaneous Solo Flying	89 hr. 47 min.	187 hr. 12 min.	389 hr. 24 min.
Pilot Members Flying ..	23 hr. 02 min.	117 hr. 24 min.	342 hr. 02 min.
Number of Passengers Carried	919	1,602	2,155
Pupils Under Instruction	14	17	22
Pilot Members	2	19	35
Number of Members ..	336	300	436
Number of Machines ..	2	2	3

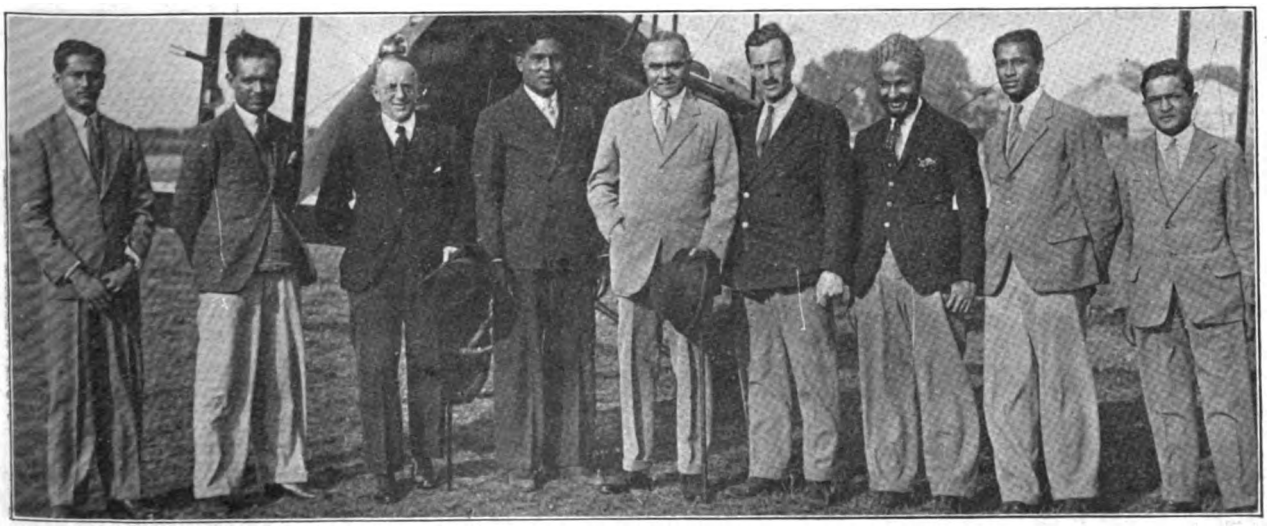
We are also enclosing for your information a copy of our Club paper, "Wing Tips," which will be regularly forwarded to you in the future so that your next "Australian News" will include the brighter side of at least one other State of our great Commonwealth.

112, King William Street, Adelaide, S.A.
June 17, 1929.

[The good sportsmen of the South Australian Section must blame one of their own brethren in N.S.W. for not giving them their due. Naturally he saw most of his own Province. Meantime congratulations to S.A. on putting up such a good show. We here hope to hear more of them in the future.—C. G. G.]

GENETS IN THE STATES.

The Fairchild Airplane Manufacturing Corpn. has received orders for 100 Genet engines from the Arrow Aircraft and Motors Corpn. and for 12 from the Nicholas-Beazley Airplane Co.



THE EAST IN THE WEST.—The High Commissioner for India (in light suit in middle) inspecting the six pupils sent by the Government of India to the De Havilland school to learn to fly. —(*"Aeroplane" photograph.*)

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47,865 MILES on GIPSY-MOTH without decarbonising

— and still Flying using WAKEFIELD CASTROL XXL

On Sept. 7th the Gipsy-Moth had flown for 563 hours on its Reliability Tour and the seals were still unbroken—equivalent to 47,865 miles.

After 500 hours flying the machine was put over a speed course and clocked only 1 m.p.h. less than the guaranteed all out speed of a brand new Moth.

The climb to 5,000 feet registered the actual guaranteed figure, i.e., 21 minutes.

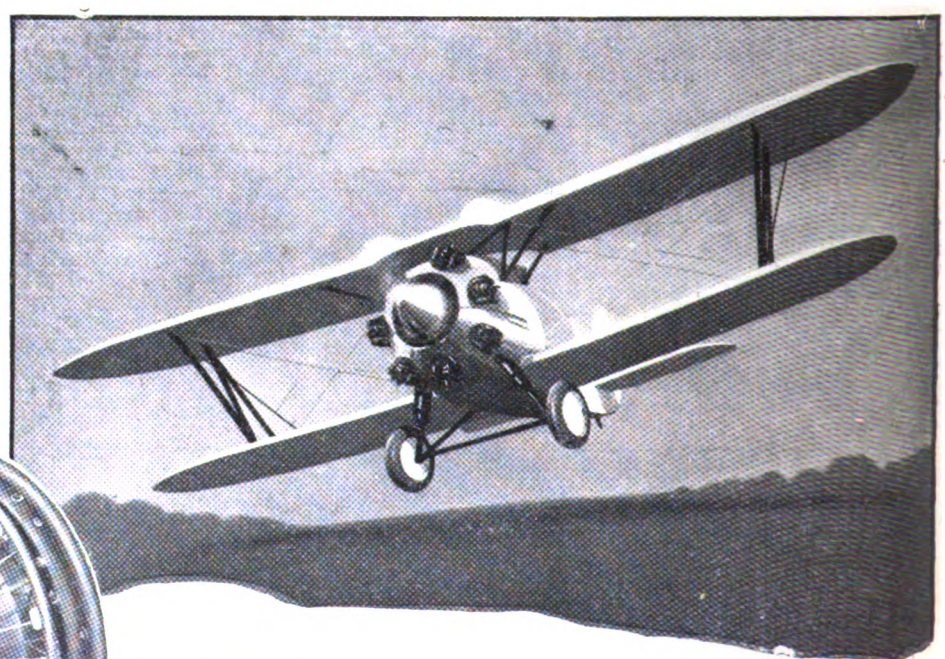
at the rate of .5 pint per hour or 1,400 m.p.g.

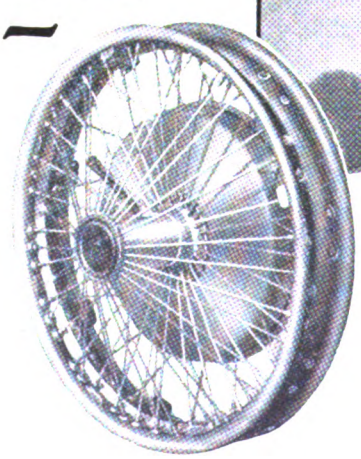
C. C. WAKEFIELD & CO., LTD., *All-British Firm* Wakefield House, Cheapside, London, E.C.2

The Circuit of Europe.

Captain Broad flying a De Havilland Machine was 1st in his class and 2nd in the general Competition. During this Contest, Captain Broad made 28 landings on Dunlop Tyre and Wheel equipment without once touching the tyres.

Safe GROUND WORK *on* —





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COMMERCIAL AERONAUTICS.

MR. MONTAGUE'S TOUR.

Mr. Montague, the Under-Secretary of State for Air, accompanied by Mr. F. G. L. Bertram, C.B.E., Deputy-Director of Civil Aviation, is making a short tour of Europe by air.

The object of the tour is to compare the systems of operation abroad with those in this country, and to obtain by personal experience a general view of civil aviation activities in neighbouring countries. No special arrangements have been made, and Mr. Montague will travel as an ordinary passenger.

The tour has been arranged to take five days, and will last from Sept. 24 to 28. On the first day, Mr. Montague will fly from Croydon to Rotterdam and Amsterdam by K.L.M. He will then proceed to Hamburg, from where he will fly to Copenhagen and Malmo by the Swedish A.B. Aerotransport.

The next day Mr. Montague will leave Malmo for Dresden, by way of Copenhagen, Lubeck-Travemunde, and Berlin. Mr. Montague will travel by Farman and Luft Hansa lines.

The third day Mr. Montague will fly from Dresden to Vienna, by the Czechoslovak Air Transport Co., and will stop at Prague.

The fourth day Mr. Montague will fly by Luft Hansa from Vienna to Cologne by way of Munich, Nuremberg, and Frankfurt.

The final stage will be from Cologne to Croydon by Sabena, and stops will be made at Brussels and Ostend.

THE AERIAL LINK BETWEEN THE AMERICAS.

Pan-American Airways, the big American corporation formed to link North and South America by a network of air lines is steadily forging ahead. Although a few far-sighted people have pointed out the necessity of linking up the British possessions in the Caribbean Sea by air lines, there is no doubt that America will provide the services and thereby augment her commercial interests in British property, especially as Jamaica is isolated from other British territories.

Pan-American Airways has a strategic advantage in being based on Miami, the holiday resort of such of the wealthy Americans who do not come to Europe. These people regard the Caribbean Sea as their holiday hunting ground and naturally turn to the air as being the best way to explore the area and reach new territories. Thus Pan-American Airways have a big public upon which to draw, while working up their South and Central American sections as pure business propositions.

Colonel Lindbergh, who surveyed the Pan-American routes in 1928, left New York on Sept. 17 with Mrs. Lindbergh to fly round the routes again. Mr. J. T. Trippe, the President of Pan-American Airways, and his wife, are accompanying the Lindberghs. The machines used will be a three-engined Fokker and a Sikorsky amphibian.

The party is flying from Miami to Havana, thence by Porto Rico to Dutch Guiana. From Dutch Guiana the party will return by the coasts of Venezuela and Columbia, where the German Scadta line is firmly established, to Panama and Central America, and so home. A fine trip, but pretty hard going for the ladies through the tropical countries.

Colonel Lindbergh and his party reached Georgetown, British Guiana, on Sept. 23. The previous day they had flown from San Juan, Porto Rico, to St. Kitts, the capital of the Leeward Islands, where they were welcomed by the Governor. The next stage was to Antigua, another island in the same group, where the party had lunch.

After lunch the trip was resumed by way of another British Island, St. Lucia, to Port of Spain, the capital of Trinidad, where the party attended a reception at the Union Club and were afterwards the guests at a Government House banquet.

A SOUND DECISION.

Northern Air Lines have decided that in future no passengers will be carried on journeys which involve a sea crossing in single-engined aircraft.

The Company has been doing a considerable amount of business taking passengers from Manchester to Dublin, Belfast and Douglas, but has now decided that journeys over the sea must not be undertaken until triple-engined aircraft are available.

The loss in revenue will be considerable and it is with the greatest reluctance that the Company turn away this lucrative traffic, but it is felt that "Safety First" must be the guiding principle of Northern Air Lines, so until the new triple-engined aircraft are delivered Manchester people will not be able to cross the sea by air.

The firm is making no alteration in ordinary cross-country journeys and will continue to use single-engined machines where no sea crossing is necessitated.

Sea journeys not carrying passengers will be continued as at present, i.e., goods and newspapers and photographs will be accepted as usual.

If a single-engined aeroplane is forced to land owing to engine trouble a safe landing can almost always be made if over land, but it is felt that engine trouble while over the sea might have serious results although the aeroplanes are usually in touch with shipping and carry special life belts.

Two triple-engined all-metal air liners have been ordered, and delivery is promised early in the new year, these machines are luxuriously fitted, with heated cabins, lavatory, etc. [Are these Fords?—ED.]

One of these machines will probably be used on the Isle of Man service next Spring and the other will be used for general work to London and the Continent.

Afternoon tea trips over Manchester are to be a feature of the company's activities next year. Passengers will be taken for an hour's flight over the City and served with tea while in the air.

THE LARGEST FOKKER.

A report from the New York correspondent of *The Times* states that the new Fokker F.32 made her first public appearance on Sept. 13, when a number of trips with the full complement of crew and passengers on board were made.

The F.32, which has been built by the Fokker Aircraft Corporation of the United States, is a four-engined monoplane with the engines arranged tandem-wise in nacelles under the wing on each side of the fuselage.

The engines are 525 h.p. Pratt and Whitney "Hornet" air-cooled radial engines. The F.32 has accommodation for thirty passengers and a crew of four. The machine has been designed for a top speed of 140 m.p.h., a cruising speed of 120 m.p.h., and a range of 480 miles.

FRENCH AVIATION AND GOVERNMENT FINANCE.

The Paris correspondent of *The Times* announces that an agreement has been concluded between the French Government and the Air Union and the Compagnie Internationale de Navigation Aérienne for financial participation by the State, the agreement being for a period of 30 years.

An agreement has also been concluded by the French Government with the Compagnie Général Aéropostale, the State participation in this case being for 20 years.

The financial participation in the case of the Air Union and Aéropostale is 25 per cent., and in the case of the C.I.D.N.A. 30 per cent.

The agreements, which require ratification, will be laid before the Chamber early in the Session.

WITH THE NIGHT MAIL.

Sabena are opening a night air mail service between London and Brussels on Oct. 1. This service will operate both ways and will result in letters posted at the London Central office before midnight being delivered in Brussels by the first post. For first delivery in London the latest time of posting in Brussels is 22.00 hrs.

The Belgian Post Office is co-operating with Sabena in the new venture and it is a sign of better things that no fee will be charged for the new service until Jan. 1.

Post Offices should use the fastest means of transport available as part of their service to the public, and not charge enormous fees for Air Mail. If Imperial Airways had the entire Indian letter mail contract (about 30 tons a week) would there be any need for a subsidy?

The inauguration of the night service to London will be marked by a ceremony at Brussels aerodrome. M. Jaspar, the Prime Minister, M. Hymans, the Foreign Secretary, and M. Lippens, Minister for Railways, are expected to be present.

During the proceedings a memorial to Major Nelis will be unveiled. Major Nelis, of whom an obituary notice appeared in THE AEROPLANE of April 3, 1929, was the pioneer in Belgium of commercial aviation, and to his foresight and energy are very largely due the present Belgian air lines, and especially the very fine organisation in the Belgian Congo.

THE END OF A SEARCH.

The Times of Sept. 11 states that the Western Australian Airways aeroplane recently chartered by the East Asiatic Company has not found any trace of the missing Danish training ship *Köbenhavn*, although it made a flight of 1,500 miles along the coast, from Broome to Fremantle, and from 25 to 30 miles out to sea.

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Learn to fly at

HANWORTH

THE London Air Park at Hanworth, headquarters of the N.F.S. flying organisation, is the ideal instructional centre, where the flying pupil may qualify for the Air Ministry "A" Licence for private pilots, quickly and at the minimum of expense.

Experience shows that the average flying member is able to "pass out" after a period of from 13 to 20 hours' training. The minimum under N.F.S. rules is eight hours "dual" instruction, and five hours' "solo" flying, the cost of this minimum course being under £25.

Not only is Hanworth one of the largest air parks in the country, but as a Country Club it is unexcelled. The Club itself provides first-class residential accommodation; lounges, dressing and drawing rooms, writing room, ball-room and an excellent standard of catering. Tennis and squash racquets courts provide facilities for outdoor recreation. The Hanworth estate covers an area of 230 acres.

A limited number of members are now being enrolled at the following rates: Flying Members, 5 gns. entrance fee, and 5 gns. annual subscription. Non-flying Members, 3 gns. in each case. For 1929, two-thirds of the annual subscription is rebated. Serving Officers of H.M. Regular Forces are admitted without entrance fee. Membership of Hanworth Club confers honorary membership of all other N.F.S. Clubs, and free use of every N.F.S. station. Private flying for qualified members costs as little as £1.1.0 an hour (3½d. a mile). Residential terms at Hanworth range from 5½ to 7 guineas per week.

Write to-day for the N.F.S. brochure that fully describes the privileges of membership and enumerates the services offered to all who wish to fly.

NATIONAL FLYING SERVICES LTD.

GRAND BUILDINGS, TRAFALGAR SQUARE, LONDON . . W.C.2.
Telegrams: "Natflying, Westrand, Ldn."
Phone: Gerrard 9316 (4 lines)

LONDON AIR PARK, HANWORTH, MIDDX.
(30 mins. from the West End)
Feltham Stn., Southern Rly.
Phone: Feltham 236

India & Back Flight

The spirit supplies for the Duchess of Bedford's remarkable flight to India and back were provided at all points on the route, with the exception of Karachi, by the British Petroleum Company, Ltd.

The machine was a Fokker with Bristol Jupiter Engine, piloted by Capt. C. D. Barnard.

"BP" AVIATION

ANGLO-PERSIAN OIL CO. LTD
British Petroleum Co. Ltd. Britannic House, Moorgate, E.C.2
Distributing Organisation

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THE AMERICAN AIRCRAFT INDUSTRY.

For the past year or so there has been a tendency in the United States to form groups, or combines, or trusts, of the older and better-class aircraft firms, and to join with them American licensees of the best European firms. These groupings have become so confusing that an American friend has kindly sent from the States an account of them as they were at the end of August.

The larger groups of the various aircraft interests in the United States are as follows:—

There is the Curtiss-Wright group, which so far includes the following companies:—

Curtiss Aeroplane and Motor Co. Inc.
Curtiss Airports Corporation.
Curtiss Flying Service Inc.
Curtiss Aeroplane Export Corporation.
Curtiss-Caproni Corporation.
Curtiss-Robertson Airplane Manufacturing Company.
Wright Aeronautical Corporation.
Keystone Aircraft Corporation (including the Loening Company).
Moth Aircraft Corporation.
New York and Suburban Air Lines Inc.
New York Air Terminals Inc.
Travel Air Company.

Associated with this Group by identity of management, or directorship are National Air Transport, Trancontinental Air Transport, Pitcairn, and part of the Aviation Corporation of the Americas. Also there are two or three Investment Trusts, such as the National Aviation Corporation and the North American Aviation Corporation affiliated with this Group.

The second Big Group is the United Airport and Transport Company which includes the following subsidiaries:—

Boeing Airplane Company.
Chance Vought Corporation.
Pratt and Whitney Aircraft Company.
Hamilton Aero Manufacturing Company.
Boeing Air Transport Inc.
Pacific Air Transport.
Stout Air Services Inc.
Stearman Aircraft Co.
Sikorsky Aviation Corporation.
Standard Steel Propeller Corporation.

Thirdly, there is The Aviation Corporation, which controls a large part of the air transport business in the country, as well as the Fairchild Corporation, and a subsidiary interest in the Waco Company. Its operating subsidiaries are as follows:—

Colonial Airways Corporation.
Interstate Airlines Inc.
Universal Aviation Corporation.
Embry-Riddle Aviation Corporation.
Southern Air Transport Inc.
Fairchild Aviation Corporation.
New York Aviation Corporation.
Aviation Patent and Research Corporation.
Roosefelt Field Inc.
Waco Airplane Company.

The strongest independents, at present, are the Consolidated Aircraft Corporation, Douglas, and Glenn Martin. Consolidated Aircraft Corporation has recently acquired Thomas Morse and a large interest in the Kinner Co.

The Detroit Aircraft Corporation is a recently formed merger which includes Lockheed and the Aircraft Development Corporation, which has just delivered a metal airship to the Navy. The following are subsidiaries of the Detroit Aircraft Corporation:—

Ryan Aircraft Corporation.
Aircraft Development Corporation.
Aviation Tool Company.
Grosse Ile Airport Inc.
Marine Aircraft Corporation.
Blackburn Aircraft Corporation.
Eastman Aircraft Corporation.
The Winton Aviation Engine Company.
Lockheed Aircraft Company.

A LINK WITH THE EAST.

A year ago five Fokker VII.-3M monoplanes flew to Batavia and got there. They were the advanced guard of a regular service scheduled to start for mails only in 1929 and passengers in 1931.

The regular fortnightly service began according to schedule on Sept. 12, when a Fokker carrying 146 kgs. (322 lb.) of mail took off from Schiphol aerodrome.

The distance is well over 8,000 miles, so that our famous Indian Air Line is completely surpassed. Even its ultimate object and goal is surpassed, for Singapore is not the terminus of the Dutch service, but a halting-place *en route*.

Van Tromp nearly swept us off the seas—are we to be flown out of our skies?

IMPERIAL AIRWAYS AND THE CHANNEL PASSAGE.

Imperial Airways Ltd. announced on Sept. 18 that from that date the whole of their Cross-Channel Air services radiating from London will be worked with three engines, and a steward will be carried on all services.

The twin-engine Handley-Page Napier Air liners will be used for working the land section between Paris and Zurich, and for cargo and supplementary services.

Just why twin-engined machines should be safe over 50 to 100 miles of mountain country in the Vosges and Jura regions and in Switzerland and unsafe over a mere 20 miles of Channel is not explained.

A pilot trying to do a slow landing in a small clearing in a forest is just as likely to stall and kill his passengers as is a pilot trying to alight on a glassy sea and misjudging his height.

This decision strikes one as mere eye-wash. Either a two-engined machine is safe or it is not. If it is *not* it should not be used anywhere except over open country with proper landing grounds always within gliding distance.

CANADIAN BORDER TRAFFIC.

According to the returns of the Canadian Department of Customs and Excise, twenty-six American aircraft, valued at $279,528 (approx. £55,960), were imported into Canada during the first quarter of this year.

One hundred and thirty-three American aircraft passed through Customs inspection on entering Canada and 114 on leaving Canada. The majority of these were engaged on the regular air mail routes. Passengers entering Canada totalled 182 and those leaving Canada numbered 165.

One thousand one hundred and sixty-three bags of mail entered Canada and 550 bags passed through outwards.

According to the U.S. Department of Commerce Canadian Colonial Airways, the operators of the New York—Montreal air mail route, carried 63,661 lbs. of mail over 46,276 miles in the first six months of this year for which it received $44,616 (approx. £8,925).

A NEW CANADIAN AERO-ENGINE FIRM.

A new company has recently been formed in Canada for the production under licence of various well-known aero-engines. This new firm is known as Aero-Engines of Canada Ltd. and has a capital of $200,000 (£41,000).

The President is Mr. F. M. Ross, and the Chief Engineer, who is also Works Manager, is Mr. A. S. Suddes, formerly of the Bristol Company.

This firm, who have the manufacturing rights for the whole of Canada for the Bristol Jupiter and Wright Whirlwind, will build these engines. They are also agents for the Cirrus and Cirrus-Hermes air-cooled engines.

A service organisation is being formed so that mechanics specially trained on the various types may be lent to the various operating companies.

ANOTHER NAVAL PROBLEM SOLVED.

Orders for several bomb-sights, said to be capable of dropping 100 lb. bombs down the funnels of battleships have been made by the U.S. War Department from a Connecticut clock-manufacturing company. The device will be made at a cost of $28,000. The instrument which works out the mathematical data for a correct hit is described as being as intricate as a "chain of Swiss watches."

A wholly unreliable report from the U.S. Navy Department states that an order for several plugs capable of being inserted in the chimneys of warships to prevent 100 lb. bombs from penetrating therein has been placed with a Brooklyn Marine Store dealer. The Naval Commission responsible for thinking out this antidote might be described as being as artful as a "cartload of ring-tailed monkeys."

A MATTER OF TONNAGE.

Every week THE AEROPLANE publishes an analysis of the aircraft arriving at and departing from Croydon. Last week the freight carried by Imperial Airways was given as 30¾ *lbs.* This should obviously have been 30¾ *tons*, still people do get queer ideas about British aviation, so this correction may be necessary. And anyhow, in this year of grace 30 tons is almost as ludicrous as 30 lbs.—If it were 300 tons we might feel pleased, but 3,000 would be more reasonable if we were a truly progressive nation.

THE INDIAN MAILS.

The Postmaster-General announces that in order to allow of the posting in London, up to the latest possible moment, of letters for the Indian Air Mail, arrangements have been made for late correspondence to be accepted, as from the Mail to be despatched on Saturday, Sept. 7, at the Post Office, Charles Street, Haymarket, S.W.1, up to 9.25 a.m. on Saturdays. The letters must be handed in at the counter and only unregistered articles can be accepted.

No special charge beyond the ordinary postage and air fees (see the Air Mail Leaflet obtainable at any Post Office) will at present be made.

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"THE AEROPLANE," SEPTEMBER 4 AND 11.

Will any readers who have finished with their copies of THE AEROPLANE for September 4 and 11 post them to this office as these numbers are completely out of print and the list of applicants for copies is growing apace.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 20; Monday, 33; Tuesday, 33; Wednesday, 30; Thursday, 33; Friday, 33; Saturday, 30.

IMPERIAL AIRWAYS LTD.:
London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 75, passengers 728, freight 27½ tons. India Route: Inward, passengers 1, mail 710 lbs.; outwards: passengers 2, mail 726 lbs.

AIR UNION:
Paris—London and return: Machines 61, passengers 254, freight 20 tons.

K.L.M.:
Amsterdam—Rotterdam—London and return: Machines 24, passengers 148, freight 13 tons.

SABENA:
Brussels—London and return: Machines 12, passengers 47, freight 7 tons.

DEUTSCHE LUFT HANSA A.G.:
Amsterdam—London and return: Machines 35, passengers 60, freight 8¾ tons.

MISCELLANEOUS:
British machines 14, passengers 17.
Foreign machines 1, passengers 1.
Total number of trips by British machines 89, carrying 745 passengers. Foreign machines 123, carrying 510 passengers.

COMPARATIVE FIGURES.

Week ending Sept. 21:
Machines, 212; Passengers, 1,255; Crews, 500; Total personnel, 1,755.
Corresponding week, 1928:
Machines, 187; Passengers, 1,079; Crews, 356; Total personnel, 1,435.
Corresponding week, 1927:
Machines, 155; Passengers, 990; Crews, 288; Total personnel, 1,278.
Corresponding week, 1926:
Machines, 103; Passengers, 572; Crews, 136; Total personnel, 708.
Corresponding week, 1925:
Machines, 124; Passengers, 556; Crews, 163; Total personnel, 719.
Corresponding week, 1924:
Machines, 110; Passengers, 481; Crews, 132; Total personnel, 613.
Corresponding week, 1923:
Machines, 106; Passengers, 350; Crews, 162; Total personnel, 512.
Corresponding week, 1922:
Machines, 106; Passengers, 321; Crews, 190; Total personnel, 511.
Corresponding week, 1921:
Machines, 82; Passengers, 208; Crews, 105; Total personnel, 313.
Corresponding week, 1920:
Machines, 108; Passengers, 175; Crews, 132; Total personnel, 307.

CROYDON NOTES.

The tri-motor Ford has been flying in and out of Croydon Aerodrome recently. Those who had demonstration flights in her, think extremely well of her performance. She is not considered suitable for work on European Air Lines, however, as her baggage-carrying capacity is wholly inadequate.

It seems that in the States nobody travels with more than a single grip, except multi-millionaires, who carry two grips. In Europe, however, it was the American tourist with his (or usually her) vast cabin trunks, weighing more than the passenger, who caused Air Line folk to demand bigger and better luggage accommodation from designers. Hence the whole nose of the Fokker F.VIII used by K.L.M. opens as the door of a vast luggage compartment and the Argosy has a large baggage space behind the cabin.

American designers who want to capture the Air line trade in Europe should spend a thoughtful half hour in the attic where their wives and daughters store their innovation trunks, gay wtih the labels of European air lines.

Capt. Kingsford Smith, who flew the new Fokker F.IX when in Holland and was present at all her tests, speaks very highly of the machine. She is an 18-seater (two crew) three-engined Jupiter job, and is stated by Capt. Kingsford Smith to be handy to fly and to have a top speed of well over 135 m.p.h. An Imperial Airways pilot tells us that he saw this aeroplane take off on two engines, with a full load. She is, of course, designed to fly on any two engines when fully loaded. This aircraft will be on the London line shortly.

The Aerodrome Authorities are full of admiration for the Ford tail wheel which does no harm to their grass and raises practically no dust at all. The Ford pilots use their ship exactly like a car with decent brakes. They will come down hill at 20 m.p.h. straight for an obstacle which would wreck any other aircraft and turn neatly in the aeroplane's length just before hitting it.

They can probably taxi anywhere unaided to within inches in a gale of wind, and they seem able to shoot through a hangar door with an inch or so to spare on either wing tip, just as the experienced "Baby Austin" owner shoots into the wash-house and comes to rest under the sink. And here are we, ye gods, with aeroplanes which are as often as not more or less out of control when on the ground. It is all very well to model aircraft upon the duck or the goose for flying purposes, but why emulate these uncouth fowl on land also?

On the edge of the Tarmac Apron the early worm is experiencing some difficulty in reaching the surface to schedule, and worms have been emerging as late as noon owing to having to bore their way through patches of sticky stuff laid over small areas of the earth there.

It is not so much with the idea of infuriating the earthworm that the authorities have begun to puddle with liquid adhesives, and queer chemicals, but with a view to alleviating the dust-nuisance, if possible.

Persons accustomed to lounge about the tarmac in the execution of their duty when aeroplanes are taking off, have become inured to being taken behind the ear with large flying flints, and groping about gravel-blind for the rest of the day. But strangers do not really care for the playful habits of aircraft joyously kicking their heels in dry weather, and therefore the activities of the authorities are praiseworthy and laudable, so far as they go.

Before they grow tired of revelling in glucosity, however, we should like to throw out a hint or two about the virtues of several sticky mixtures which have not been tried up to now.

What is the matter with sardine oil and secootine mixed with the interiors of chocolate creams and forced into the soil under pressure?

Again, surely chewing gum, well masticated and rolled flat, is worth a trial? And although the cost of strips of surgical plaster laid side by side gummy side down may be prohibitive, cannot something be done with gum arabic from the backs of part-worn postage stamps, tinctured perhaps with dilute bird-lime to give it the necessary body?

The above suggestions we offer gratis out of the fulness of our heart, but what follows is our own secret process, so valuable that we recommend the Air Ministry to approach us with bags of bullion (Box 123 Hop. THE AEROPLANE) before we are compelled to sell our process to a Foreign Power. Details of our secret cannot, of course, be given here, but we may permit ourselves to boast that we have reduced to a scientific certainty that up to now adventitious process by which the average cook produces an incredible viscosity in that estimable comestible, the welsh rarebit. And we modestly avow that we have found the perfect aerodrome surface, which is, moreover, of a pleasing pale buff colour.

One warning we must give the Authorities, which is that impetuous young pilots must be prevented at all costs from taking off over our patent surface before it has hardened, otherwise the aircraft will infallibly assume the appearance of a well wrapped Egyptian mummy or the cocoon of the common or garden cabbage butterfly.

To the objection that our material will lead to plagues of small rodents along the tarmac edge, we reply that we mix a certain amount of Liverpool virus with our brew, which has the additional advantage of preventing unscrupulous persons removing wedges of tarmac for consumption with their supper beer.

Worms will not pierce our patent surface, for what saith Pliny—"Ye worme brooketh but ill ye aroma of cheese."

Seriously, however, is it not time the Authorities ceased dabbling with mixed adhesives and considered the advisability of paving double the present area at Croydon, because this is what everybody at the Aerodrome wants, and it seems likely it will have to be done sooner or later anyhow. [And anyhow, what is the matter with concrete runways in the directions of the prevalent winds, as they have in America?—C. G. G.]

MALLITE PLYWOOD
USED BY THE LEADING AIRCRAFT MANUFACTURERS
THROUGHOUT THE WORLD.
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THE AERONAUTICAL & PANEL PLYWOOD CO., LTD., 218-226, KINGSLAND RD., LONDON, E.2.
Telegrams: VICPLY KINLAND LONDON.

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We recently picked up a rather dull super-crook novel by a woman which immediately rivetted our attention. In it the super-crook used to motor to some secluded field with his loot and a "giant" Fokker monoplane owned by him came and landed in the dark by the light of the car head-lights and took the crook and his loot away to the Continent.

So simple—but what about Customs Clearance for foreign from one of the only two authorised Aerodromes, i.e. Croydon and Lympne, and what about picking up cargo not on the aeroplane's manifest in odd fields? Also, what about the Air Ministry, who take quite an interest in aircraft departing at night for the Continent?

According to the authoress, the aeroplane was kept at an adjacent aerodrome and was fitted with machine-guns.

It was not stated what the Aerodrome Authorities thought of the machine-guns, and altogether it seems a pity this good woman should write on matters about which she has no earthly idea when half a day spent at Croydon would at least teach her that the wind does not "sough" through the wires of Fokker monoplanes, which was one of the crowning absurdities of her book.—SPRY.

THE GREAT VEITCHI VOODOO.

If a portly personage in spats, with here and there a wisp of red tape in his hair and a nasty gleam in his eye, were to advance upon you in Whitehall, muttering, "Veitchi! Veitchi!" would you suppose him to be Arch-Priest of some slightly infamous form of Voodoo, or merely a Government servant afflicted with death-watch beetles boring into his dome—like St. Paul's Cathedral?

In the flesh we did not meet him, but he penned us a mysterious epistle from his Departmental den, headed "Veitchi," and the word was underlined in blood-red ink.

Visions of ourselves swathed in red tape being sacrificed to some fearful Civil Service Deity faded when we turned the page and found that Veitchi was merely a flooring compound with which our offices at Croydon are furnished. We have been inhabiting these offices for eighteen months or more, and this is the first we knew of the delicacy of these floors, which apparently have to be treated something like a convalescent cow in a pedigree herd.

Of a sudden we are urged never to wash our floors except with luke-warm water, and on no account to use common soaps. Soft soap may be used, and perhaps some of the best lavender-scented toilet preparations, and from time to time the floor must be dosed with paraffin (presumably best toilet). Linseed oil must be given in raw, damp weather, and to tone up the flooring after a heavy day, a touch of red oxide is recommended.

A dreadful thing has been happening, for the last eighteen months, however, when all unwittingly, we trod bits of gravel and chalk into the precious floor, and now—alas! too late—we learn that abrasives make our flooring porous.

Heaven help us in stormy weather, if the floors beneath our feet are porous and the cracks in the roof let water in, and may all the Saints succour the unfortunate bloke paying an incredible rental for the room below us, for, without miraculous intervention, he will infallibly drown miserably.

Will not the Labour Government take up our cause? For, burdened by rentals such as made the Feudal System so unpopular amongst the half-starved peasantry, we cannot afford our floors the rich and expensive condiments our Feudal overlords demand for them. And does Whitehall care? Not a bit. Whistling blithely, they probably clean their boots with subtle creams composed of linseed oil, toilet paraffin, soft soap, and red oxide.

SPARKING PLUGS.

The engine of the Macchi 52 which finished second in the Schneider Trophy Contest was fitted with Champion sparking plugs. This same make of plug was used in the same machine when it broke the World's Speed Record in 1928. They were also used in the 1926 Schneider Trophy winner.

Those who know of the great difficulties with which the plug-makers are faced when they have to deal with the high compression of modern racing engines, will realise that the Champion plug must of necessity be numbered among the world's best sparking plugs.

AN A.D.C. APPOINTMENT.

Mr. J. Vivian Holman, formerly of No. 2 (Army Co-operation) Squadron, R.A.F., has joined the Staff of A.D.C. Aircraft Ltd. as Assistant Sales Manager.

Mr. Holman has been an Instructor at the De Havilland School of Flying, Stag Lane, since he retired from the R.A.F. in 1927.

NEW COMPANIES.

AERO DEVELOPMENT AND EQUIPMENT LTD.—Private company. Registered Sept. 6. Capital, £100 in 1s. shares. Objects: To carry on the business of aeronautical, mechanical, electrical, automobile, nautical, civil, structural and consulting engineers, inventors and designers, etc. The subscribers (each with one share) are: W. V. Gilbert, 19, Hillcrest road, Acton Hill, W.3, consulting engineer. G. R. Waygood, Abbey House, Westminster, accountant. W. V. Gilbert is the first permanent director. Secretary: C. B. George. Registered office: 117, Windmill Road, Brentford.

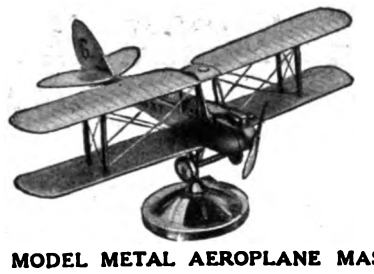
AEROMARINE ADVERTISING LTD.—Private company. Registered Sept. 6. Capital, £2,000 in £1 shares. Objects: To carry on the business of advertising contractors and agents, proprietors of newspapers, etc. The directors are: T. S. Sprigg, The Thatcher House, Claygate, Surrey. C. St. J. Sprigg, The Thatched House, Claygate, Surrey. J. T. Stevenson, Park Cottage, Park Road, Radlett. A. C. Hardy, The Old Nurseries, Esher. F. S. C. Thompson, 4/5, Park Place, St. James's, S.W.1. Secretary: C. Sprigg. Solicitors: A. Bolden, 22A, College Hill, E.C.4. Registered office: 56 and 57, Fleet Street, E.C.4.

MORTGAGES AND CHARGES.

SAFETEX SAFETY GLASS LTD.—Further charge on freehold factory at Hendon dated Sept. 10, 1929, to secure advances not exceeding £4,000. Holders: Safetex Glass Holding Co. Ltd., 21, Great Portland Street, W.

RECEIVERSHIPS (APPOINTMENT OR RELEASE).

E. R. CALTHROP'S AERIAL PATENTS LTD.—W. C. Northcott, C.A., of 6, Great Winchester Street, E.C.2, was appointed Receiver on Sept. 9, 1929, under powers contained in debentures dated April 18 and Oct. 26, 1923, and Feb. 25, 1925.



SCALE MODEL METAL AEROPLANE MASCOTS.
"MOTH," "AVIAN," "BLUEBIRD," "DESOUTTER," £3 3s. each.
SPECIAL MODELS AND TROPHIES OF EVERY DESCRIPTION.
CHALLENGE CUPS, ENAMELLED BADGES, ETC.
BIRMINGHAM MEDAL CO., LTD.
FREDERICK STREET, BIRMINGHAM

For the DUCHESS OF BEDFORD'S flight

K·L·G SPARKING PLUGS

were used by CAPT. C. D. BARNARD

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Unequalled Value
Brilliant Performance
and Absolute Dependability

...make WACO the most popular commercial aircraft in America

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"SEA CLIFF" Trade Mark.

C. Clifford & Son LTD
BIRMINGHAM.

Phosphor Bronze
IN ALL FORMS.

Non-corrosive. Hard as Steel.
Looks like gold.

PERSONAL NOTICES.

Deaths.

LANE.—On Sept. 23, at Grantham, as the result of a flying accident, L-AC. Lane, R.A.F.

SOMERSET.—On Sept. 23, at Hambrook, near Bristol, as the result of a flying accident, Edward V. Somerset, Coldstream Guards, Guards' Depot, Caterham.

TIARK.—On Sept. 23, at Hambrook, near Bristol, as the result of of a flying accident, Edward V. Somerset, Coldstream Guards, Guards' Somerset.

WALLER.—On Sept. 15, at Butterstone, Perthshire, Gwendeln, dearly-loved wife of Sq. Ldr. W. H. de Warrenne Waller, R.A.F., youngest daughter of the late J. H. Lambert, of Redmount, Co. Galway.

Forthcoming Marriages.

GREIG—DEAN.—The engagement is announced between Flt. Lt. D. D'A. A. Greig, D.F.C., A.F.C., R.A.F., and Miss Lorna Elaine Dean, only daughter of the late the Rev. C. G G. Dean and Mrs. Dean, of Bexhill-on-Sea.

HOPE—BALFOUR.—The engagement is announced between Flt. Lt. Eustace Jack Linton Hope, A.F.C., R.A.F., son of the late Major Linton Hope and Mrs. Hope, of Kingshotts, Fernhurst, Sussex, and Evelyn Hope, second daughter of Sir Arthur and Lady Balfour, of Ropes, Fernhurst, Sussex, and Riverdale Grange, Sheffield.

THOMPSON—HILL.—The marriage between Flt. Lt. D. R. W. Thompson and Aileen, daughter of Mrs. Seymour Hill, Park House, Southwell, and the late Rev. J. Seymour Hill, will take place on Oct. 1.

Marriage.

BATEMAN—JOAKIM.—On Sept. 23, in London, Captain Philip Bateman, late London Irish and R.A.F., only son of Mrs. H. Bateman, 36, Cadogan Gardens, and Maisie, elder daughter of Mr. M. Joakim, of Grosvenor House, and Rangoon, Burma.

Births.

FELL.—On Sept. 21, at 48, De Vere Gardens, to Mollie, wife of Lieut.-Colonel L. F. R. Fell—a son.

SANDERS.—On Sept. 17, at 7, Airlie Gardens, W.8, to Mary (née Olivier), wife of Sq. Ldr. A. P. Martyn Sanders, R.A.F.—a daughter.

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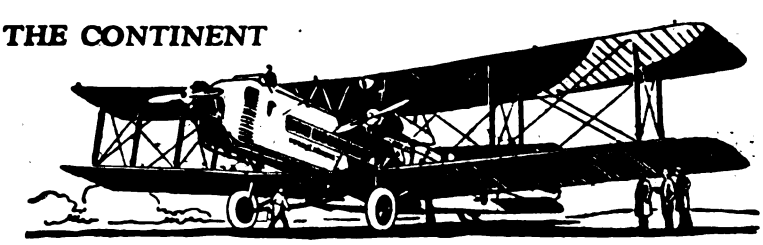

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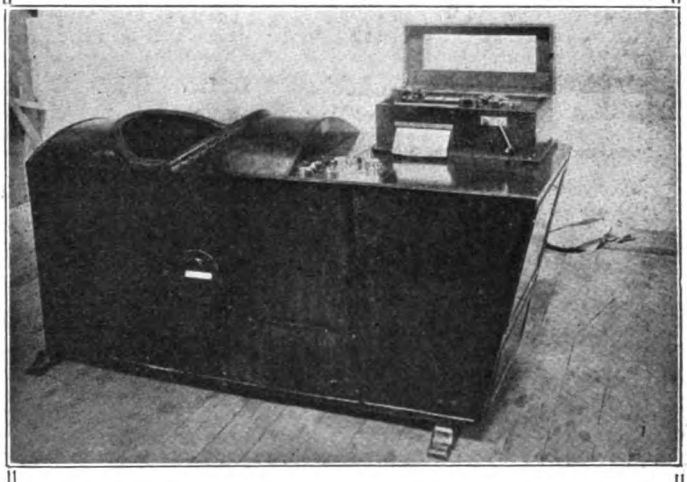

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OCT 17 1929

THE AEROPLANE

6d. Weekly.

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C.G.Grey

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THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXXVII No. 14.

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ON GETTING BACK TO WORK.—III.

The Trend of the Trade.

Rather an interesting position is growing up in the Aircraft Trade along lines which older and bigger trades have followed in the past. That is the growth of a clear division between "old" firms and "new" firms.

The Society of British Aircraft Constructors consists of about twenty firms. And apparently one of the objects of the Society is to prevent anybody else from penetrating into that group which were the pioneers of the Industry.

It is not exactly a price-upholding ring. That is not possible, because, as already explained, you cannot get Anglo-Saxons to co-operate, and so a price-upholding ring can only be formed by first forming a Trust—and that can only be done when there are many big firms whose shares can be bought on the Stock Exchange. But its policy is definitely to prevent outside firms from getting into the sacred circle of contractors to His Majesty's Air Ministry.

Originally the Society was formed by manufacturers of war-machines. Most of them at one time or another since the War 1914-18 have made some sort of an attempt to make civil aeroplanes, but almost all of them have been so busy with their war machines that they have never made a civil aeroplane as an economic proposition.

The De Havilland Company alone have practically scrapped the making of war machines, although they made the best in the world of their own types, and they have concentrated on the production of sporting and transport vehicles.

Some of the other firms have taken to making light aeroplanes. A. V. Roe & Co. Ltd. and Blackburns have made quite a success of the Avian and the Bluebird, and the Westland people made a remarkable success of the Widgeon, but they have chosen to give it up in favour of their small three-engined machine. A. V. Roe & Co., Ltd., have also, under the far-sighted policy of Mr. J. D. Siddeley, taken on making Fokker machines in large and small sizes. But many of the firms inside the S.B.A.C. do not make light aeroplanes or civil aircraft of any kind.

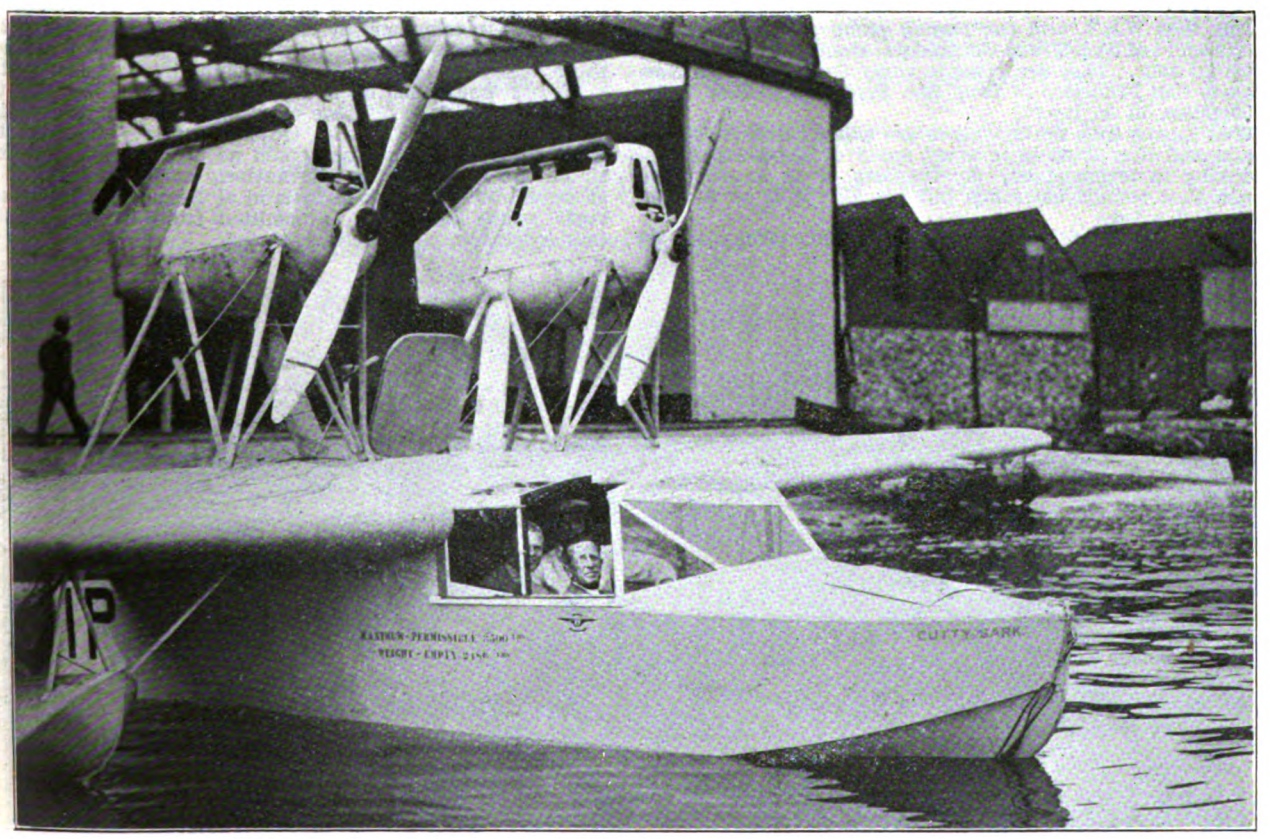
The British Aircraft Trade To-day.

The result is that we have now arrived at the very interesting point at which, if you count up all the firms in this country (including the little firms which are just starting, very often with small capital, but with a good deal more capital at the back of them if they want it, and including those which are more or less sporting gambles, though they are run by men who are quite capable of making as

---

**"I AM NEVER KNOWN TO QUAIL
AT THE FURY OF A GALE
AND I'M NEVER, NEVER SICK AT SEA."**

(Sir W. S. Gilbert—*H.M.S. Pinafore.*)



THE LATEST FLYING-BOAT.—The Saunders-Roe Cutty Sark (two Cirrus-Hermes engines) in which Sir Sefton Brancker, Director of Civil Aviation, who is seen sitting in the pilot's seat, flew to La Baule Seaplane Meeting on Sept. 14. He was piloted by Flg. Off. C. E. Chilton, R.A.F., of the Marine Aircraft Experimental Establishment, Felixstowe.

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good an aeroplane as the older firms can make) you find to your surprise that there are more firms in this country making light aeroplanes or civil aeroplanes and not making war machines, than there are making war machines and not making light aeroplanes or civil machines.

In fact if you count up all the firms which have been registered as limited companies to make aeroplanes, as well as the partnerships which are actually engaged in building experimental aeroplanes with the intention of developing into regular manufacturing firms if their experimental machines are successful, you find that there are definitely more aircraft-constructing firms outside of the S.B.A.C. than there are in it.

The result of the growing up of all these new firms which are designing and constructing civil aircraft must in the end be a distinct improvement in the performance of our civil aircraft. Sooner or later somebody is bound to produce a commercial aircraft which is able to earn its own keep without a subsidy.

The American Pay-Way.

In America air-lines are paying like anything without any subsidies. Just at first on the Trans-Continental Air Mail Route, when the Post Office gave up running its own machines and let the transport of mails out to contract, the contractors were paid at a rate over and above the value of the mails they carried, which did amount in practice to a subsidy. But now the slight supercharge on letters sent by air mail not only pays for their transport, but actually leaves the Post Office a profit over and above what the Post Office pays to the air mail contractors.

In spite of the Post Office cutting the rate at which they are paying the contractors for carrying the mails, one of the contractors wrote the other day and said that they were making so much money that they felt they ought to be in jail.

That is simply the result of using economic aeroplanes, and of telling the World that air transport of mails is worth while, and of delivering the goods when you have got them to convey.

Now the mail contractors themselves realise that they have got to go on doing better and better. Mr. C. M. Keys, when he was here the other day, doubted the correspondent who said that he was making huge profits on air mails. But he did admit that his own great line, National Air Transport Inc., which runs the night mail between Chicago and New York, and runs the trans-Continental through mail over the same route (the other side of the Continent is covered by the Boeing group), was doing quite well on that route and on its various branches to the Southward from Chicago and New York.

The improvement which Mr. Keys mentioned is very simply that N.A.T. and the Boeing group are going to put up the speed of their Trans-Continental mail machines to 150 miles an hour. They are going to carry the mails from New York to San Francisco or from San Francisco to New York, 3,000 miles, in 20 hours.

That means that the machines are going to cruise at 150 m.p.h. and they must have a top speed of about 175 m.p.h. Thinking in terms of our air crawlers of 80 m.p.h. or 90 m.p.h. that sounds alarming, but actually it is as easy as falling off a log.

Any Lockheed with a Pratt and Whitney Wasp of 450 h.p. cruises at 150 m.p.h., and with an N.A.C.A. cowling over the engine it cruises at about 170 m.p.h. Consequently you can load that machine down with mail and it will still cruise quite happily at well over 150 m.p.h.

Ground Organisation.

But even with these machines and reliable engines, C. M. Keys is just as keen as he was when he first acquired Colonel Paul Henderson from the U.S. Post Office as his air-line organiser, on having perfect ground organisation. His method is shown in the action of Trans-Continental Air Transport Inc., commonly known as T.A.T., when one of their Ford tri-motors with six passengers on board crashed into a mountain-top in a storm and killed everybody on board.

T.A.T. promptly stopped the whole of their services, in spite of the fact that, although they had only started on July 8, they had carried over 1,500 passengers and had covered over 250,000 miles on the Trans-Continental route without an accident.

This route is the famous rail- and air route run in connection with the Pennsylvania Railroad. Passengers start from New York by rail at night, cover the middle stretch next day by air, spend the next night in the train and arrive at San Francisco the following evening, thus crossing the Continent in 48 hours without any strain at all instead of taking about five days by rail.

Just because of that one accident T.A.T. stopped their service till they had made a thorough investigation of its cause. And then, having proved that there was nothing the matter with the aeroplane, they went on again with renewed confidence. But when Mr. Keys was over here he foreshadowed some of the ways in which even such accidents as that may be prevented in future. And his group are all out to spend money on perfecting their ground organisation to prevent such accidents.

Which is quite diametrically opposed to our method of humbugging ourselves into a belief in infallible engines and infallible aircraft, and leaving the ground organisation and the ground regulation to look after itself. Our two recent unfortunate accidents proved quite definitely that we do nearly all our flying "hanging on our props," as the pilots say, without worrying how a machine is going to get down in between aerodromes which may be a hundred, or two or three hundred, miles apart and without worrying very much which route it follows to get there so long as it keeps on time.

Looking Backward.

Years and years ago suggestions were made in The Aeroplane that about half-a-dozen observers should be posted at intervals along the Calais-Paris air route whose duty would be simply to telephone by the ordinary land-wires at intervals to St. Inglevert saying where there was fog and where there was low cloud. This would have assured that machines would not be flying blind through fog near the coast when they could have clear air twenty or thirty miles inland, and would not be trapped by low cloud on the Beauvais Ridge when they could go over it and find clear air on the Paris side, or alternatively could go round it, or at worst could be warned to land at Beauvais. These messages would have been transmitted from St. Inglevert to Croydon before the machine started.

FOR THE THIRD ROUTE.—Sir Philip Sassoon's Gipsy-Moth which has just been delivered to its owner by the De Havilland Aircraft Co. Ltd. Sir Philip, who is Chairman of the Royal Aero Club, has just been apppointed to command No. 601 (County of London) Squadron, R.A.F.—(*"Aeroplane" photograph.*)

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British Triumphs in the Air, on Land and Sea

1918 A Napier-engined D.H. aeroplane climbed to a height of 30,500 feet in 66 minutes. At this time no human being had ever soared so high.

1921 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 163·4 m.p.h.

1922 A Napier-engined Supermarine flying-boat regained the Schneider Trophy for Great Britain at a speed of 149 m.p.h.

1922 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 180 m.p.h.

1923 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 192.4 m.p.h.

1926 The first non-stop crossing of South Atlantic Ocean carried out by Commandante Franco flying a Dornier flying-boat with two Napier engines.

1927 Schneider Trophy won by a Napier-engined Supermarine-Napier seaplane flown by Flight-Lieut. S. N. Webster, A.F.C. Speed 281.669 m.p.h.

1928 Capt. H. S. Broad, flying D.H. Hound, fitted with Napier engine, secured three World's speed records whilst carrying loads of 500 and 1,000 kilogrammes.

1928 The greatest formation flight ever carried out was made with four Supermarine-Napier Southampton flying-boats, each fitted with two Napier engines. The machines flew from England to Australia, round Australia and back to Singapore, covering 180,800 engine miles without mechanical trouble.

1929 The first non-stop flight from England to India was carried out with a Fairey monoplane fitted with Napier engine. 4,130 miles in 50 hrs. 38 mins.

* * * *

1929 The highest speed ever attained on land was made by Major Sir Henry Segrave when he drove his Irving-Napier car over one mile at the amazing speed of 231.36 m.p.h.
Capt. Malcolm Campbell set up world's land speed records at Verneuk Pan with his Napier Arrol-Aster as follows :—over 5 miles, speed 211 m.p.h.; over 5 kilometres, speed 216.53 m.p.h. They both used Napier engines.

* * * *

1929 The world's motor-boat speed championship was won at Miami by Major Sir Henry Segrave, driving Sir Charles Wakefield's Napier-engined "Miss England."
Sir Henry Segrave at the Lido with the same boat made six runs over the measured mile, averaging a speed of 92.8 m.p.h.
At this meeting, competing against the best from Italy and America, Sir Henry Segrave won all trophies including the Duke of Piedmont's cup and Count Volpi's cup.

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The finest aero engine in the World

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This was in the days before wireless on aircraft, and when there were three competing English lines to Paris, besides the French lines. But neither our Department of Civil Aviation, which was then under Sir Frederick Sykes, nor the French Air Authorities, nor the air lines themselves, would do anything about it.

The whole cost would not have been more than about £20 a week, but rather than spend that amount of money on proper ground organisation the air lines kept on hanging on their props and trusting to luck. The result was that the whole route between Calais and Paris was marked by the wrecks of machines which had been forced to land by bad weather, and the Beauvais Ridge itself was described as bristling with the tails of machines which had stuck their noses down through the trees.

Even allowing that the machines used in those days were mostly obsolete war machines and not worth much, there must have been £20,000 or £30,000 worth of machines wrecked simply to save the expenditure of a thousand or a couple of thousand pounds a year. And we still go on in that same fool way, except that we now have wireless.

The Modern Way.

Trans-Continental Air Transport and National Air Transport are laying out a regular scheme of ground organisation to make flying possible at any time of the day or night and in any kind of weather, barring perhaps a full blizzard.

They are making elaborate experiments to find out whether a radio beacon is better than directional wireless.

The radio beacon, which tells the pilot by means of two little white vibrating fingers on his instrument board whether he is to the left or the right of his direct line, is an almost infallible guide, but it has the disadvantage that it pulls the pilot straight through fog areas, storms, and everything else. It is a beautiful thing in fine weather, but it has its disadvantages in bad weather.

The other idea is to have a perfect system of ground stations for weather observation all along the route, and well on each side of it, so that the machines may be directed by wireless which way to go to avoid the fog areas or storm areas which may be about at that particular time.

This means that in effect the Americans are considering not only direction-finding wireless but direction-giving wireless.

Collating the weather reports every few minutes from a wide belt of country all along a route of a thousand miles at a time, keeping tab on where the various machines are on that route, keeping in touch with them and telling them where to go, and so forth, all sounds frightfully elaborate. But as a matter of fact it is only a natural development of the work that is done every day and all day long in the train-despatching departments of any properly organised railway.

Such an elaboration of ground organisation and ground control would simply horrify any of our air line people, who, thanks to lack of financial enterprise in this country, have to rub along on inadequate capital just as Queen Elizabeth's sea captains had to man and equip their fleets without any financial support from her.—And our air lines cannot even practise piracy on the High Seas as an additional source of revenue as our sailor-men did.

Night-Flying.

By the way, there was one rather interesting minor point made by Mr. Keys in discussing the air line business. Having described the 150-mile-an-hour postal machines for the trans-Continental route, he said that there was no sense in using these high-speed machines on the Chicago-New York Night Mail service.

All business letters at either city are posted before 19.00 hours, and nobody wants them next morning before 09.00 hours, so the Night Mail has fourteen hours in which to cover about 1,000 miles and allow time for handling at each end. Consequently the old machines which have averaged their 100 miles an hour for the last six years are still quite good enough for that job.

But that principle means economy on any night mail line, even with the most modern aircraft, because whatever developments happen, we shall always have to pay for speed. We may not have to pay as highly for speed as we do at present. But when we have reduced our power-to-load cost to the lowest possible figure we shall always be able to carry a big load flying slowly at the same cost as a light load flying very fast.

This is a very good argument for the establishment of a comfortable slow-flying night mail line between London and Berlin, cruising at say 125 or 130 m.p.h. If our people in this country will not consider it, no doubt the Luft Hansa people will have such a line at work in a year or so from now.

Radio versus Light.

All this development of air-mail and passenger flying in the States is producing a rather interesting argument on the relative merits of wireless beacons and light beacons.

In course of time, no doubt, what with television and such things, although we shall not be able to see through fog by mere penetration, we shall be able to receive pictures of the aerodromes ahead of us transmitted through fog.

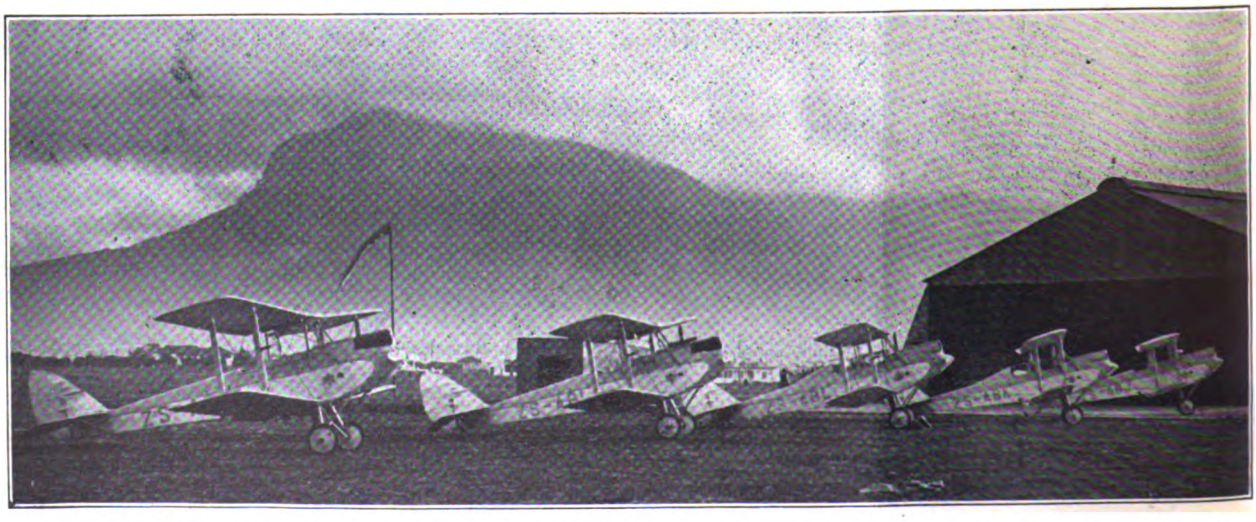
Even now, with fixed radio-beacons to give the proper fixed line for an air route, and swinging radio-beams, like the beams of a lighthouse, to let pilots know the direction of any particular radio-beacon, wherever they may be, we are already very nearly as far advanced in the indication of direction by radio as we are by light. Consequently sooner or later there is going to be a very nice little war in aerodrome equipment between the lighting people and the radio people. Lighthouses can do wonderful things in clear air, but a very small patch of fog puts them out of action.

Chicago's Latest.

One of the most interesting things in the way of lighthouses is a beacon which is being put up as a gift to aviation by Mr. Elmer Sperry, of the Sperry Gyroscope Company, on the top of the Palmolive Building in Chicago. One forgets how high the Palmolive Building is, but it is one of Chicago's efforts to out-Woolworth Woolworth, and to make the Eiffel Tower look like a tooth-pick. Whether it runs to 1,000 feet or more matters very little, the point is that it is away up above normal lake fogs.

The beacon has two billions of candle power, with something very special in lenses, and the makers claim that it has a range of 500 miles. Admitting that it has, the quaint situation arises that such a range is useless for most of its length and much of its time.

A friend of The Aeroplane in Chicago has worked out that if the beam, even from its immense height, is arranged so as to pass as a tangent to the curve of the Earth's surface at about 1,000 feet, most of the other end of the beam will be quite unusable, because it will disappear into the air at a height which no aeroplane will ever reach. At 300 miles the beam will be at 39,000 feet.



MOTH MAIL CARRIERS.—Five Gipsy Moths, three with a mail compartment in place of the front seat, and two with coupé heads, belonging to Union Airways Ltd., of South Africa. This company is in receipt of a subsidy from the Union Government for the transport of mails between Cape Town, Port Elizabeth, Bloemfontein and Johannesburg, and also between Port Elizabeth, East London and Durban.

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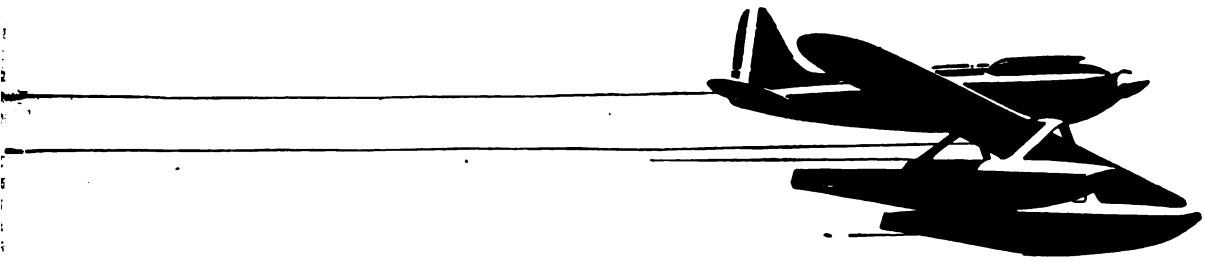

THE WORLD'S SPEED RECORD
BROKEN AT 357·7 MILES PER HOUR
OVER THE 3 KM. STRAIGHT LINE COURSE
(SUBJECT TO HOMOLOGATION BY F.A.I.)

In addition to being fitted to the winning aircraft of the 1929 Schneider Trophy race the machine on which Squadron Leader Orlebar broke the World's speed record was fitted with a

FAIREY
METAL
AIRSCREW
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In the last five races for the Schneider Trophy, the winning aircraft have been fitted with this type of airscrew

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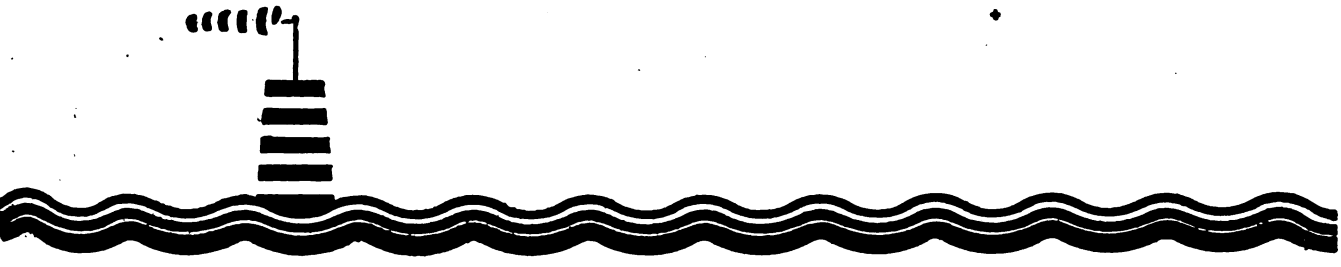

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All the same, this Sperry beacon must be quite a nice light, for our Chicago friend says that a pilot took a machine up into the beam and was able to read ordinary newspaper print by it at a distance of fifty miles. Imagine being able to read at Brighton by the light of a beam from the Crystal Palace.

Obviously the fallacy of this enormous light is that although it is superior to low fogs owing to its height it is well up among low clouds. And therefore it can only be useful on quite clear nights.

Fog Penetration.

There is, however, a statement going about that the Sperry people have been trying some very interesting experiments with the penetration of light through fog. Lieut. Doolittle, of the U.S. Army Air Corps, one of America's best and most daring pilots, has been doing quite a great deal of research work, including much dangerous flying in fog, to discover what can be done in the way of making light penetrate so as to make landings possible in fog. The Sperry firm are coupling with it beams from radio-beacons, and fog altimeter using super-sonic (that is to say inaudible) sound-waves, up around 27,000 cycles, past even the range of a cat's ear.

There is a story in America that a good deal of this "ex-Sperry-menting," as some funny fellow called it, has been done by the Sperry Company's London Office, where the observers found that a covered van in the street which was invisible from the third floor when stationary could easily be seen from the sixth or eighth floor when moving. Personally one believes that this is a pure American invention, because as a matter of fact we do not have fogs in this country of such density.

At any rate, anybody relying on our fogs for such an experiment might have to wait a couple of years for a suitable one. The last time one saw a really good fog was going into New York down the Hudson River from Cleveland.

The idea is to develop a combination of radio-beacons and the super-sonic sounder. Between air-ports the pilot will fly on the regional beacon, and, when he reaches his port, will pick up a purely local beacon casting a beam along the run-way.

The super-sonic indicator, which, Mr. Sperry says, can be calibrated to inches, will bring the pilot down to within thirty feet. And after that he will have what Mr. Sperry calls the "barber's pole" effect of the ground rushing past below him, to give him the signal to flatten out and land.

Meantime the various lighting people are doing their best to penetrate fogs. But unless somebody makes some fresh discovery in optics they may find themselves left out in the cold altogether by these radio beams which work just as well in clear weather as in thick, but seem to prefer fogs. Things rather look as if unless our lighthouse manufacturers bestir their tame scientists they will find themselves in very much the same boat as the carriage-making industry did when motor-cars came along.

Our Air-Park Issue.

This subject of the organising of air routes and the laying out of aerodromes and lighting and so forth is quite one of the most important subjects of the present day. Consequently there is good reason for devoting particular attention to it just now, while people have time to think and make arrangements for the real flying season next year, when there is certainly going to be an enormous boom in flying.

Therefore the management of The Aeroplane have decided to bring out on October 23 a special Air-Park Issue of The Aeroplane, with the idea of providing people who are interested in organising air-parks with the kind of information that they will want in the near future.

Hitherto our idea of an aerodrome has been a field with a shed or two on one side of it, with luck, a petrol pump near the sheds. Croydon Aerodrome just happened. It was certainly not designed. Otherwise the sheds would never have been arranged as they are, so that if a machine is wanted out of the back of a shed everything in front of it has to be moved before it can be got out. No more intelligence was shown in designing Croydon Aerodrome than has been shown in designing the average motor garage of to-day, which is still built on the lines of a rather inefficient mediæval coach-house.

The only proper aerodrome in this country which started as an open piece of land and was built up as an aerodrome *ad hoc*, is the Air Park at Heston, and probably by now, even though it is not yet finished by a very long way, one hopes, the proprietors, Messrs. Norman and Muntz, have discovered a dozen ways in which they would have made it different if they had started at the beginning with their present experience.

Nevertheless the fact remains that it is the best laid-out arrangement of aerodrome buildings for the purposes of Civil Aviation in this country, and it might well serve as a model for the designs of the various civil aerodromes which will ere long be started in this country.

Sir Alan Cobham's Crusade.

With very little attention from the London newspapers but with an enormous amount of support from the local newspapers wherever he has been, Sir Alan Cobham has spent all this Summer journeying from one city or big town in England to another, spreading the Gospel of Aviation and inducing the various city councils and other authorities to take an interest in the immediate need for municipal aerodromes. At every city or town he has taken up the Mayor and the Corporation and the Borough Surveyor and the City Engineer and other officials of importance so as to let them see their own home towns from above. And in making these flights over and over again around the same town or city Sir Alan has himself learned an immense amount about how to select the best spot for an aerodrome.

Only the other day he told one that what appears to be the most obvious site for an aerodrome is almost always the wrong site when you come to take all the needs of the town and of an ideal aerodrome into consideration. He said that quite often the best place for an aerodrome has turned out to be in about the last place where you would think of looking for it at the start.

Realising this need for municipal aerodromes all over the country, and to back it up as strongly as possible the fine work that Sir Alan has been doing, the Special Air-Park Issue of The Aeroplane will be devoted to all those subjects which will be of value to the municipalities, or even the small towns, which are thinking of starting aerodromes, either on a scale suitable to a great city or to comparatively small townships in the British Dominions Overseas.

Some Contents.

Sir Alan Cobham has kindly consented to write an article for The Aeroplane on "How to Choose an Aerodrome." As already stated his experience of the past six months has given him, in spite of all his years of experience, some quite new views on this subject.

Messrs. Norman and Muntz of the Heston Air Park have promised to contribute an article on "The Laying Out of an Aerodrome," giving some of their experiences in the organisation of the Heston Aerodrome. Also one gathers that their experience will be at the disposal of anybody who may be laying out an aerodrome in the future. Certainly after all the work they have done they, or rather their firm, Airwork Ltd., are entitled to rank as first-class aerodrome engineers.

Arrangements are also being made with Mr. A. C. M. Jackaman of Slough, perhaps better known at present as a brilliant pilot than he is in his true rôle as an unusually competent building contractor, to contribute an article on "How to Put Up Aerodrome Buildings." The "Social Focus" and the "Arch of Ctesiphon" at Heston are outstanding examples of how thoroughly good building can be done by British workmen in record time.

In addition this Air-Park Issue will contain a mass of information gathered from American publications,—seeing that in America there are a dozen fully-equipped air-parks for every empty landing ground that we have in this country.

Aviation is going ahead at such a rate throughout the British Empire that the information in this Air-Park Issue may ultimately prove to be of even greater value in the Dominions Overseas than it will be in this country. But the immediate business will certainly be done in this country.

With that end in view the Air-Park Issue of The Aeroplane will be placed in the hands of every Lord Mayor, Mayor, City Surveyor, Borough Surveyor, and Municipal Engineer of every town of importance in this country. And it will go likewise to the chief officials of every township of importance, where flying is likely to develop, in the British Empire.

This will be The Aeroplane's first contribution of the new Season towards putting the development of Civil Aviation next year on a sound basis.—C. G. G.

A NEW PRIZE FOR AVIATION.

During the last fortnight the Supermarine-Rolls-Royce S.6 and the Schneider Trophy have been on exhibition in *The Evening World* Pavilion at the North-East Coast Exhibition, Newcastle-upon-Tyne.

The Evening World is presenting the Lord Mayor of Newcastle, Alderman A. W. Lambert, with a sum of about £1,575 for the provision of an Aviation Trophy to be competed for annually. This sum will be the money obtained as receipts for admission to the Pavilion after deducting the costs of moving and exhibiting the machine.

The Evening World is the latest production of the Northcliffe organisation and is now being published in Newcastle-upon-Tyne and Bristol.

The presentation of the above Trophy is sufficient proof that the interest shown in Aviation by the late Lord Northcliffe is not being allowed to lapse.

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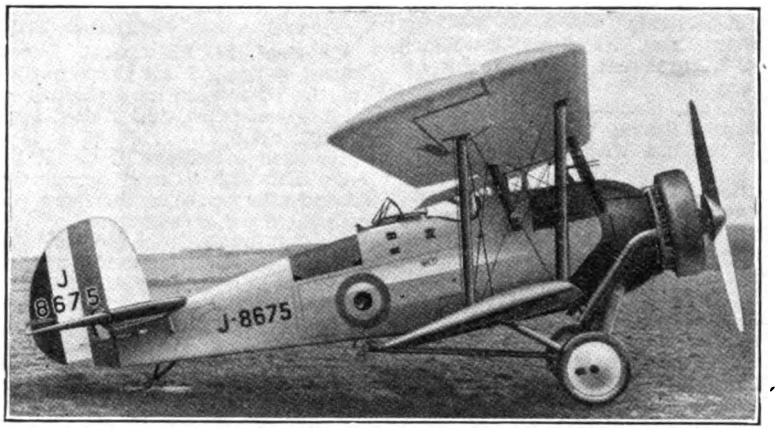
ARMSTRONG WHITWORTH
AIRCRAFT



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It is the standard Army Co-operation two-seater of the Royal Air Force.

Its steel construction accounts for its unrivalled durability and ease of maintenance. Fitted with the world-famous Armstrong Siddeley Jaguar engine (plain or geared type), its speed, climb and ceiling fulfil the severest Service requirements. It is produced on the grand scale by the best equipped aircraft works in Europe.

PERFORMANCE FIGURES

ATLAS WITH JAGUAR ENGINE AND TOWNEND RING

Fuel, 75 gallons (337 litres). Oil, 7 gallons (32 litres). Military Load, 880 lbs. (400 kgs.)

	Plain Engine.	Geared Engine
Approx. total weight	4000 lbs.	4115 lbs.
	1820 kgs.	1870 kgs.
Speed at ground level	143.5 m.p.h.	149 m.p.h.
	231 km.p.h.	240 km.p.h.
" " 5000 ft	139.5 m.p.h.	145 m.p.h.
" " 10000 ft	134 m.p.h.	140 m.p.h.
" " 15000 ft.	125 m.p.h.	131 m.p.h.
" " 1000 metres	226 km.p.h.	236 km.p.h.
" " 3000 metres	216 km.p.h.	225 km.p.h.
" " 5000 metres	193 km.p.h.	204 km.p.h.

	Plain Engine.	Geared Engine.
Time to 5000 ft.	5.25 minutes	4.25 minutes
" " 10000 ft.	12.5 "	10.5 "
" " 15000 ft.	26 "	21.75 "
" " 1000 mtrs.	3.5 "	2.5 "
" " 3000 "	12.5 "	10.25 "
" " 5000 "	34 "	27.5 "
Absolute Ceiling	19000 ft.	19100 ft.
	5800 metres	5830 metres
Service Ceiling	17300 ft.	17700 ft.
	5280 metres	5400 metres

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THE INTERNATIONAL SAFE AIRCRAFT COMPETITION.

Nine new entries have been received by The Daniel Guggenheim Fund for the Promotion of Aeronautics for the International Safe Aircraft Competition, making a total entry list of twenty-five, of which three are from Great Britain.

The new entries, all of whom are American manufacturers, are as follows:—

Gates Aircraft Corporation, New York City.—American manufacturers of Belgian R.S.V. aircraft. Gates R.S.V. Mono-biplane, two-seat, open-cockpit biplane, designed for training and sport purposes. Renard five-cylinder air-cooled radial engine.

Taylor Brothers Aircraft Corporation, Bradford, Pa.—A high wing, two-seat, side-by-side cabin monoplane with variable incidence. Kinner K-5 engine.

Command-Aire, Inc., Little Rock, Arkansas.—Standard production model, Type 5-C-3, three-seat, open cockpit biplane. Curtiss Challenger engine.

Ford-Leigh Safety Wing, Inc., Jackson Heights, Long Island.—Two-seat, open cockpit biplane, with Leigh Safety Wing device. Curtiss OX-5 engine with Kirkham valve gear.

Moth Aircraft Corporation, Lowell, Mass.—American manufacturers of the De Havilland Moth. Two-seat, open cockpit biplane and fitted with Handley Page automatic auxiliary airfoils. D.H. Gipsy engine.

John H. Wiggins Co., Inc., Tulsa, Okla.—Two/four-seat, open cockpit biplane with special flaps and slot design. Wright J-6 5-cylinder radial engine.

V. J. Burnelli, Keyport, New Jersey.—Two-seat, twin-engined monoplane with variable camber-wing. Four-wheeled landing gear with special tyres and brakes. Two American Cirrus Mark III engines, with ability to fly on either engine.

Bourdon Aircraft Corporation, Hillsgrove, R.I.—Three-seat, open cockpit biplane, Model B-4. Kinner K-5B engine.

Whittelsey Manufacturing Co., Inc., Bridgeport, Conn.—A modified Whittelsey Avian two-seat, open cockpit biplane, fitted with Handley Page slots. Cirrus Hermes engine.

Those entries previously accepted are:—

United States.—Heraclio Alfaro, Brunner-Winkle Aircraft Corp., Cosmic Aircraft Corp., Cunningham-Hall Aircraft Corp., Curtiss Aeroplane and Motor Co., Inc., Dare Airplane Co., Fleet Aircraft, Inc., Charles Ward Hall, Inc., J. S. McDonnell, Jr. and Associates, Pitcairn-Cierva Autogiro Co., Rocheville Aircraft Corp., and Schroeder-Wentworth Associates.

Great Britain.—Handley-Page, Ltd., The Gloster Aircraft Co., Ltd., and the Cierva Autogiro Company.

Italy.—The Societa Italiana Ernesto Breda of Milan.

Five further applications for entrance have been submitted, but as yet the specifications are inadequate. With this exception, the entry list is closed. Competitors have up to Oct. 31 for the presentation of their entries at Mitchel Field, Long Island, N.Y. Two of the three British entries, the Cierva Autogiro and the Handley Page biplane, which is irreverently known as the "Gugnunc," have already left this country.

THE SPRIGHTLY FUNGUS.

There has been a conference of mycologists in London. Mycologists are people who specialise in the habits of fungi and other similar growths. The interesting point about the conference is the fact disclosed by some of the delegates that aircraft have been used to obtain certain data.

A disease of wheat known as rust causes an average loss in Canada of £5,000,000 a year. This disease is due to fungi. Fungi are propagated by the diffusion of spores, and in order to trace these spores, gelatine-covered slides carried on aeroplanes were exposed at different altitudes. By such means these spores were found to be coming from the south. Spores had been trapped at 10,000 feet.

Another delegate said that he had found living organisms 15,840 feet above the earth.

BLIND FLYING.

On Sept. 24, Lieutenant Doolittle, who is temporarily loaned by the U.S. Air Corps to the Daniel Guggenheim Fund for the Promotion of Aeronautics, took-off, flew a distance of fourteen miles, and landed again at the point of take-off flying "blind."

He used a two-seat Consolidated biplane and sat in the back seat with a hood completely covering the cockpit. A second pilot occupied the front cockpit who could take over control in an emergency.

Lieutenant Doolittle took off and flew five miles along the path of a radio beacon and returned along the same path. He then flew two miles further and returned to make a perfect landing at the place from which he started.

The instruments which made this flight possible are stated to be a new gyroscopic compass, an extremely sensitive altimeter, an artificial horizon, and the two-reed wireless-beacon receiver.

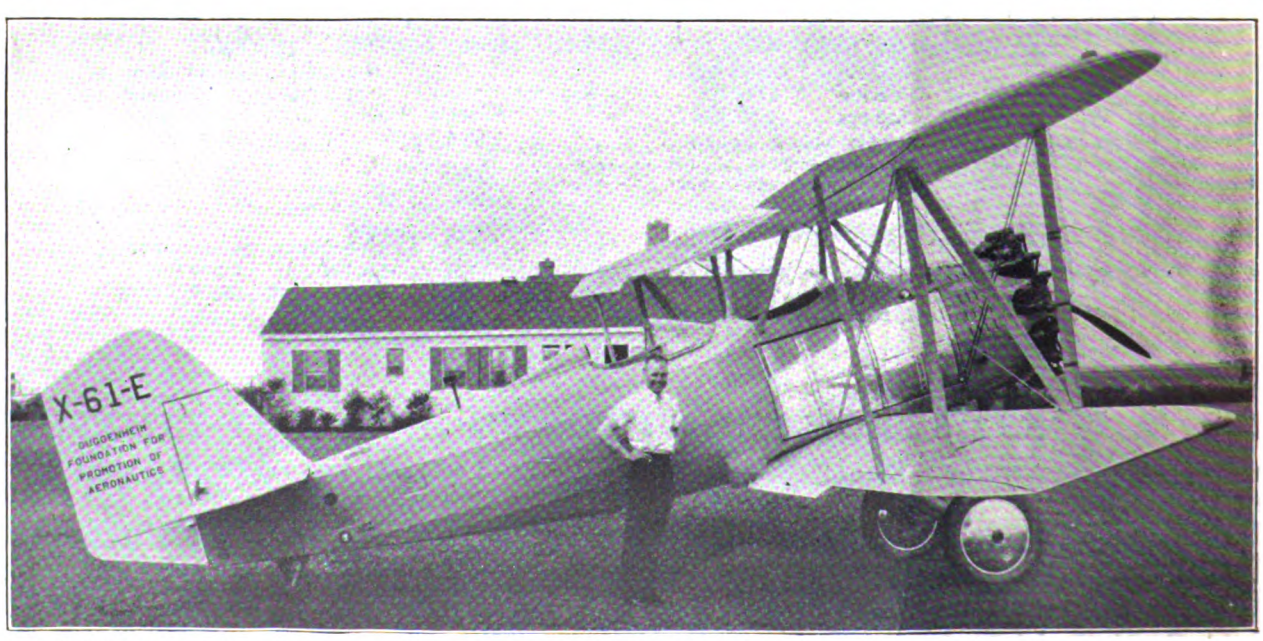
The artificial horizon is probably similar to our "turn indicator," though the American instrument is stated to show whether the nose of the aeroplane is up or down. The two-reed wireless-beacon receiver was described in The Aeroplane of Dec. 26, 1928.

This instrument has two vibrating reeds, the ends of which are free to vibrate side-by-side in an opening in the cover. When the machine is heading directly towards or directly away from the beacon the reeds vibrate with the same amplitude. Should the aeroplane deviate either way from its path towards the beacon, one or other of the reeds will vibrate with greater amplitude and the other with less.

The following cable relative to the above has been received by Major R. H. Mayo, British representative of the Daniel Guggenheim Fund for the Promotion of Aeronautics, from Mr. Harry F. Guggenheim, President of the Fund.

As a result of tests successfully conducted this morning at Mitchel Field I take pleasure in informing you that the Daniel Guggenheim Fund for the Promotion of Aeronautics is able to report a solution of the hitherto unsolved last phase in the problem of flying through fog. In conditions representing the densest fog, flying in a covered cockpit and guided entirely by his instruments Lieutenant J. H. Doolittle conducting the experiments was able to take off from the airport, fly from it, return to a given spot and make a landing. It is significant that the achievement is realised through the aid of only three instruments which are not already the standard equipment of any airplane.

Harry F. Guggenheim.



PRACTICAL RESEARCH.—Lieut. J. H. Doolittle standing in front of the Vought Corsair biplane (Pratt and Whitney Wasp engine) which is used by the Guggenheim Foundation for the Promotion of Aeronautics in their fog or "blind" flying experiments.

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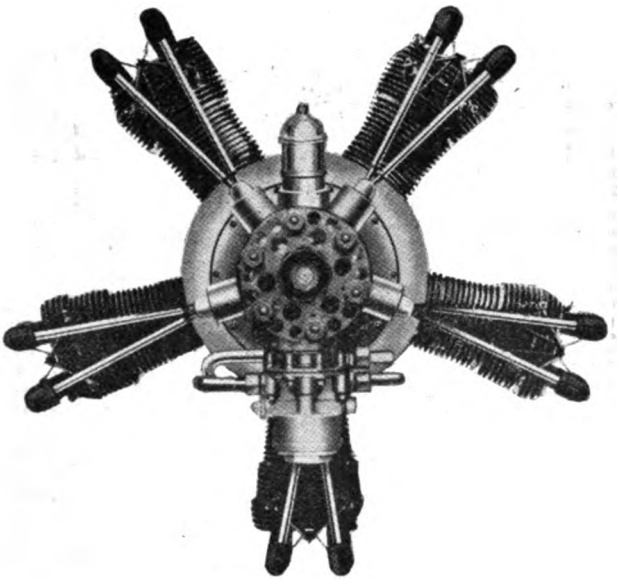
A New Armstrong Siddeley Engine —the GENET MAJOR



Front view showing the enclosed Valve Gear and streamline rocker covers.

THE 100-110 h.p. Genet Major represents the results of ten years' continuous progress in the design and manufacture of air cooled radial engines. It embraces many of the most successful features of the latest Jaguar, Lynx and Mongoose engines and is specially suitable for powering light aircraft and multi-engined aeroplanes.

LEADING FEATURES:

5 cylinders 4.25" or 108 mm. x 4.5" or 114.3 mm. 319 cubic inches or 5.23 litres. Compression ratio 5.23 to 1. Normal r.p.m. 2200. Rated normal B.H.P. at sea level 100, actual 103. Maximum B.H.P. at sea level 110. Weight complete with two magnetos, carburettor, air intake, propeller hub and tachometer drive 250 lbs. or 113.5 k.g. Overall measurements: diameter 38" or .95 m., length 36.2" or .905 m.

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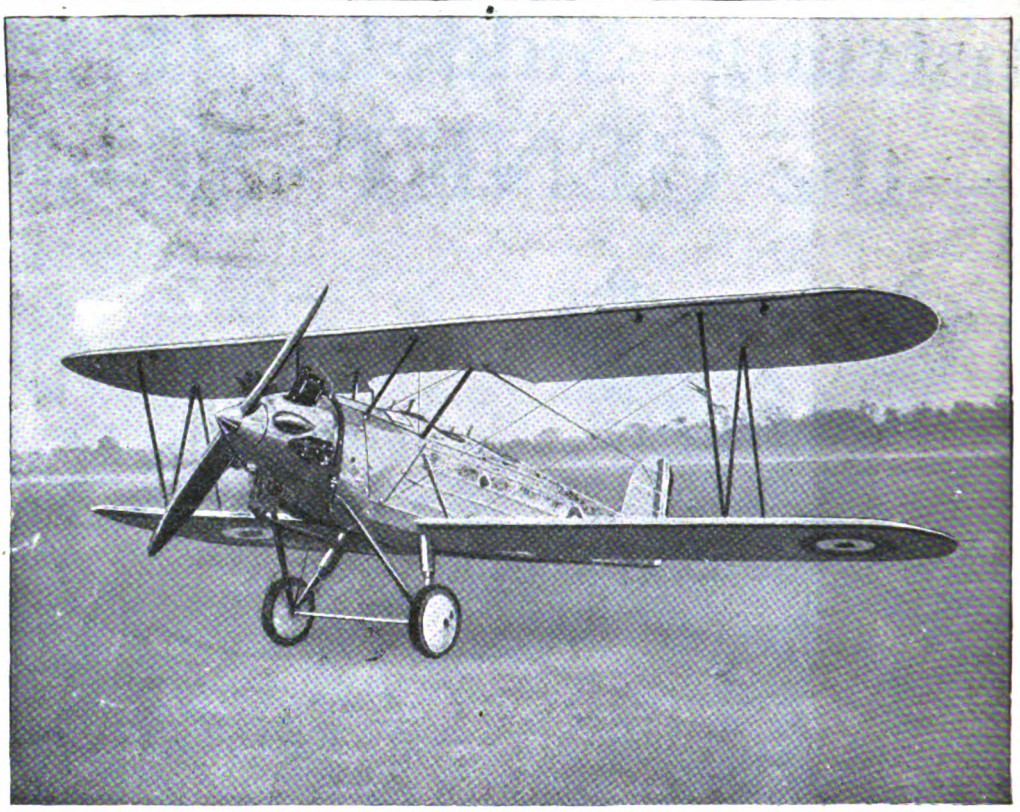

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D.16

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THE ROYAL AIR FORCE.

The London Gazette.

September 24.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—The following are granted S.S. comns. as Plt. Offs. on probation with effect from and with seniority of Sept. 13:—H. C. Adams, S. H. Bell, D. P. A. Boitel-Gill, J. C. L. Bruce, R. R. Chapman, L. E. Chiswell, G. B. S. Coleman, C. R. Davies, J. Ll. M. Davys, S. W. H. Egan, G. Egerton-Hine, T. N. Fraser, J. S. Hamilton, C. J. Hansford, J. N. Hepworth, L. M. Hooper, R. G. Hosken, N. C. Hyde, B. N. Matson, L. R. Mouatt, E. E. Noddings, R. C. Parker, I. N. Roome, K. N. Sayers, G. D. Seabourn, M. W. Simons, S. D. Slocum, J. A. MacD. Teacher, H. J. Ward, C. A. Washer, H. J. Wilson.

Plt. Off. on probation A. J. P. Groom is confirmed in rank (Aug. 15); Plt. Off. R. V. Redpath is promoted to the rank of Flg. Off. (Sept. 2); Plt. Off. H. J. Cross is promoted to the rank of Flg. Off. (Jan. 18) (substituted for the notification in the *Gazette* of Aug. 20).

The following Flg. Offs. are transferred to the Reserve, Class A:—E. C. G. Badcock (Sept. 20); H. C. Macphail (Sept. 22).

Flg. Off. C. H. G. Bremridge resigns his perm. comn. (Sept. 17); Plt. Off. on probation A. C. Baber resigns his S.S. comn. (Sept. 17); the S.S. comn. of Plt. Off. on probation A. R. Armstrong is terminated on cessation of duty (Sept. 21).

ACCOUNTANT BRANCH.—Plt. Off. on probation H. A. Frost is confirmed in rank and promoted to the rank of Flg. Off. (Sept. 9).

CHAPLAINS BRANCH.—The Rev. D. F. Blackburn is promoted to the rank of Wing Cdr. (Aug. 16); the Rev. F. W. Hilborn relinquishes his S.S. comn. on transfer to the Army (Sept. 12).

LEGAL BRANCH.—Flt. Lt. G. S. Marshall, O.B.E., is granted the acting rank of Sq. Ldr. with pay and allowances in Class B.B. (Army) rates, whilst employed as Deputy Judge Advocate-General, Middle East Command (Aug. 9).

MEMORANDA.—The permission granted to Sec. Lt. A. B. Whiteley to retain his rank is withdrawn on his conviction by the Civil Power (July 10). The permission granted to Lt. E. W. Carmichael to retain his rank is withdrawn on his enlistment in the Supplementary Reserve (Aug. 20).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—G. S. Ogilvie is granted a comn. in Class A.A. (i) as a Plt. Off. on probation (Sept. 9).

Flg. Off. C. H. G. Bremridge is granted a comn. in this rank in Class C on resignation to his perm. comn. in the R.A.F. (Sept. 17).

The following Plt. Offs. are promoted to the rank of Flg. Off.:—W. E. Hampton, P. G. Philcox (Sept. 19); L. C. Williams (Sept. 20). Flg. Off. T. H. Finney is transferred from Class A to Class C (May 30). The following relinquish their comns. on completion of service:—Flt. Lt. C. F. Briggs (Sept. 20); Flg. Off. C. H. Bird (Sept. 15); Plt. Off. V. P. Field (Sept. 7) (substituted for the notification in the *Gazette* of Sept. 10).

Flg. Off. G. G. Williams is removed from the Service (Sept. 11).

Appointments.

Week ending Sept. 30.

GENERAL DUTIES BRANCH.—Wing Commander F. W. Stent, M.C., to R.A.F. Depot, Uxbridge, on transfer to Home Establishment, 27/8.

Squadron Leader H. W. Woollett, D.S.O., M.C., to Station H.Q., Manston, 17/9.

Flight Lieutenants K. B. Lloyd, A.F.C., to 204 Sq., Mount Batten, 13/9. H. M. Mellor, to No. 3 Sq., Upavon, 13/9. C. P. Brown, D.F.C., to H.Q., 'Iraq Command, 28/8.

Flying Officers C. H. Hockly, to No. 6 Sqdn., 'Iraq, 2/9. F. G. Fairhead, to No. 6 Sqdn., 'Iraq, 19/8. S. R. Groom, to H.Q., Wessex Bombing Area, Andover, 12/9. R. A. Chignell, to Andover Communication Flight, 12/9. G. Wood, to R.A.F. Depot, Uxbridge, 16/9.

Pilot Officers E. C. Granville, G. F. P. O'Farrell, to No. 12 Sqdn., Andover, 2/9. R. I. Johnson, T. E. Whittome, to No. 100 Sqdn., Bicester, 2/9. The undermentioned Plt. Offs. are posted to the R.A.F. Depot, Uxbridge, on appointment to S.S. Comns. with effect from 13/9. H. G. Adams, S. H. Bell, D. P. A. Boitel-Gill, J. C. L. Bruce, R. R. Chapman, L. E. Chiswell, G. B. S. Coleman, C. R. Davies, J. L. M. Davys, S. W. H. Egan, G. Egerton-Hine, T. N. Fraser, J. S. Hamilton, C J. Hansford, J. N Hepworth, L. M. Hooper, R. G. Hosken, N C. Hyde, B. N. Matson, L. R. Mouatt, E. E. Noddings, R. C. Parker, K. N. Sayers, G. D. Seabourn, M. W. Simons, S. D. Slocum, J. A. MacD. Teacher, H. J. Ward, C. A. Washer, H. J. Wilson, I. N. Roome

MEDICAL BRANCH.—Squadron Leader G. H. H. Maxwell, M.B., to No. 3 F.T.S., Gantham, 30/9.

Flight Lieutenant V. S. Ewing, M.B., to No. 1 School of T.T. (Apprentices), 7/9.

Flying Officer R. E. Alderson, M.B., to Princess Mary's R.A.F. Hospital, Halton, 12/9.

STORES BRANCH.—Flying Officer F. R. Lines, to Station H.Q., Hawkinge, 22/9.

The Prince of Wales's Pilot.

Mr. Edward Hadley Fielden, A.F.C., Reserve of Air Force Officers has been appointed pilot to H.R.H. the Prince of Wales, K.G. Mr. Fielden will pilot the new D.H. Moth which has just been bought by His Royal Highness.

The Prince of Wales will continue to use the Service Wapiti maintained for his use by No. 24 (Communication) Squadron, R.A.F., for transport to official functions.

Mr. Fielden entered the R.A.F. with a short service commission in January, 1924, and after a course of flying instruction at No. 2 Flying Training School, Digby, was posted to No. 25 (Fighter) Squadron, Hawkinge. In July, 1925, he was posted to No. 23 (Fighter) Squadron, Henlow. In September, 1926, he was posted to the Duxford Station Flight. He was placed on the Reserve in January, 1929.

No. 601 (County of London) Squadron.

Sir Philip A. G. D. Sassoon, Bart., G.B.E., C.M.G., M.P., formerly Under-Secretary of State for Air, has been appointed to command No. 601 (County of London) (Bomber) Squadron, Auxiliary Air Force.

No. 601 (County of London) Squadron was commanded from its formation in August, 1925, by Sq. Ldr. the Lord Edward Grosvenor, who died on Aug. 26, 1929.

No. 33 (Bomber) Squadron.

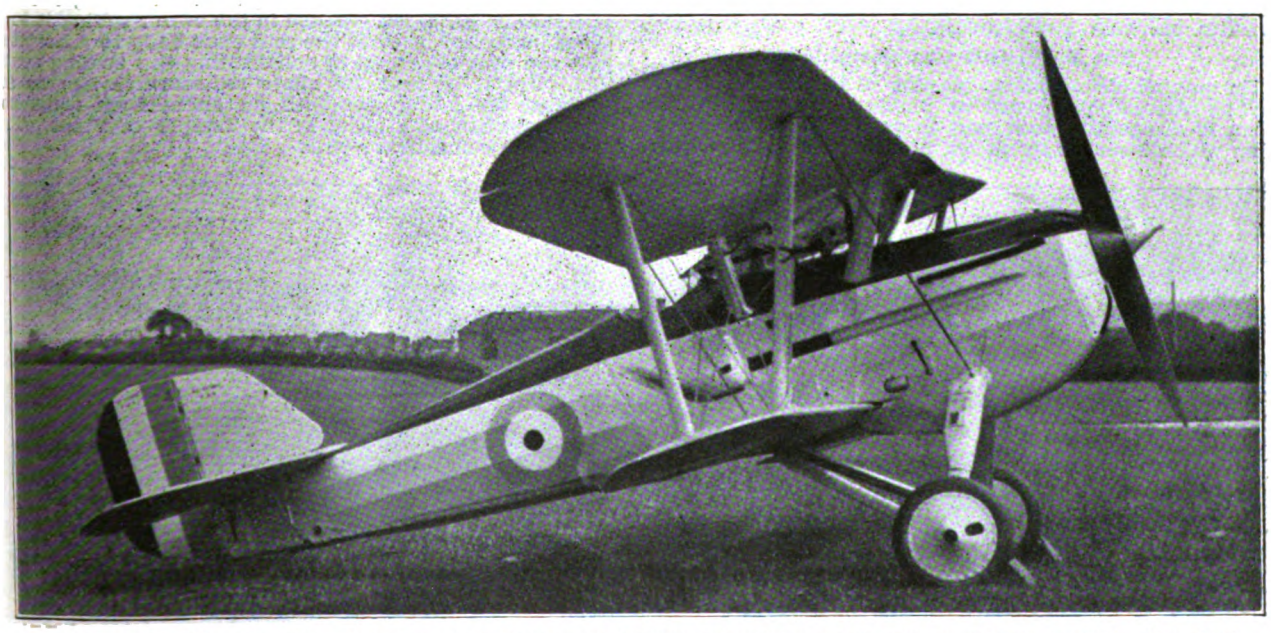
No. 33 (Bomber) Squadron, R.A.F. moved from Eastchurch to Netheravon on Sept. 14, 1929.

The permanent station of No. 33 (Bomber) Squadron, which is one of the Squadrons which has been formed this year to replace the two Squadrons transferred to India, is at Netheravon.

No. 33 (Bomber) Squadron is equipped with Hawker Horsleys, and is commanded by Sq. Ldr. F. P. Don.

A Fatal Accident.

The Air Ministry regrets to announce that as the result of an accident near Grantham to an Atlas machine of No. 3 Flying Training School, Grantham, on Sept. 23, 364690 L-AC. Ernest George Pritchard Lane, was killed and Flt. Lt. Reginald Pyne, D.F.C., the pilot of the aircraft, was dangerously injured.



FROM VECTIS.—The Saunders-Roe A-10 single-seat fighter ship-plane (Rolls-Royce F-XIS engine), the first landplane of its type produced by the well-known producers of marine aircraft.

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The Lafferty Cup Competition.

The Royal Air Force College, Cranwell, has been invited to compete in the Lafferty Cup Competition. This competition consists of the 1½ mile relay race, one mile race, high jump and 50 yards swim.

In previous years the Competition has been between the R.M.A., Woolwich, the R.M.C., Sandhurst, the R.M.C., Duntroon, Australia, and the R.M.C., Kingston, Canada.

The events have been run off by Cranwell who are now awaiting comparison with the other Colleges.

British Pilots for the Hedjaz.

The Daily Telegraph of Sept. 27 states:—

King Ibn Saud is now negotiating for the engagement of six British pilots to form the nucleus of an Air Force in the Hedjaz.

Various proposals have been under consideration at different times during the past four years for the engagement of pilots who have completed their service in the R.A.F., says Reuter. For some time King Ibn Saud, it is understood, has been anxious to make use of British material and to employ British pilots, but up till now the terms of the contract offered have not proved altogether satisfactory.

If the present negotiations are successful and the contract terms approved, it is probable that the chosen pilots will leave England shortly to take up their new duties.

The Royal Aeronautical Society, Halton Branch.

A meeting of the Council of the Halton Branch of the Royal Aeronautical Society was held on July 10 when the following Aircraft Apprentices were elected as Students:—H. G. Buck, R. E. Drake, H. B. Sherman, C. Williamson.

Between 400 and 500 Members of the Branch attended the two excursions to Gosport for the Schneider Trophy Contest.

Owing to the passing out of the 14th Entry, six new members are required for the Committee from No. 1 Wing.

The total membership of the Branch is now nearly 1,000 as 480 new members joined in June and July.

The President of the Branch is Air Cmdre. I. M. Bonham-Carter, C.B., O.B.E., and the Hon. Secretary and Treasurer is Mr. C. H. Latimer-Needham, M.Sc., F.R.Ae.S.

The R.A.F. Rugby Union.

The 1929-30 Committee of the R.A.F. Rugby Union has been formed under the chairmanship of Air Commodore A. D. Warrington-Morris, C.M.G., O.B.E., who is also the R.A.F. Representative on the Rugby Union Committee.

The Treasurer is again Wing Cdr. W. C. Hicks, A.F.C. The new Secretary is Flt. Lt. James Lawson, R.A.F., Worthy Down.

Flg. Off. G. R. Beamish will again act as Captain of the team, with Flt. Lt. R. V. M. Odbert as Vice-Captain.

The Representative of the Northern Units is Flt. Lt. J. S. Chick, M.C., A.F.C., and the Representative of the Southern Units is Flt. Lt. J. Lawson.

The match against the Royal Navy will be played at Twickenham on Feb. 8 and the match against the Army at Twickenham on Mar. 22.

The fixtures for the 1929-30 season are:—

Jan. 4, The Police, at Imber Court. Jan. 18, Bristol, at Bristol. Jan. 22, Cambridge University, at Cambridge. Jan. 25, Northampton, at Northampton. Jan. 30, Leicester, at Leicester.

Feb. 1, Bedford, at Bedford. Feb. 8, Royal Navy, at Twickenham. Feb. 12, Middlesex. Feb. 26, Oxford University, at Halton.

March 8, Coventry, at Coventry. March 12, Civil Service, at Halton. March 22, The Army, at Twickenham.

The R.A.F. Golf Championship.

The annual championship meeting of the R.A.F. Officers' Golfing Association opened at Sunningdale, on Sept. 24, when 22 competitors took part in the 36 holes stroke test from which 8 qualify for match play for the championship.

The leader at the end of the day's play was Sq. Ldr. C. H. Hayward, who has won the championship six times. His score of 148 led the field by 13 strokes.

Those who qualified were:—

Sq. Ldr. C. H. Hayward Old 76, +New 72, =Total 148; Flt. Lt. Davidson 78, +83, = 161; Flg. Off. Campbell 82, +82, =164; Sq. Ldr. Barr-Sim 82, +84, =166; Sq. Ldr. Brown 88, +86, =174; Grp. Capt. Briggs 90, +85, =175; Sq. Ldr. Parr 88, +87, =175; Flt. Lt. McFadyen 86, +91, =177.

Grp. Capt. the Prince of Wales on Monday won the nine holes second division handicap with a return of 45 — 6 = 39.

The results were:—

R.A.F. Championship.—First Round.—Flg. Off. Campbell beat Flt. Lt. McFadyen by 7 and 6; Sq. Ldr. C. H. Hayward beat Flt. Lt. Davidson at the 19th hole; Sq. Ldr. C. V. Parr beat Sq. Ldr. Barr-Sim at the 19th hole; Grp. Capt. E. L. Briggs beat Sq. Ldr. A. J. Brown by 2 and 1. *Second Round.*—Hayward beat Campbell at the 19th hole. Parr beat Briggs by 2 up.

36 *Holes Scratch.*—Sq. Ldr. C. H. Hayward, 76+72=148.

18 *Holes Scratch.*—Grp. Capt. Peel Ross, 80.

36 *Holes Handicap.—First Division.*—Flt. Lt. C. R. Davidson (6), 149 net. *Second Division.*—Grp. Capt. Burnett (18), 161 net.

18 *Holes Handicap.—First Division.*—Sq. Ldr. A. Lees, 80 — 8=72. *Second Division.*—Grp. Capt. Burnett, 96 — 18=78. 9 *Holes: First Division.*—Flg. Off. Campbell, 38 — 3=35. *Second Division.*—Grp. Capt. the Prince of Wales, 45 — 6=39.

Bogey.—First Division.—Wing Cdr. Gaskell Blackburn (10), 2 up, after a tie with Flt. Lt. Davidson (6). *Second Division.*—Flg. Off. Harris (15), 2 down.

The championship was won for the seventh time by Sq. Ldr. C. H. Hayward, who beat Sq. Ldr. Parr by 7 up and 6 to play in the 36 holes final.

The results were:—

Championship.—Final.—Sq. Ldr. C. H. Hayward beat Sq. Ldr. Parr, 7 and 6.

Scratch.—Sq. Ldr. Hayward, 77.

Handicap.—1st Division.—Sq. Ldr. Barr-Sim, 78, scr., and Sq. Ldr. Fawcus, 78, scr., tied. *2nd Division.*—Flg. Off. Harris, 87 less 15—72; the Prince of Wales, 87 less 12—75. 9 *holes: 1st Division.*—Flt. Lt. McFadyen, 37 less 3—34. *2nd Division.*—Flg. Off. Harris, 39 less 7½—31½. The Prince of Wales, 42 less 6—36.

Bogey Fourball Competition.—Sq. Ldr. Brown and Flt. Lt. Mackay tied with Flt. Lt. McFadyen and Flt. Lt. Bett, 7 up.

Medal Foursomes.—The Prince of Wales and Sq. Ldr. D. S. Don, 89 less 14—75; Sq. Ldr. Fawcus and Sq. Ldr. Lees, 81 less 4—77.

The Penalty of Fame.

The latest addition to Madame Tussaud's is a waxen effigy of Flg. Off. H. R. D. Waghorn, A.F.C., R.A.F. For the edification of the unknowing it may be said that Madame Tussaud's is a permanent exhibition of waxworks perpetuating the fame of all well-known personalities, be they Makers of History, Builders of Empire, or Murderers of Mankind.

Coupled with this event may be taken the strange disappearance from the upper lip of one of the personalities of a well-known producer of high-speed aircraft a moustache of a singularly becoming type. Although of recent growth it proved amenable to discipline and rapidly took on the shape that is now regarded as one of the strongest qualifications for entry into the most exclusive branch of the British Army. Rumour had it that domestic opposition, coupled with the undesirability of wearing such a military accessory with marine headgear, resulted in the owner selling it to the above institution, such as one sells one's body to a hospital—with the ultimate object of enlightening the coming generation. Can it be that the above self-sacrifice has so soon provided the late owner with an anonymous right to a minute portion of a niche in the Temple of Fame. Truly a peculiar coincidence.—L. B.

THE HANDLEY PAGE HARE.—A high performance day bomber with a Bristol Jupiter geared engine.
("Aeroplane" photograph.)

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Extract from Melbourne Evening Paper, 20.8.29.

EFFICIENT LIGHT ENGINE.

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After 500 hours' flying service, the cylinders and bearings were in excellent condition and piston heads showed hardly a trace of carbon.

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Extract from Capt. The Hon. H. Grosvenor's letter.

"By the way, I had my CIRRUS II down the other day for the first time since its trip round Australia, since when it has had a fair amount of work, and we were amazed at its condition.

"The Bearings are still almost on the tight side and impossible to touch, and bar a few Rocker Arm Bushes it is as good as new. I will in all probability fit new Rings though."

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AIR DEFENCE.

[*Air Defence.* By Major-General E. B. Ashmore. Longmans, Green and Co. The Aeroplane Book Dept., Cannon House, Pilgrim Street, E.C.4. 8s. 6d. net.]

When the Great War began each of the great Powers possessed flying services, the most elaborate of which was that of Germany. She had 232 aeroplanes, all of them of advanced types. The knowledge of the existence of these machines and of the scheme of rapid development adopted by the German Government did not induce the British authorities to make any serious preparations to resist air attack in the case of war and in August, 1914, a system of air defence had to be improvised from the few inefficient aeroplanes left in the country and from a few guns specially unsuitable for their new purpose. Two ammunition stores were guarded by 6 in. howitzers, "a most unsuitable weapon for air defence." Major-General Ashmore's description of the defence in this early period is pathetically amusing. There were guns which drove about the streets during a raid, searchlights which revealed vulnerable points and helped neither pilots nor guns and there were a few relatively inefficient aeroplanes which were taken up casually by the pilots and not in conformity with any general scheme of air defence.

Nothing effective was done until the War Office undertook, in the spring of 1916, the responsibility for air defence. Thenceforward progress was fairly rapid. A proper warning system was devised and guns suitable for air defence were installed. Cordons of observers were set up over the greater part of the country. These cordons were at first manned by soldiers who, by reason of wounds or ill-health, were unfit for service in the field. General Ashmore is a little unjust to these early observers whom, he thinks, failed from inadequate supervision. When he organised the London Air Defence Area in 1917 the cordons had been greatly reduced for reasons of economy, but they still provided the most accurate of the information received always excepting that which came direct from gun and light stations.

General Ashmore describes clearly and simply the development of the air defences and the manner in which they overcame the raiding airships. This menace once ended there was some relaxation in the defence system. The lack of aeroplanes oversea caused the withdrawal of many machines employed on home defence and the number of guns ordered for anti-aircraft work was reduced by the seizure of nearly half the number by the Admiralty. But the principal deficiency was a lack of fighting organisation. There were no proper patrol areas for aircraft and in their search for the enemy they were exposed to the fire of the anti-aircraft guns. Thus when the first aeroplane raids were made in May, June and July the enemy pilots had a relatively easy task. In the raid of June 13, 1917, there were 594 casualties, "far the largest in any individual raid during the war, the nearest approach being the 286 killed and wounded in the 25th May attack on Folkestone." "The great principle of air defence was not yet sufficiently recognised: that although aeroplanes are the first means of defence, they are ineffective unless supported by a control system on the ground."

As a result of popular clamour the London Air Defence Area was brought into being at the end of July, 1917, and for the first time there was definite unity in the defence system. The A.A. branch of the Headquarter Staff, Home Forces, were loath to relinquish their powers. General Ashmore says:—

> For instance, I had ideas of my own as to the best place for the mobile anti-aircraft guns outside London, and I settled to move them accordingly. The anti-aircraft branch of the staff considered that they could not prevent me moving the guns as I wished, but they proposed to checkmate me by refusing to provide the necessary telephone communications for the new positions. Again during the raid of August 22, the guns had used a new method of observing height and controlling fire. It was to a great extent due to this method that such excellent results were obtained. The Headquarter Staff thereupon asked me by whose authority I had dared to introduce such a novelty. The answer was, "By my authority." But I was able to add that the method had been invented and practised under their own auspices before I arrived. When the night raiding began, and we devised the barrage system—that afterwards became an essential factor in the defence—I was forbidden to use it.

But with the support of Lord French these difficulties were soon overcome and the groundwork of the organisation which survives, in the main, to this day was speedily laid down. There was the introduction of night flying on scouts, an introduction for which Major Murlis-Green, Lieutenant C. C. Banks and Captain Brand were responsible. The earlier idea had been to use Handley Pages, singularly unsuitable machines for the purpose. The balloon aprons—each of three Cacqout balloons linked to a cable from which depended a series of wire streamers—served to keep the enemy at a respectful height and so narrowed the zone in which our pilots had to work. Proper patrol areas were arranged and surrounding London there was a barrier of guns each employing a newly-devised system of box barrages. There was, moreover, a well-co-ordinated system of central control which, however, did not repress the initiative of the subordinate commanders. The section of the book in which these developments are described has special interest as they were the sources of the system at present in use.

We know the results of the reorganisation. Serious raiding stopped after May, 1918, which was a pity as a further development of the control system was never tested under warlike conditions. After the Armistice had ended hostilities the air defence system was allowed to fall to pieces in spite of the protests of those who knew what reconstruction at a later date would cost and it was not until 1924 that there was any revival of official interest in air defence. General Ashmore would like the Air Ministry to take over complete control of all units engaged in air defence. He sees a "fundamental weakness" in the divided responsibility between the War Office and Air Ministry. He thinks that the Territorial ground units engaged in air defence should be handed over to the Air Ministry and be administered as are the Territorial squadrons of the Royal Air Force. He speaks warningly of the present deficiency in communications. "So far we have only made a beginning; perhaps a fifth of the Observer Corps communications and one-tenth of the searchlight communications; none at all as yet at gun stations." These communications cannot be improvised hastily. In regard to the future he has no belief in counter-bombing as a means of defence. He says:—

> . . . . are we to wait until London has been bombed before we launch our counter-bombing offensive-defensive? It must be remembered that in air attack the maximum strength can be developed at the outset; this first blow on London may be on a vast scale. How long will it take our counter-bombing to produce its effect, and stop the attacks on London. Weeks, certainly; months, perhaps. The enemy's aerodromes will presumably be known to us, but what if he is cunning enough to arrange new jumping-off places, prepared beforehand in secret? They may not be easy to find. No! London would suffer terribly, perhaps intolerably, long before any counter-bombing could save her.

So far General Ashmore's book is the only work of value in the matter of air defence. He might have written at twice the length with advantage. An unofficial textbook is necessary and had there been less compression in "Air Defence" it might have filled the gap. As it is General Ashmore has made an interesting addition to the history and the theory of air defence.—W.

A PILLAR OF CLOUD BY DAY.

The Berlin correspondent of *The Times* reports the extensive trials at Travemünde on Sept. 17 of smoke-screens as a means of defence against attacks from the air.

The tests, which were observed from the air by seven machines including the Rohrbach Romar (which is certainly acquiring publicity nowadays), were announced to be entirely satisfactory.

That may be, but R/T and W/T have been developed intensively of late years. As a result blindly-flown aircraft can be guided by R/T or W/T right onto their target and told to drop their lethal bouquets.

One also knows, on good authority, that the French have succeeded in despatching a wirelessly-controlled aeroplane with no crew aboard from an aerodrome. This machine was guided to its destination, and its bombs were dropped in that vicinity by wireless control, and the machine was then brought safely home. As a matter of fact the bombs were dropped a mile wide of the mark, still the Zeppelins did no better during 1914-18.

Also, passengers on the Cairo-Karachi route have stories of a crewless, wirelessly-controlled machine, which has done a large amount of flying over Arabia.

Furthermore smoke-screens are just as useful for blinding the defence as they are for blinding the attack.

THE NEXT EXAMINATION FOR AIR NAVIGATORS.

Air Ministry Notice to Airmen No. 57 of the year 1929 states that the examination for 1st and 2nd Class Air Navigators' Licences will be held at the Air Ministry, Gwydyr House, Whitehall, on Monday, Tuesday and Wednesday, Oct. 14 to 16, 1929. An examination for 2nd Class Licences only will be held on the same date at the office of the Air Ministry Representative, Heliopolis Aerodrome, Cairo.

Candidates for the 1st Class licence will also be required to attend at Croydon Aerodrome on Thursday, Oct. 17, 1929, for a practical examination in meteorology.

The fees remain at 5s. for both classes of candidates.

Application forms, syllabi, and conditions of examination can be obtained on application to the Secretary, Air Ministry (C.A.2), Gwydyr House, Whitehall, S.W.1.

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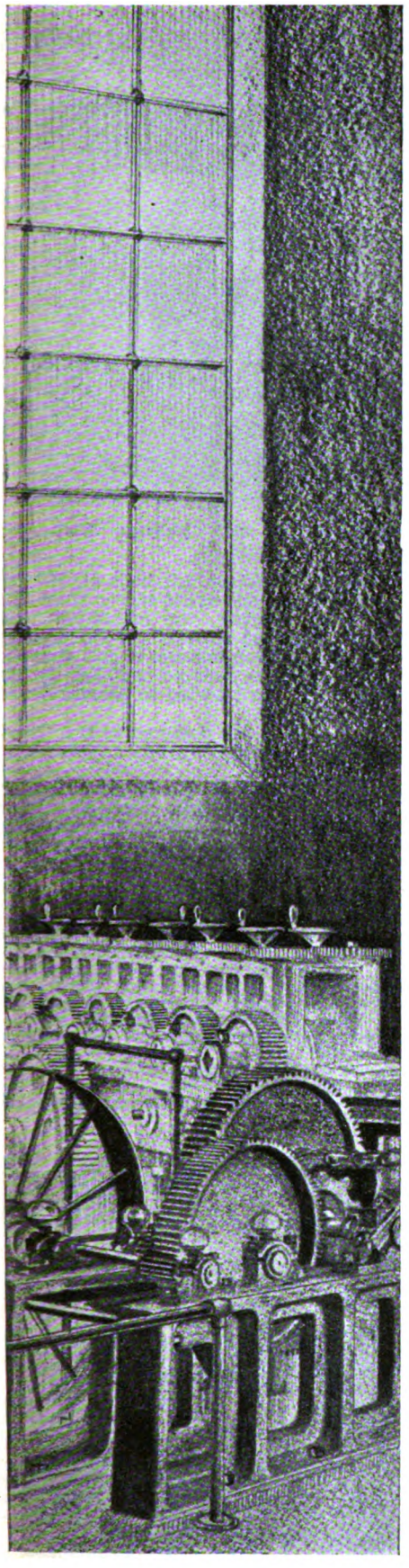

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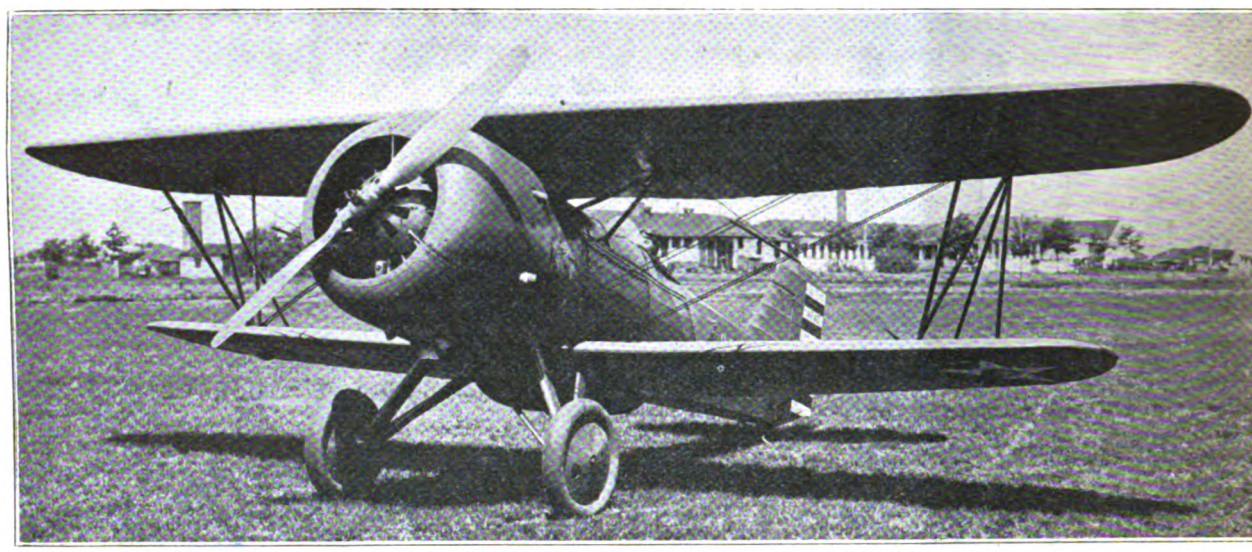
SOME RECENT AMERICAN SERVICE AIRCRAFT.



AIR-COOLED.—The Curtiss Hawk (XP-3A) single-seat fighter biplane (425 h.p. Pratt and Whitney Wasp engine) with the new N.A.C.A. cowling.

The accompanying photographs illustrate several types of recent American fighter aircraft.

The Curtiss Hawk (P1-C) is one of the two standard single-seat fighters of the U.S. Air Corps. The other is the Boeing PW-9, which is also fitted with the Curtiss D-12 water-cooled engine. These are the only two types of pursuit-aircraft with water-cooled engines now in standard use in the American Services.

The Curtiss XP-3A is an experimental Army type with the 475 h.p. Pratt and Whitney Wasp air-cooled radial engine and the new N.A.C.A. low-drag cowling. No performance figures of this type are available, but judging from the photograph it would appear that what advantage might be gained in speed would be destroyed by the lack of good visibility forward, one of the most important qualities of the single-seat fighter.

With the advent of ethylene-glycol cooling-fluid, commonly called "Prestone," which enables the radiator surface to be reduced to one-fourth the size required for normal water-cooling, the water-cooled engine becomes again a rival to the air-cooled engine in-so-far as frontal area is concerned.

In addition to the fact that the radiator resistance is cut to a fraction of its former value, something like 100 lbs. is saved in weight, and the speed of the machine is increased by as much as 11 or 12 m.p.h. By the use of small wing radiators in place of the one-fourth size frontal radiator the speed is increased by 15 m.p.h.

In tests with a Curtiss Hawk fitted with a Curtiss D-12 engine and using "Prestone" fluid (which boils at 387 degrees Fahrenheit) in a radiator somewhat larger than the computations indicated as necessary, the maximum temperature of the cooling liquid was recorded as 270 degrees Fahrenheit. This occurred after ten minutes of full throttle operation at 2,000 ft. The machine, relieved of 90 lbs. weight of radiator and cooling liquid, was reported to possess better flying qualities than previously.

The Curtiss F7C-1 and XF8C-2 are designed to U.S. Navy specifications for single- and two-seat ship-board fighters respectively.

The Hall XFH-1 is also a single-seat ship-board fighter, but this machine embodies a watertight fuselage and a droppable undercarriage to enable the machine to alight in the sea without total loss. This idea follows the French precedent for ship-board aircraft, as developed principally by the Levasseur Company.

The Curtiss P1-C "Hawk."

Type.—Single-seat military pursuit biplane.

Wings.—Single-bay, staggered, unequal-span biplane. The wings are tapered in plan form and are built up of wooden spars and ribs, covered with fabric. One set of "N" type splayed-out streamline steel-tube interplane struts on either side of the fuselage. Ailerons fitted to top plane only and are of metal construction, covered with fabric. Ailerons operated through positive push-pull rods, adjustable to permit of various degrees of differential or synchronous aileron motion.

Fuselage.—Welded steel-tube structure, covered with fabric.

Tail Unit.—Normal type. Metal framed, covered with fabric. Tail controls are cable-operated, with a differential action incorporated in the elevator controls.

WATER-COOLED.—The Curtiss Hawk (P-1C) single-seat fighter biplane (435 h.p. Curtiss D-12 engine) which is one of the standard pursuit biplanes of the U.S. Army Air Corps.

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The plugs that helped

GREAT BRITAIN

WIN THE

SCHNEIDER TROPHY

at the highest speed ever attained

were

LODGE

PLUGS

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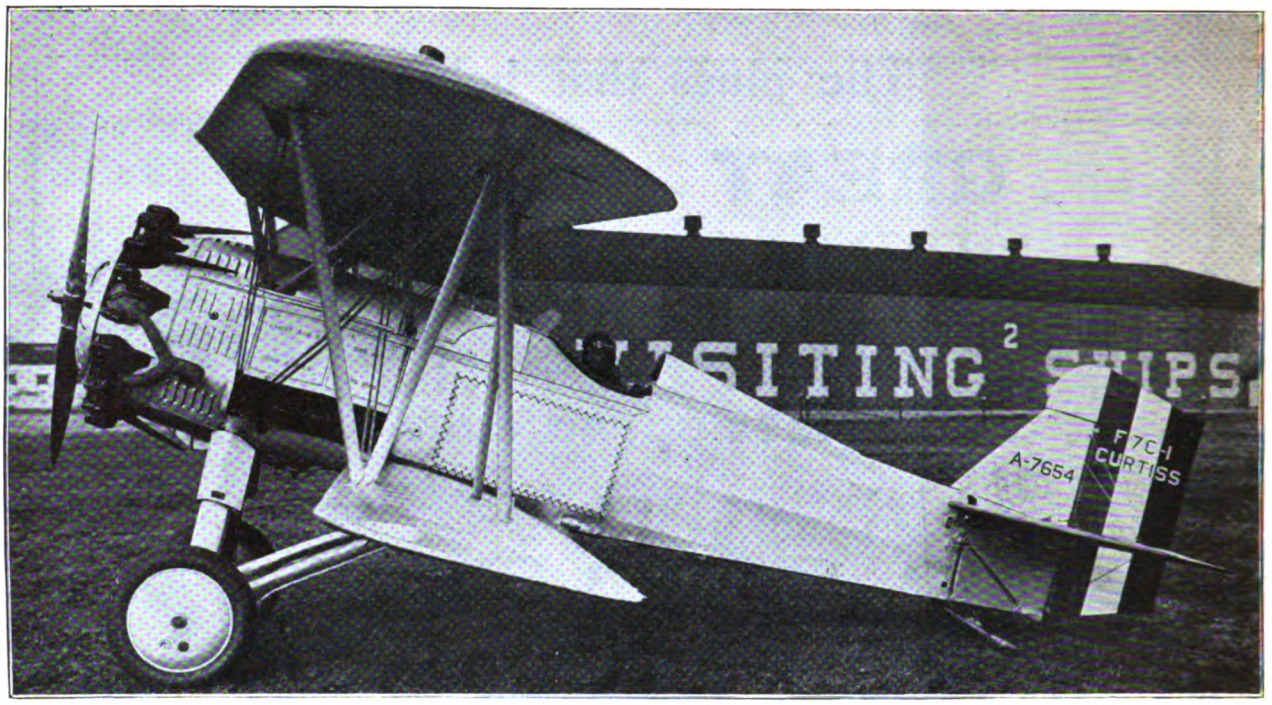

AN AMERICAN SINGLE-SEAT SHIP-PLANE.—The Curtiss Sea-Hawk (F7C-1) single-seat fighter ship-plane (425 h.p. Pratt and Whitney Wasp engine) which forms part of the carrier equipment of the U.S. Navy.

Undercarriage.—Split type. Consists of two Vees hinged on the bottom fuselage longerons and two bent axles crossing at the centre. Suspension by rubber compression discs, housed within the fuselage. Steerable tail-skid sprung by rubber compression discs. Interchangeable wheels and skis.

Power Plant.—One 435 h.p. Curtiss D-12 water-cooled engine on a detachable welded steel-tube mounting. The water system incorporates a tunnel radiator. Auxiliary fuel tank carried under fuselage, behind tunnel radiator, and is droppable in case of emergency. Curtiss-Reed duralumin airscrew.

Accommodation.—Pilot's cockpit aft of top plane. Armament consists of two fixed Browning guns, firing through airscrew, and provision is made for carrying small fragmentation bombs for ground attack work. Equipment includes regulation Army parachute and oxygen equipment.

Dimensions.—Span 31 ft. 6 in. (9.6 m.), Length 23 ft. (7.01 m.), Height 8 ft. 9 in. (2.67 m.), Wing area 252 sq. ft. (23.4 sq. m.).

Weights and Loadings.—Weight empty (with water) 2,195 lbs. (998 kg.), Weight of crew 200 lbs. (90.6 kg.), Weight of fuel and oil 330 lbs. (149.6 kg.), Weight of equipment 27 lbs. (12.2 kg.), Total disposable load 765 lbs. (347 kg.), Weight loaded 2,960 lbs. (1,345 kg.), Wing loading 11.74 lbs./sq. ft. (57.4 kg./sq. m.), Power loading 6.8 lbs./h.p. (3.08 kg./h.p.).

Performance.—Maximum speed 165 m.p.h. (266 km.h.), Speed at 15,000 ft. (4,570 m.), 154.5 m.p.h. (249 km.h.), Landing speed 58.7 m.p.h. (85 km.h.), Initial rate of climb 1,800 ft./min. (548 m./min.), Climb in 10 mins 12,350 ft. (3,762 m.), Service ceiling 21,000 ft. (6,398 m.), Absolute ceiling 22,150 ft. (6,750 m.).

The Curtiss F7C-1 "Sea Hawk."

The Curtiss F7C-1 is a single-seat ship-board fighter, fitted with the 425 h.p. Pratt and Whitney Wasp engine. It differs in many features from the standard "Hawk," particularly with regard to arrangement of wings, undercarriage and general equipment.

Type.—Single-seat naval shipboard fighter.

Wings.—Unequal span staggered biplane. Top planes have 7 degrees of sweepback outside the centre-section. Bottom planes are straight. Centre-section is mounted above fuselage on widely-splayed "N" type steel-tube struts. One pair of splayed "N" type steel-tube interplane struts on either side of fuselage. Ailerons on inset hinges on top planes only. Wings of Curtiss C-72 section, of wooden construction, with spruce box spars and ribs, covered with fabric.

Fuselage.—Constructed of riveted steel and duralumin tubing, with steel fittings, and is designed for catapult and deck-landing loads.

Tail Unit.—Normal type. Metal-framed, covered with fabric. Balanced rudder. Adjustable tail-plane.

Undercarriage.—Split type. Consists of two Vees hinged to bottom fuselage longerons and two half-axles hinged to a Vee cabane under fuselage. The shock-absorbing medium in front legs of Vees is a combination of a two-cylinder oleo gear and rubber discs. Hydraulically operated wheel brake-shoes bear on the inner surface of the wheel rims. Entire undercarriage may be replaced by a single central float and two wing-tip floats, and the machine can be catapulted with either type of landing gear.

Power Plant.—One 425 h.p. Pratt and Whitney Wasp air-cooled radial engine. Main petrol tank, carried in fuselage, is fitted with dumping valve, to lighten machine and provide extra buoyancy in event of forced landing in the sea.

Accommodation.—Pilot's cockpit in rear of trailing-edge of top plane. Pilot's seat is provided with 11 ins. up-and-down adjustment, and rudder pedals slide back and forth in conjunction with seat. In turtle-deck, behind cockpit, is carried a pneumatic life-raft which

AN AMERICAN TWO-SEAT SHIP-PLANE.—The Curtiss XF8C-2, an experimental two-seat fighter ship-plane (450 h.p. Pratt and Whitney Wasp engine), which is now being tested in the U.S. Navy.

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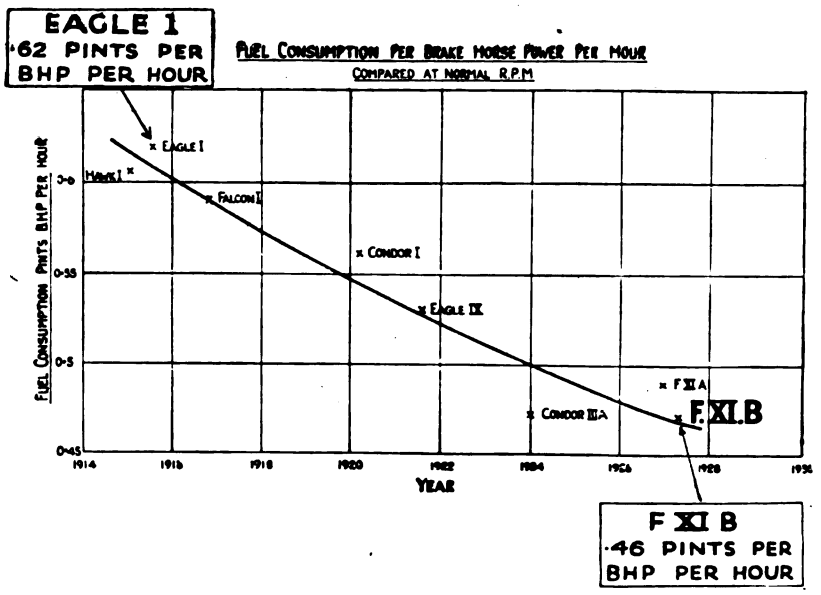

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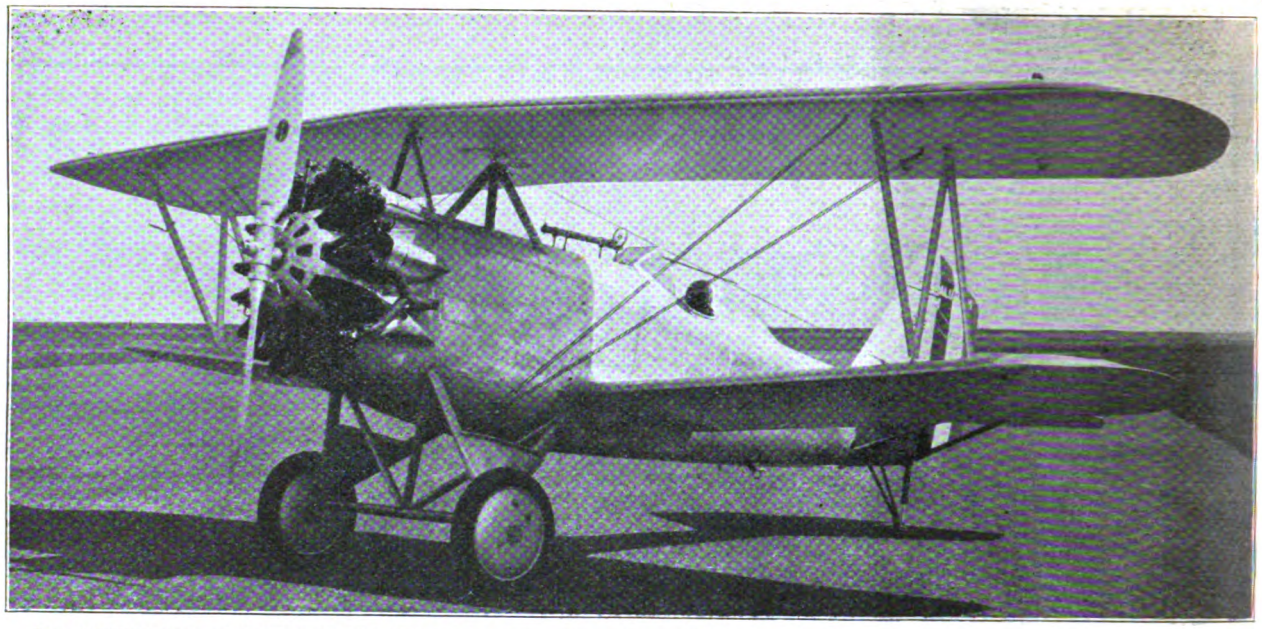

AN AMERICAN SINGLE-SEAT SHIP-PLANE.—The Hall XFH-1 all-metal single-seat ship-plane (425 h.p. Pratt and Whitney Wasp engine) built by the Hall-Aluminium Aircraft Corpn. of Buffalo, N.Y. It has a water-tight fuselage and a droppable undercarriage for emergency alighting on the sea.

can be inflated in a few seconds with carbon dioxide. All petrol pipe lines kept outside pilot's cockpit and pressure fire-extinguisher carried in engine compartment.

No dimensions or performance figures are available.

Curtiss XF8C-2.

The Curtiss XF8C-2 is an experimental two-seater ship-board fighter equipped with a 450 h.p. Pratt and Whitney Wasp engine. Though resembling the Curtiss Falcon in appearance, it possesses many of the characteristics of the lighter, single-seater fighters.

Type.—Two-seater ship-board fighter.

Wings.—Equal-span, staggered biplane. Upper wing has 12° of sweep-back. Bottom wings are straight. Centre-section is mounted above fuselage on widely-splayed "N" type duralumin tube struts. Interplane bracing consists of one pair of "N" type struts in either side of fuselage. Wings are of wooden construction, employing C-72 airfoil section, with spruce box-spars, wood ribs, and fabric covering. Wing-bracing consists of double flying wires and single landing wires. Lower ailerons are balanced.

Fuselage.—Constructed of steel and duralumin tubing, with Warren-truss bracing.

Tail Unit.—Normal type. All-duralumin construction, fabric-covered. Rudder balanced. Horizontal stabiliser adjustable in flight, vertical stabiliser adjustable on ground.

Undercarriage.—Split type. Consists of two Vees, the front leg of each incorporating an oleo and spring shock-absorber. The rear legs of each Vee hinges to the lower longerons. Two radius-rods hinge to an attachment on the under side of the fuselage in line with the Vee hinges.

Power Plant.—One 450 h.p. Pratt and Whitney Wasp engine. Fuel is carried in two tanks, one in either side of fuselage, aft of firewall.

Accommodation.—Two seats for pilot and gunner arranged in tandem aft of upper wing. Flotation bags, which can be inflated with carbon dioxide in a few seconds, are carried in canvas packs on either side of fuselage, and provide ample buoyancy to keep plane afloat in event of a forced landing in the sea.

Dimensions.—Span 32 ft. (9.75 m.), Length 25 ft. 4½ in. (7.75 m.).

Weights.—Weight empty 2,515 lbs. (1,140 kg.), Weight loaded 4,191 lbs. (1,900 kg.).

Performance.—Maximum speed 136 m.p.h. (219 km.h.), Cruising speed 109 m.p.h. (175 km.h.), Stalling speed 61.8 m.p.h. (99.5 km.h.), Initial rate of climb 1,000 ft./min. (305 m./min.), Service ceiling 16,400 ft. (5,000 m.).

The Hall XFH-1 Biplane.

The XFH-1 has been built by the Hall Aluminium Aircraft Co. of Buffalo, N.Y., in co-operation with the Bureau of Aeronautics, U.S. Navy Department.

This machine embodies a watertight fuselage, which affords sufficient flotation in an emergency landing and ensures that the machine would remain afloat during a period sufficient to allow the rescue of the pilot and the salving of the machine, and the undercarriage is droppable.

The fuselage of the XFH-1 is an aluminium monocoque built up of frames and stringers and is covered with sheet. All material used is "Alclad." Watertight bulkheads and buoyancy tanks are built in in such a manner as not to diminish the aerodynamic qualities and are so located that flotation at reasonable trim is assured.

The engine is a 425 h.p. Pratt and Whitney Wasp air-cooled radial.

The machine carries the full useful load and overload of the standard single-seat ship-board fighter, and equipment includes deck-landing gear, bomb gear, fixed armament consisting of two guns, oxygen equipment, etc.

SIGHT-SEEING BY ZEPPELIN.

On Sept. 28 the *Graf Zeppelin* took 32 passengers for a trip over Switzerland. The route was from Friedrichshafen to Berne, then over the Bernese Oberland and twice round the Jungfrau. Thereafter the airship returned safely to Friedrichshafen.

THE VICTORS.—Mr. Hubert Broad and his mechanic, Mr. Weedon, standing in front of the Super Coupé Moth in which they covered the Zenith Trophy circuit of 1,044 miles round France at an average speed, including compulsory stops, of 113 m.p.h. They have, subject to homologation, been awarded the Trophy.

("Aeroplane" photograph.)

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PRIVATE FLYING IN THE UNITED STATES.

Messrs. Dominick and Dominick, of the New York Stock Exchange, make some interesting statements in a bulletin which they issue periodically. These read as follows:—

The United States not only has more airplanes in operation than any other country in the world, but the 1928 American production was greater than all the rest of the world combined. At the same time, the comparative smallness of the aircraft output is indicated by the fact that while automobile registrations in America total some 24,000,000, the number of airplanes licensed by the Department of Commerce to date amounts to only 6,254. Somewhere between these two figures lies the enormous market for aircraft which is the basis of the Industry's future.

Last year private capital came into the Industry in abundance for the first time and air transport demonstrated that it could be profitable without subsidy. Production of airplanes increased about 300 per cent. as compared with the figures for 1927 and was variously estimated at around 4,500 airplanes and 3,500 engines, with a total value of $75,000,000.

Of the 25 companies manufacturing commercial engines, however, 4 companies produced 75 per cent. of this total, and of the 45 active airplane manufacturers about 11 companies accounted for the same proportion. A high degree of concentration had already taken place in the Industry, therefore, and this condition has been accentuated this year. year.

It is evident that the production of airplanes for 1929 will be considerably less than previous forecasts and is now estimated at about 7,000 instead of 10,000 and 12,000. The restriction of manufacture to this figure would make it extremely difficult for many of the smaller manufacturers to survive.

The situation gives added point to the consolidations and mergers which have been a feature of the Industry in the past 18 months. We have witnessed the formations of several groups dominating the Industry and combining under their control all the various departments of aviation, including air transport as well as aircraft manufacture. Of these, the two largest, the Curtiss-Wright group and the United Aircraft and Transport Company, are fairly typical of the effort to bring all the functions of aviation under one control.

Doubtless these mergers will continue, and we shall witness in the next few months a re-adjustment of the aviation business which will result in the elimination of many of the small manufacturers by absorption into larger units or otherwise. The uncertain factor of the Industry, therefore, is found among the small and weakly financed companies accounting for a limited and scattered production.

With this warning in mind we can anticipate a profitable and active future for the carefully organised and strongly financed companies.

[There is, however, the other view that every firm which disappears, by being swallowed in a merger, leaves room for a new small firm to make a start,—and if the small firm can deliver the goods, and can produce new designs of types which catch the fancy of buyers, it will get all the business it wants.—C. G. G.]

AN INQUEST AT GREENWICH.

On Sept. 25, an inquest was held at Greenwich on the body of Mr. Arthur Norman Brunning, who was killed when the machine, in which he and Mr. S. U. Annis were flying, crashed close to the Sidcup by-pass road at Welling, near Woolwich, on Sept. 19.

Mr. Annis was severely injured, and at the time of the inquest he was still in hospital.

Mr. Grant stated that no application had been made to the inquest that Mr. Brunning had passed his "A" licence test, and that he had, Mr. Grant believed, obtained a licence. Mr. Annis, who had been in the R.A.F. during the War 1914-1918 and was doing a "refresher" course, had taken this particular machine up for a solo flight in the morning.

Mr. Grant stated that the application had been made to him for the machine to be taken up in the afternoon and that his permission for the flight had not been obtained.

From a statement made by Mr. Annis, and read at the inquest, Mr. Brunning appears to have fainted or had a fit after putting the machine into a dive, and then fallen onto the control column. Mr. Annis had no time to attempt to regain control.

The jury returned a verdict of "Death from accidental causes," and added a rider to the effect that more care should be taken on the aerodrome to prevent pilots taking machines up without permission.

FALSE ECONOMY.

The air mail due to leave Karachi for England on Sept. 29 was unable to start for the very good reason that no suitable machine was available.

The recent disaster at Jask, when one of Imperial Airways machines was destroyed, has made the working of a shuttle service necessary. As the outgoing mail to Karachi has been held up by sandstorms in 'Iraq the home mail will have to wait at Karachi until the arrival of this machine.

PERCY PILCHER.

[From a Correspondent.]

At a time when aviation looms so large in the public eye, we are apt to forget the pioneers of this new mode of travel, and to have no thought for the memory of those who give their lives to the cause. Therefore, it is well to record that Sept. 30 was the anniversary of an experiment in an aerial machine, in Stanford Park, near Rugby, in 1899, which had a tragic issue.

The victim was Percy Pilcher, R.N. His prediction of great things for the flying machine has been more than realised.

On several occasions previously he had made successful flights over the same ground. This day there was a distinguished house party at Stanford Hall, including Mr. Henniker Heaton, M.P., and in the afternoon they proceeded to the Park to witness the tests. While in mid-air a cross-bar of the machine broke, allowing the wings to fold up, and the whole thing collapsed.

Lieut. Pilcher was badly injured, and died a couple of days later.

At the inquest the Hon. Adrian Verney-Cave (the present Lord Braye) said that at the time there was a strong wind blowing, but this he considered was rather an advantage than otherwise, because without it the machine could not have risen.

The object of the experiments was to obtain control over the machine in mid-air. It was raised by means of a rope drawn by men and horses, and it was the intention of Lieut. Pilcher, when he attained his object, to apply a specially constructed oil motor to propel the machine.

Lord Braye (father of the previous witness) mentioned that he was averse to the experiment being made that day, but Lieut. Pilcher was anxious that the trial should take place, as Mr. Henniker Heaton was present and was most interested in the machine.

The jury returned a verdict of "Accidental death."

The memorial shown in the accompanying picture was subsequently erected by the late Lord Braye on the identical spot where Lieut. Pilcher fell with his machine.

The inscription on the front reads: "Percy Pilcher, Pioneer of Aviation, fell here, Sept. 30, 1899." On the reverse side: "Icaro alteri."

The Pilcher Memorial at Stanford Park, near Rugby.

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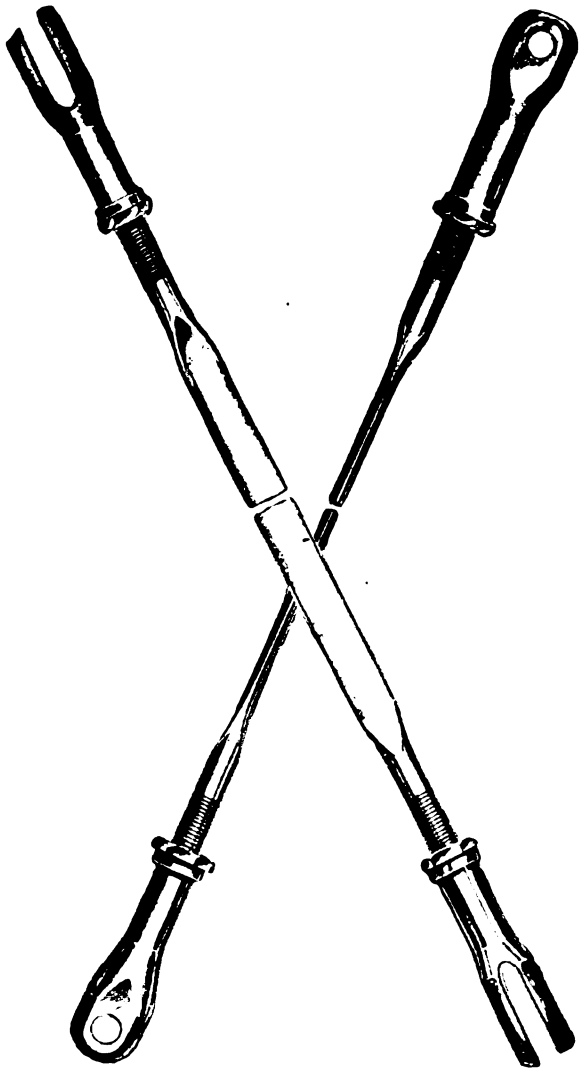
VICKERS STREAMLINE WIRES & SWAGED TIERODS



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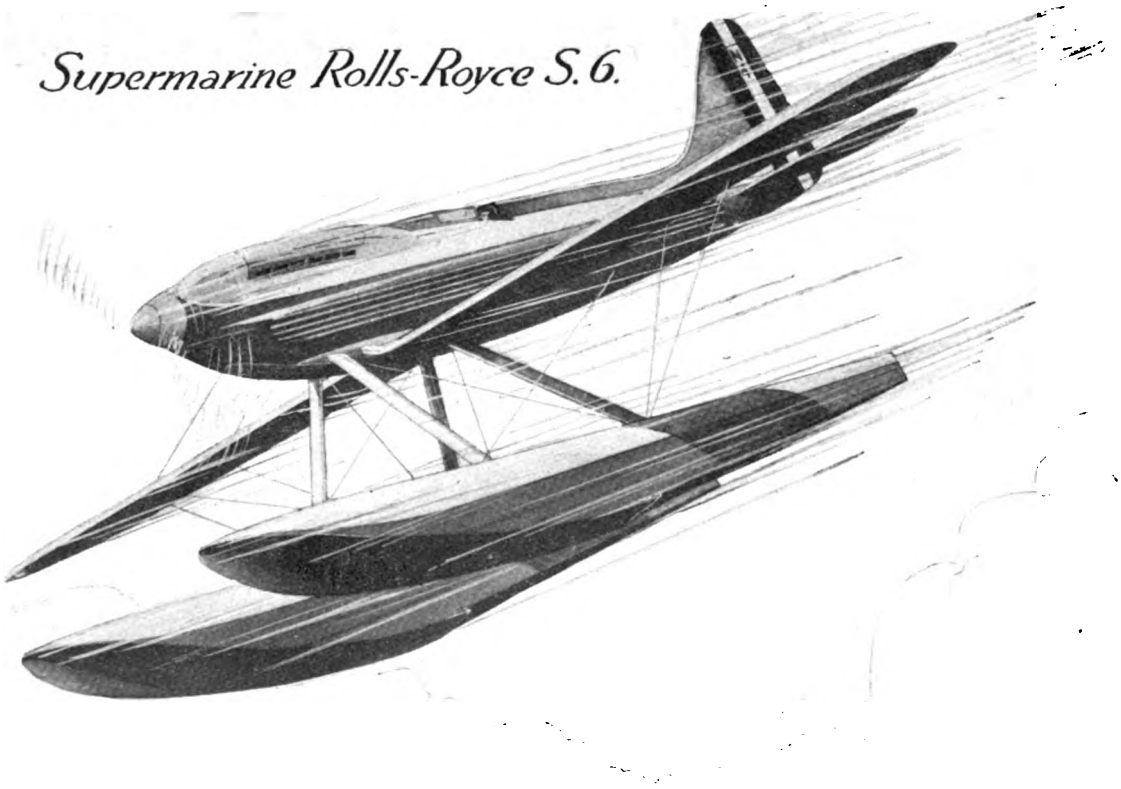

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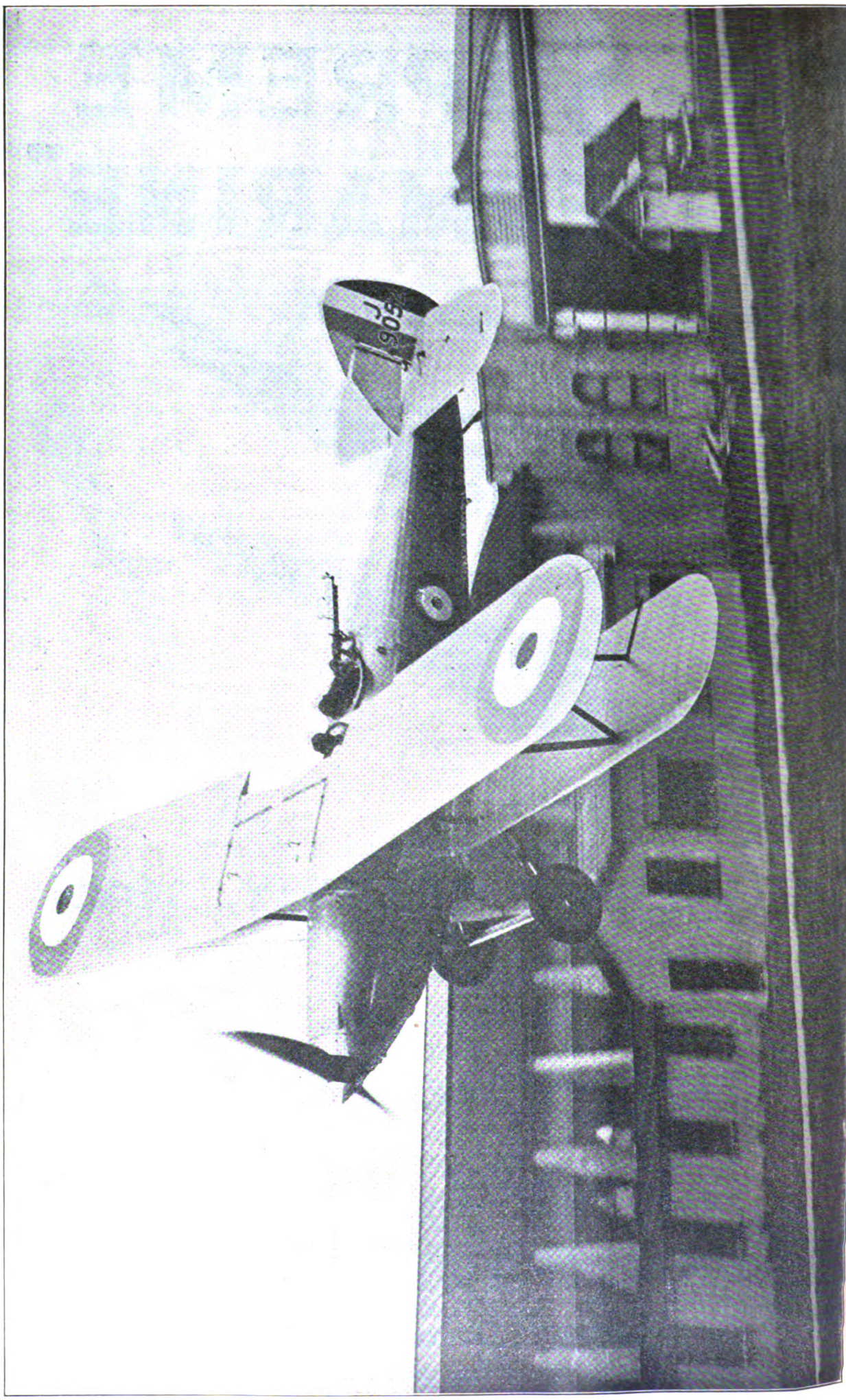


ON THE TURN.—A striking view of the Hawker Hurricane. The

THE LIGHT AEROPLANE AND THE FLYING CLUBS.

THE NORTHAMPTONSHIRE AERO CLUB MEETING.

In spite of the advantages of good weather and a large tendance of visiting pilots, the third flying meeting of the orthamptonshire Aero Club, at Sywell Aerodrome, on Sept. , was distinctly disappointing.

A number of visiting aircraft arrived overnight, and more w over during the morning and early afternoon.

Among the visitors were some of the band of flying sports-en and sportswomen whom one meets at practically every ub display, and two or three came over without their achines.

Among the former were Mr. Talbot-Lehmann in the N.F.S. artan, Mr. Wheatley in the Golden Shell Moth, and Mr. uilter, Mr. Murray, Mr. Grey, the Hon. Lady Bailey, and r. Malcolm in their Gipsy Moths. To this list must be ided the indefatigable Mr. Parkhouse, of Teignmouth, who yally supports these flying meetings. Of those who arrived ithout mounts were Flt. Lt. T. Rose, Mr. Cazalet, and Flt. t. La Poer Trench.

Sir Sefton Brancker also flew down in his Moth, EDCA, iloted by Mr. Campbell.

In addition to the influx of private owners, the Club was onoured by a contingent from the Central Flying School, Vittering, consisting of two R.A.F. Genet Moths and three ynx-Avros.

According to the programme, Flg. Off. Atcherley was have given a "demonstration of flying as it should be one," but he sent word regretting his inability to attend he meeting.

The programme opened at 14.30 hours with a landing ompetition, which was won by Flg. Off. Johnson, of the Central Flying School, with a distance of 4 feet to his redit.

With all due respect to the organisers of the display, the nly outstanding event of the afternoon was then given y Flt. Lt. Wiblin and Flg. Off. Johnson on the Genet Moths. One has seen many demonstrations given by the C.F.S. Moths, but the performance at Sywell was well up to anything yet done. Their inverted flying and slow rolls across the aerodrome at a low height was a treat to watch, and a comic touch was added by one of the pilots hedge-hopping over the enclosures and blowing a small hooter.

The next event was described as a novelty race for "B" Licence pilots only. Each pilot was provided with a lady passenger, who first had to knock over three beer-bottles with tennis-balls. Her pilot had to thread a needle, and both had then to run to their machine, take off, and fly round Sywell Reservoir. Returning to the aerodrome, the pilot had to land, taxi to a given line, and then fold his wings. After all this, his passenger had to run to the Official Car.

This event was run off in two heats, and the final provided a thrill. The participants were Mr. H. Davis, of the Brooklands Flying School, and Flt. Lt. T. Rose, on one of the Club's Moths. Mr. Davis got away first, but was hotly pursued by Flt. Lt. Rose. The machines landed almost simultaneously, but Mr. Rose got his wings folded first, and his passenger, Miss Harris, reached the Official Car and was declared the winner.

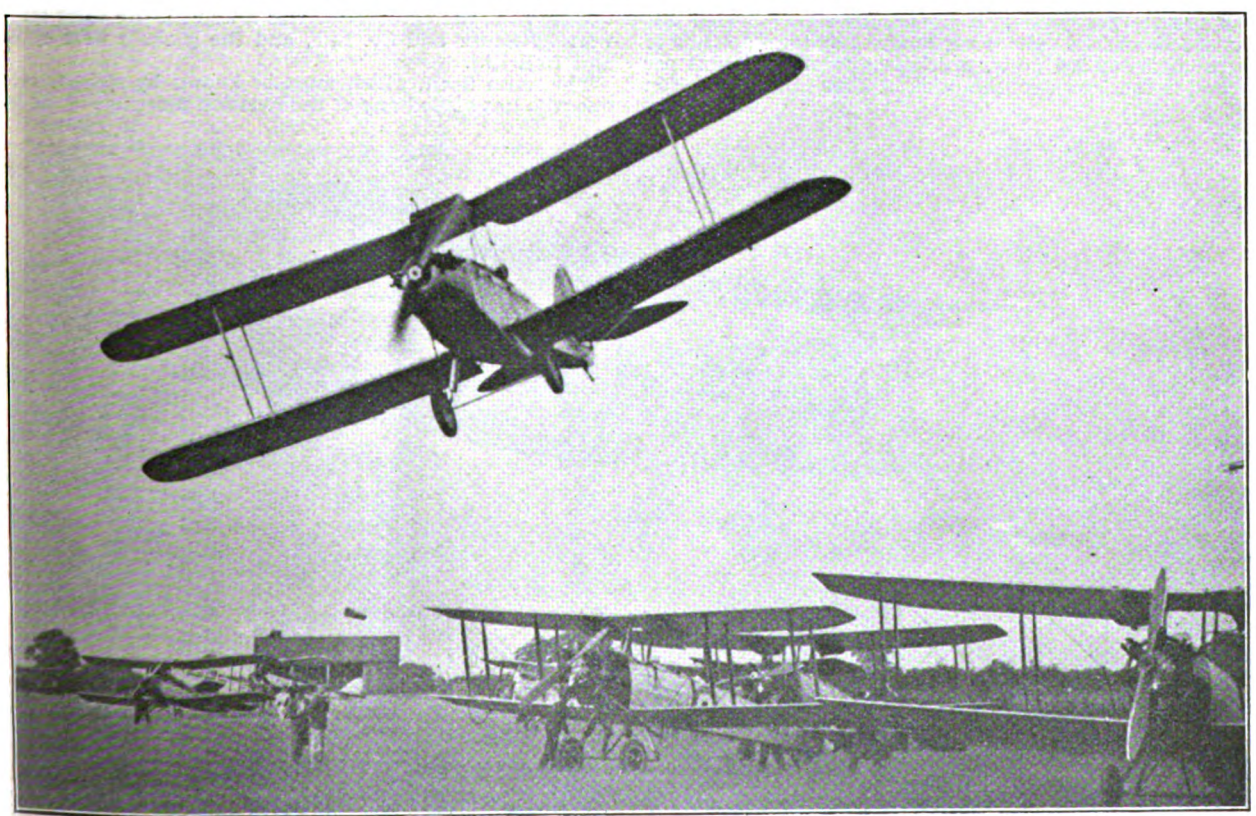
The two Genet Moths then went up and repeated their fine performance. Next followed the usual car-bombing and balloon-bursting events.

During the afternoon, joy-rides were given by one of the Brooklands Flying School Avros, which was well patronised.

The attendance was not very good, although there was a large number of cars, mostly in the members' enclosure.

In the evening, a dinner was given for the visiting pilots at the Grand Hotel, Northampton.

A fault one has to find with this show, and one which seems to prevail at most flying meetings, is the long wait between events. The situation was certainly saved by the C.F.S. Moths. There is also too much sameness in the programmes. One suggests that the secretaries of the flying clubs should get together and plan out a campaign for their meetings next year.—M. S.



AT NORTHAMPTON.—An R.A.F. Genet-Moth flying over three R.A.F. Lynx-Avros, all from the Central Flying School, Wittering, with some private owner's machines in the background.—(*"Aeroplane" photograph.*)

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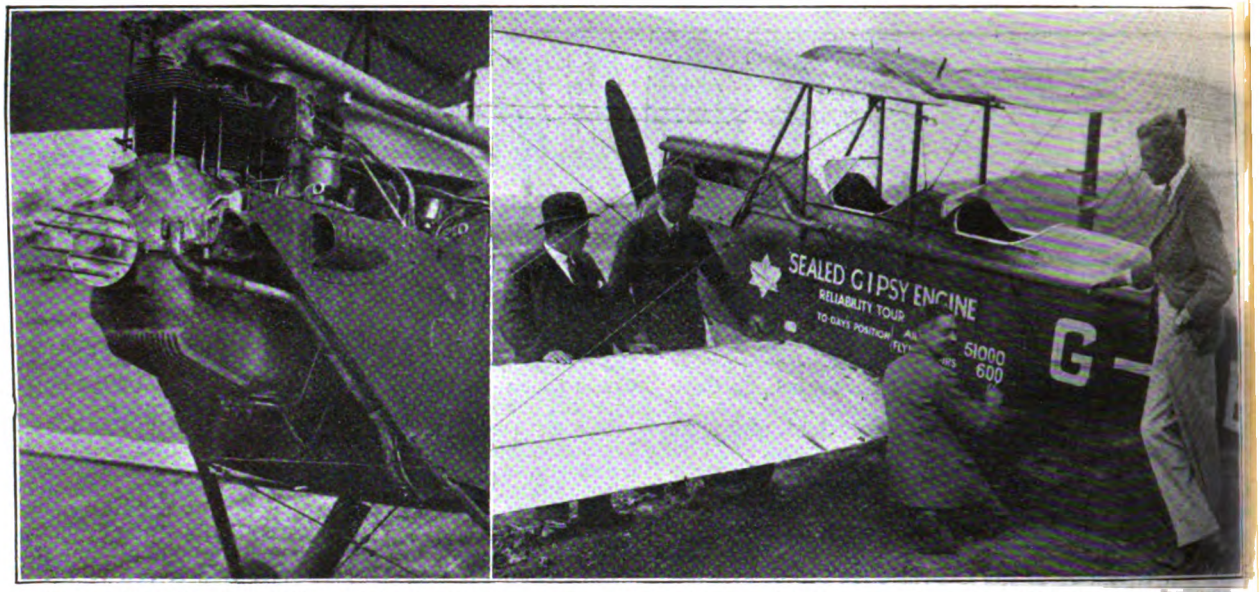

THE ENGINE AND ITS RECORD.—On the left is shown the sealed Gipsy engine immediately on the completion of its 600 hr. test. On the right Mr. Eden is seen painting up the record of hours and miles with, on the extreme left, Mr. Tuck of the Hoyt Metal Co. Ltd., and on the right, Mr. Geoffrey de Havilland, Jr., one of the pilots in the test, looking on.—(*" Aeroplane " photographs.*)

A GREAT RELIABILITY TRIAL.

On Sept. 24, a D.H. Moth G-EBTD, with an 85 h.p. Gipsy engine, completed a 600 hours' Reliability Trial, during which time the engine (which was sealed by the A.I.D.) received no repair work or overhaul whatsoever. The test was made in order to prove that the modern aeroplane engine can be run with even less maintenance than is required for a motor-car engine.

The test began on Dec. 27, 1928. For the whole of the 600 hours, Pratts petrol and Wakefield's oil were used. Before the test began, the engine developed 85 b.h.p. At the conclusion of the test, it was found that at the same r.p.m. (1,900) the power developed had actually increased by 2 horses.

The time in the air was very carefully checked and was actually 600 hours. The time was taken from the moment of leaving the ground to the moment of touching. The time for running-up and taxying and test work was counted separately and totalled 1 hr. 5 mins.

The total amount of petrol used was 2,644½ gallons, which works out at 4½ gallons per flying hour, which is the equivalent of 19 miles per gallon. If the ground time is added this works out at about 4 gallons per hour. The total amount of oil consumed was 294 pints, which is just under ½ pint per hour and is equal to a consumption of 1,400 miles per gallon of oil.

The figure of 600 hours was determined upon at the beginning of the test, and at the conclusion the engine was running so well that the firm were tempted to try for 1,000 hours. However, it was decided to stick to the original figure, which was the objective, for if anything broke, much of the value of the tests would be lost as examination of the engine might have been rendered impossible.

The full A.I.D. report on the engine will be issued in a few days, and the parts of the engine will be available for inspection in the demonstration shed at Stag Lane. In the meantime it can be stated that no parts of the engine are abnormally worn, and there is less than ⅛ inch of carbon on the pistons.

The sparking plugs were K.L.G. Type 294 and the magnetos were B.T.H. The bearings were made by the Hoyt Metal Co. Ltd., of Putney. These bearings show particularly little sign of wear, proving once again the extraordinary suitability and reliability of this metal for engines of any description. The ball bearings were made by Ransome and Marles Ltd., and Skefko Ltd. The piston-rings were by Wellworthy Ltd., the carburettor was a Zenith, the valve springs were by Salter and Co. Ltd., and the gaskets were by Hall and Hall Ltd.

The Moth itself, which must be known by sight to everyone who has visited any of the aviation meetings of the past

600 HOURS.—The D.H. Moth G-EBTD coming in to land on the completion of the 600th hour of the Gipsy Reliability Trial at Stag Lane.—(*" Aeroplane " photograph.*)

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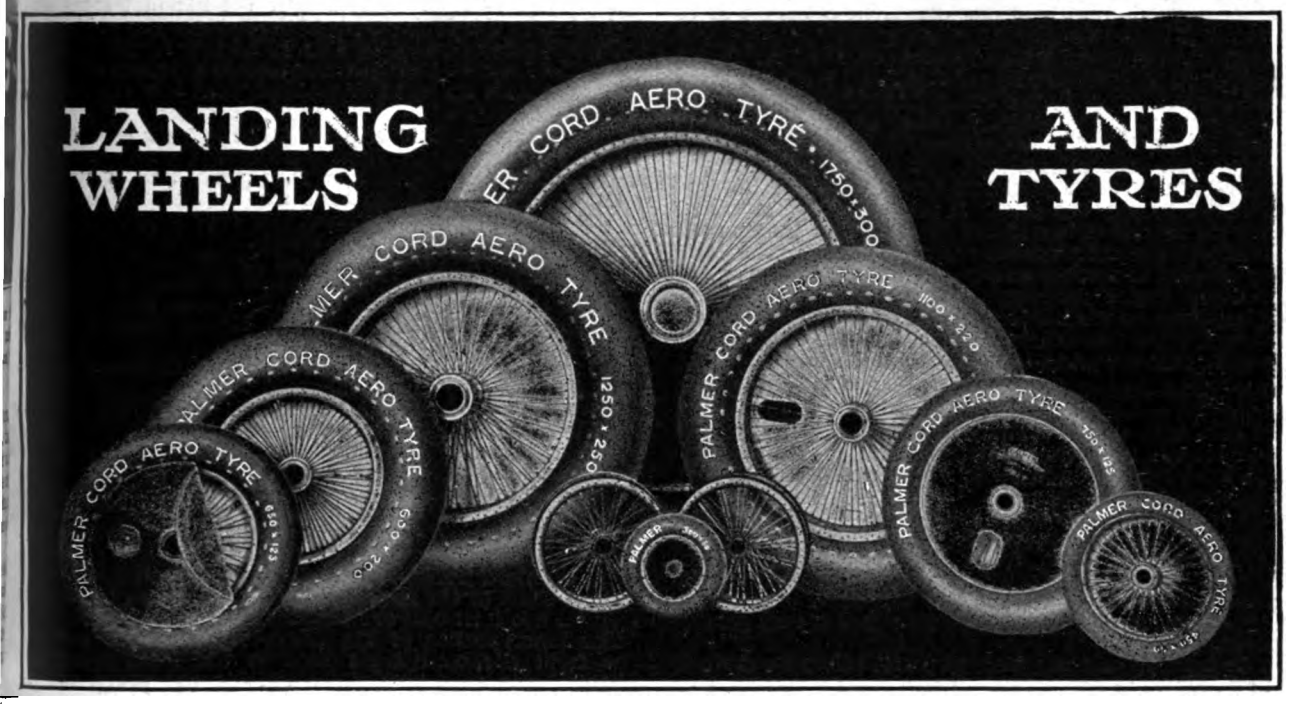
PALMER



STANDARD SIZES.

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m			m/m	m/m	m/m			m/m	m/m	m/m
375×55	168	111.12	25.4	Central	700×100	112	150.	38.09	Central	1000×150	210	185.	60.32	Central
"	195	130.	38.09	Central	"	176	178.	44.45	Central	1000×180	148	220.	80.	Central
300×60	16	111.12	25.4	Central	"	179	178.	55.	132/46	"	149	185.	55.	Central
450×60	30	89.	31.75	Central	650×125	119	178.	55.	132/46	"	155	220.	66.67	Central
"	172	130.	38.09	Central	"	147	178.	55.	Central	"	166	185.	55.	125/60
575×60	21	160.	28.	Central	"	188	120.	34.92	Central	900×200	107	185.	55.	Central
"	180	150.	38.09	104/46	"	336	178.	44.45	132/46	"	108	185.	55.	125/60
"	186	120.	34.92	Central	750×125	77	178.	44.45	132/46	"	128	220.	66.67	Central
"	190	150.	38.09	Central	"	92	185.	55.	135/50	"	137	250.	80.	Central
600×75	21	160.	28.	Central	"	95	185.	55.	Central	"	157	185.	80.	Central
"	180	150.	38.09	104/46	"	99	178.	38.89	132/46	"	202	185.	60.32	Central
"	186	120.	34.92	Central	"	112	150.	38.09	Central	1100×220	134	220.	66.67	Central
"	190	150.	38.09	Central	"	176	178.	44.45	Central	"	136	250.	80.	Central
700×75	78	178.	44.45	132/46	"	179	178.	55.	132/46	975×225	192	185.	60.32	Central
"	79	178.	44.45	Central	800×150	161*	185.	55.	135/50	"	194	185.	55.	125/60
"	100	178.	38.09	132/46	"	162*	185.	55.	Central	1100×250	364	220.	60.32	Central
"	101	178.	31.75	132/46	"	163*	185.	66.67	135/50	1250×250	314	250.	80.	Central
"	196	178.	55.	Central	"	169†	185.	55.	135/50	"	154	304.8	101.6	Central
600×100	188	120.	34.92	Central	"	177	185.	55.	135/50	1500×300	305	304.8	152.4	Central
"	304	150.	38.09	104/46	"	183	185.	55.	Central	"	306	304.8	101.6	Central
"	333	120.	34.92	Central	"	211*	185.	60.32	135/50	1525×325	197	304.8	101.6	Central
700×100	77	178.	44.45	132/46	1000×150	167	185.	55.	125/60	1750×300	139	400.	152.4	Central
"	92	185.	55.	135/50	"	174	250.	80.	Central	"	191	350.	150.3	Central
"	95	185.	55.	Central	"	182	185.	55.	Central	1750×350	193	400.	125.	Central
"	99	178.	38.89	132/46	"	187	220.	66.67	Central	2000×450	363	500.	152.4	Central
					"	201	185.	60.32	125/60					

*Wheels Nos. 161, 162, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings.
Grease gun equipment is now a standard fitting on all wheels.

(A/NL)

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year, was originally an X Moth and was intended for the De Havilland School of Flying. Actually it has not done more than a month with the School, for almost as soon as it was built its somewhat chequered career began, and most of its life it has been as a flying test-bed.

The original Gipsy engine which was fitted to the Tiger Moth for the King's Cup Race in August, 1927, was tested in "TD" and also all the first batch of Gipsy engines had their first air test in it. It was the first machine to be fitted with the new split-axle undercarriage. It was on "TD" that this undercarriage was tested to destruction. It will be remembered that during this test Captain Geoffrey De Havilland purposely dropped the machine from a height of 30 feet before it finally broke.

During the 600 hours' test, the machine has been in the care of Mr. A. T. Eden, who has piloted "TD" for a large portion of the 600 hours' flying, and it has also been flown by the majority of pilots at Stag Lane, including Captain Geoffrey De Havilland, Mr. Geoffrey De Havilland, Jr., Mr. Malcolm, Mr. Ballantyne, Mr. Fulford, Mr. Buckingham and several other pilots, so that the engine has not been nursed by any one pilot. It has been used as a sort of hack during this time and has flown all over the country.

The engine was not a special engine, but was a production engine selected at random and is essentially the same as any other Gipsy engine produced. During the whole period, there has been no mechanical trouble or failure of any description and the test definitely establishes the Gipsy in the front rank of the World's light aeroplane engines.

THE BRISTOL AND WESSEX AEROPLANE CLUB.

During the month of September the Bristol Club flew 124 hr. 20 min. with three machines in commission. Of this 76 hr. 10 min. was instructional flying, 15 hr. 45 min. solo flying, 19 hr. 5 min. licensed pilots' flying and 12 hr. 45 min. passenger-carrying flying.

With the deepest regret we have to record a fatal accident involving the death of Mr. E. M. Tiarks and Mr. Edward Somerset, when flying together in Mr. Tiarks' machine on Sept. 23. Mr. Tiarks was a most enthusiastic supporter of the Club and his loss will be very genuinely felt by all our members with whom he was a very general favourite.

On Sept. 22 we held our farewell party, before we move to the new Municipal Aerodrome. It was voted a success, very largely due to all the good friends who came in their machines to see us, to all of whom we offer our most appreciative thanks. Although there had been no advertisement, and the party was by invitation only, there was a large gathering in the public enclosure. The Aeroplane has already given an account of the day, so that it only remains to be said that we intend our first show on the new aerodrome, next Spring, to be a real good one.

Mr. R. A. Rioch, Mr. K. H. Potter, and Mr. D. Finch Hatton passed their "A" Licence tests during the month.

THE LANCASHIRE AERO CLUB.

The total flying hours for the month of September was 98 hrs. 25 mins. Five new members began instruction during this period.

Apart from the Club "At Home," which has already been reported there were no occurrences of outstanding interest until the last week of the month, during which XD sustained serious damage in a crash which occurred while she was being flown over from Woodford to Wythenshawe.

Mr. D. E. Hall, our Chief Instructor, who was piloting from the front seat, suffered a broken knee cap while Ground Engineer Bartram, who was in the back seat, was cut about the face. Their many friends both inside and outside the Club will be glad to hear that they are both making excellent progress.

It will necessarily be a month or two before Mr. Hall can resume his duties and meanwhile Mr. Michelmore, lately an Instructor with the Phillips and Powis School of Flying, at Reading, is taking over his work.

A PLYMOUTH LIGHT AEROPLANE CLUB.

Under the auspices of the Plymouth Chamber of Commerce, the Plymouth Mercantile Association, the Devonport Mercantile Association and the Plymouth Rotary Club, a committee has been formed for the purpose of inaugurating a Light Aeroplane Club for the city. The project has been helped considerably by the fact that the Corporation has decided to purchase the flying ground at Roborough for a municipal aerodrome.

Leading local business men are prominently identified with the movement, and it is confidently expected that within twelve months of the formation of the Club there will be a considerable number of owner-pilots in the district.

A local firm has offered a 20-guinea silver Challenge Cup for competition among the flying members of the Club. The enterprise is being enthusiastically supported, as it is realised that Plymouth, owing to its geographical position, is likely to become one of the most important airports in the country.

CHESTER AND N.F.S.

Although N.F.S. have offered to co-operate with Chester Corporation in the establishment of an aerodrome near Chester the City Fathers have decided to shelve the matter until an Air Ministry representative has visited the city and given his opinion as to suitable sites.

THE SINGAPORE FLYING CLUB.

The flying time of the Singapore Club for the month of July amounted to 49 hours 10 minutes, bringing the total to date up to 594 hours 27 minutes.

On Aug. 3 Mr. R. R. Gardner successfully did his first solo flight.

On Aug. 10 Mr. J. C. Alexander did his first solo.—And in that week the Club put in 13 hr. flying. The next week, owing to bad weather, only 6 hr. 50 min. were done.

Considering that the Club uses seaplane Moths only, and so is dependent on water as well as wind, this is not at all bad going.

AN AUSTRALIAN LIGHT AEROPLANE ENGINE.

The first Australian light aeroplane engine, known as the Harkness "Hornet," has been built, and it has run for many hours on bench tests without showing any signs of the usual teething troubles. The engine should by now have passed its 100-hour type test.

This engine has been designed by Mr. D. Harkness, a motor engineer and racing motorist of some considerable fame in New South Wales, and it has been built by Harkness and Hillier, Ltd., one of the biggest firms of motor engineers in the same State.

It is a four-cylinder in-line vertical air-cooled engine with a bore and stroke of 120 mm. x 130 mm

The four cylinders and the top half of the crank-case are one alloy casting.

The upper or cylinder portion of this casting is heavily finned, and steel liners are inserted.

The cylinder-head is also one alloy casting, and is held down by long holding-down bolts, five on each side, passing through the crankcase portion of the top casting and secured inside.

An overhead camshaft running in oil and driven by a vertical shaft at the back of the engine through bevel gears operates one inlet and one exhaust valve per cylinder.

The lower portion of the crank-case is in two portions. The front portion extends back to the front crankshaft bearing. The rear portion, comprising the sump, can be removed in about five minutes without removing the engine from its bearers.

The crank-shaft is a nickel-chrome steel forging, and runs on five plain bearings carried in the top portion of the crank-case. The connecting rods are of the nickel-chrome steel tubular type as used in the Wolseley Viper engine. The pistons are aluminium alloy castings.

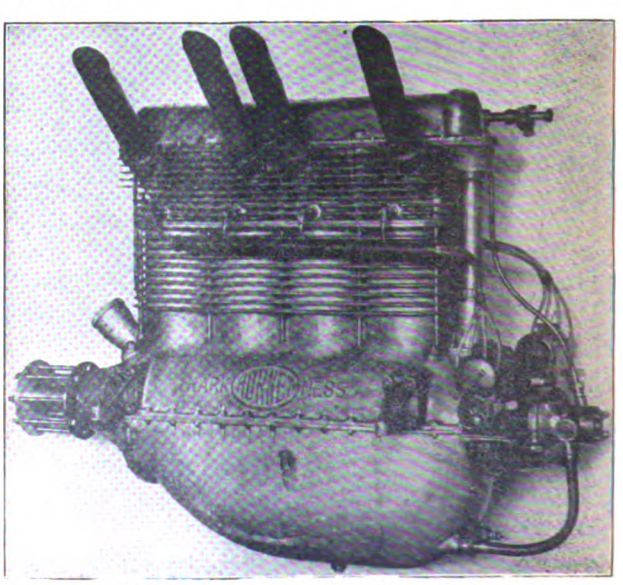
Carburation is by either a Claudel-Hobson or Zenith carburetter.

Two Simms 4-cylinder magnetos are mounted at the back end of the engine, and each fires 4 plugs on each side.

Force-feed lubrication is by a pump, of the positive-vane type, giving a pressure of 60lb./sq. in. Oil is forced to all bearings, and on its return passes through a muff on the induction pipe.

The Hornet weighs about 290lb. and gives 110 h.p. at 2,100 r.p.m., although the normal r.p.m. is 1,800.

It has been designed to fit the standard light aeroplane engine-bearers.



THE HARKNESS HORNET.—The first Australian designed and built light aeroplane engine.

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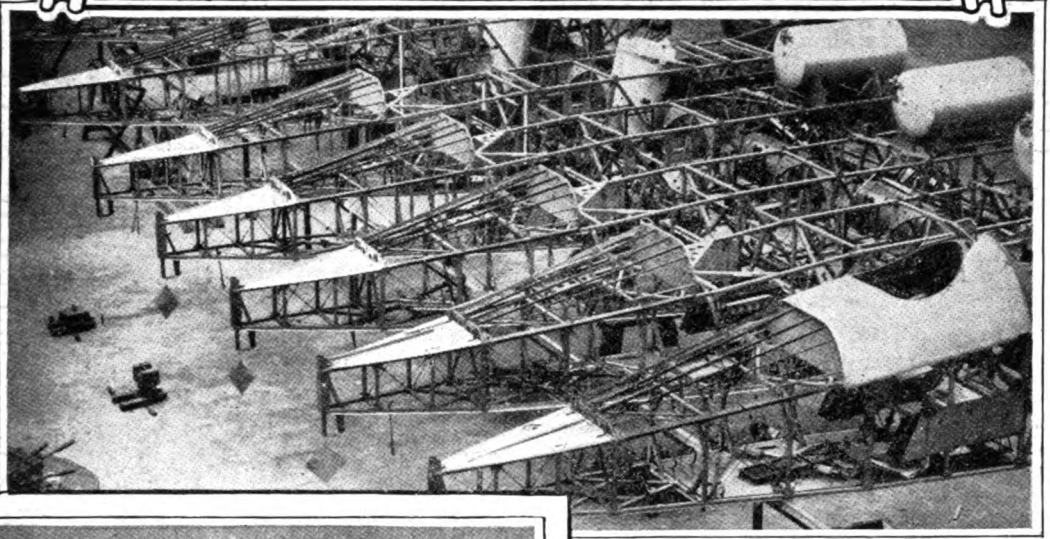
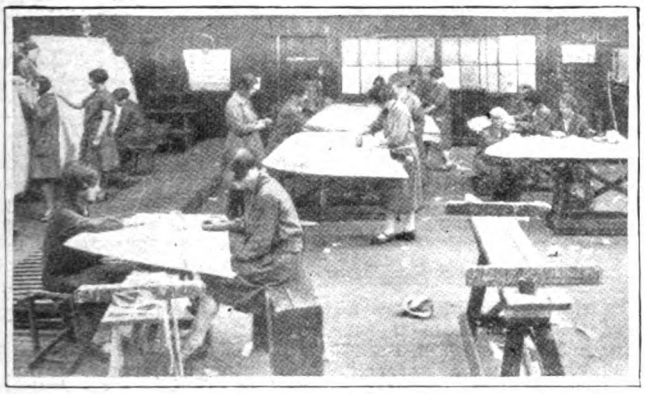
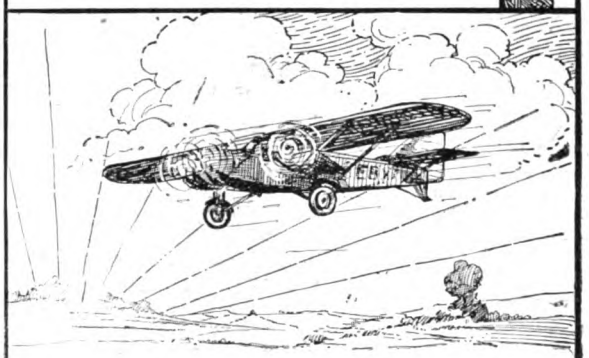
WESTLAND







WESTLAND AIRCRAFT WORKS

Where the Westland Wapiti is Built.

The upper illustration shows part of a line of Westland Wapiti fuselages in the main erecting shop at the Westland Aircraft Works at Yeovil. The fuselages travel along the assembly line on arrival from the fuselage shop and at each stage additional parts are added. At the end of the line the machines are fitted with undercarriages and go forward for rigging and the fitting of engines. The second photograph shows a portion of the wing covering shop where the fabric is applied to the wood or metal frames. Irish linen fabric is used and after the wings are taped and covered the external wing fittings are added, including the Handley-Page Automatic Slot Gear.

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THE SYDNEY—PERTH AIR RACE.

On Sept. 30 the Australian Trans-continental Air Race started from Sydney and is due to finish six days later at Perth, the capital of Western Australia. The distance is 2,290 miles and will be flown in twelve stages, two stages of roughly 200 miles each a day. The route is by way of Sydney, Melbourne, Adelaide, thence round the south coast and inland to Kalgoorlie, and finally to Perth.

Originally there were twenty-seven entries, including thirteen Gipsy-Moths, two Cirrus-Moths, one D.H.50A, one D.H.37, one D.H.9, three Avro Avians, one Klemm monoplane, one Sopwith Gnu, one Simmonds Spartan, one Westland III (known in England as the Widgeon) and two unspecified machines.

Prizes will be awarded for fatest time on handicap and also for speed. For the fastest time on handicap the first prize will be £1,000, second prize will be £300, and the third prize will be £100. For the fastest flying time over complete course the prize will be £300. There is also a £50 prize for the handicap winner of each day's section. The winners of the 1st and 2nd handicap prizes are not eligible for the daily prize, but the winner of the 3rd handicap prize is eligible for four out of the six daily prizes.

The race is open to all aircraft duly registered and certified as airworthy by the Commonwealth authorities at the date of the contest, but such craft must have a minimum safe range in still air of 350 miles.

All competing pilots must hold a pilot's "B" licence issued by the Australian Civil Aviation Branch, but "A" licence pilots may be approved by a committee of the local Aero Club specially for the race. The same number of passengers, or equivalent weight, must be carried throughout the race.

The latest reports at the time of going to press state that there were 17 starters out of the 27 entries, and all these completed the first day's stage to Melbourne. The winner of the daily prize for this section was Mr. Pratt, flying a D.H. Moth. If Mr. Pratt wins the race he will forfeit this prize.

THE LAWS OF THE RUMBLE CLUB.

In view of the institution of a Rumblers' Club in several of the Flying Clubs both in Great Britain and the Dominions, the following extracts from the Rumblers' Act, as laid down in a famous Squadron in the R.A.F., together with the fines inflicted, are published for the information of all concerned:—

THE RUMBLE ACT.

PREAMBLE.

Whereas, a Club called the Rumblers' Club having been instituted, to the financial detriment of certain classes of its members, hereinafter referred to as Rumblers, and the financial benefit of the Plate Fund of the Officers' Mess, it is by these powers enacted as follows:—

Every member committing any acts which fall under the following sections shall be mulcted in the way specified, and shall have no redress, save by an appeal to a General Meeting of the Club, such appeal, if disallowed, rendering the appellant liable to an addition of 6d. to the fine imposed.

The Common Rumble (1s.).—Openly and with or without deliberation or forethought using one or both engines in landing, having *under*shot the aerodrome.

The Surreptitious Rumble (1s. 6d.).—Clandestinely and wilfully and with malice prepense using one or both engines in landing, in a cunning and underhand manner calculated to conceal their use from members on the ground.

The Super Rumble (2s.).—Openly and with or without deliberation aforethought using one or both engines for the purpose of going round again—having overshot the aerodrome.

The Surreptitious Super Rumble (2s. 6d.).—The same as a super-rumble, but done clandestinely and in an underhand manner with malice prepense, calculated to deceive members into believing that no landing was intended.

The Common Crash (3s.).—So disintegrating an aircraft (other than its wheels and tail skid) that it may not proceed to the hangar without assistance.

The Write Off (5s.).—So disintegrating an aircraft that it may not proceed to its hangar other than by instalments and is struck off the Unit strength.

Committing a Common Nuisance (1s.).—Did omit or commit any action when flying, about to fly, or having flown, which is an offence against flying regulations.

Committing a Bumble (6d.).—Having bounced, using an engine or engines to assist the second landing.

Failing to Bumble when Necessary (1s.).—Failing, when he should do so, to use the engine or engines necessary to assist the second landing after bouncing.

Common Crumble (2s.).—Being in control of an aircraft, shall lose control of the said aircraft, thereby causing damage to his own or other aircraft or to any buildings or any appurtenances or hereditaments pertaining thereto, or to any of the King's lieges or their livestock or to any fence, byre, hencoop or other obstruction.

Common Scramble (1s.).—To attempt, with or without success, to extend the glide of an aircraft with a view to avoiding a Rumbler's fine, either by diving and pulling up or by any other means.

Common Grumble (1s.).—Any person grumbling or grousing about anything whatever to do with his job, especially in the hearing of anybody not in the Unit.

Common Ramble (2s.).—Failing to steer a proper course, causing action to be taken in accordance with regulations concerning Aircraft Overdue. (If a qualified navigator, 100 per cent. surcharge.)

A Common Cobhamble (1s.).—The appearance in any newspaper, periodical, or magazine of a photograph or reference in print concerning the offender, if done without his knowledge and connivance, other than the *London Gazette* and the Posting List

A Super-Cobhamble (2s. 6d.).—Deliberately, and with intent to promote the self-advertisement of the offender, to cause to be inserted in any newspaper, periodical, or magazine, any photograph, article, or reference in print other than the *London Gazette* and the Posting List.

The Common Tumble (2s. 6d.).—Deliberately, and while temporarily of sound mind, or otherwise, leaving an aircraft in the air in order to make a parachute descent. Subsequent offences will be charged 6d. extra each time for each offence.

The Common Gamble (with death) (2s.).—Performing any action when about to fly, flying, or having flown, calculated to cause tarmac heart in an individual of H.M.R.A.F. by looking dangerous or by being dangerous.

The Common Booble (1s.).—Committing any action when about to fly, flying, or having flown, by which an aircraft having the right of way is baulked, beggared, or bewildered.

The Common Swivel (1s. 6d.).—When taxying an aircraft swinging round in a way calculated to damage the tail-skid or undercarriage.

The Super-Swivel (2s. 6d.).—After landing, swinging an aircraft round with its tail-skid off the ground.

The Super-Booble (£1).—Committing, in order to avoid a Rumbler's fine of any sort, any action in the air or on the ground likely to cause damage to the aircraft.

The Common Blamble (1s. 6d.).—Any person, having committed an offence under the Rumble Act, blaming any other pilot, aircraft, buildings, war material, aerodrome surface, or any cow, sheep, or other live-stock, or any of the King's lieges or their dogs, cats, or any hares, rabbits, partridges or other wild game, shall be fined the sum above in addition to the appropriate Rumble fine.

The Common Fumble (1s.).—By fumbling or otherwise, purposely or by accident, opening a parachute when not required to reduce the speed of the offender's descent.

The Common Mumble (5s.).—Landing an aircraft and mouthing a request to the local inhabitants as to its whereabouts.

The Humble (6d.).—Landing in so low and humble a manner on the aerodrome at such a distance from the tarmac that the character of the landing can only be inferred from the observed or heard results.

The Hamble (2s.).—When about to fly, flying, or having flown, committing any act of airmanship calculated to be of a grotesque or astounding nature—*e.g.*, flying with one wing down to counter the effect of drift on a course, or such as finding the wind-speed when above an unbroken layer of cloud and with the earth invisible by watching the direction of the movement of the clouds, or similar law.

The Dawdle (6d.).—Conduct when about to fly, or having flown, calculated to delay unnecessarily other aircraft requiring the flare path.

The Common Bubble (1s.).—Causing a radiator to boil by neglecting to open the radiator shutter efficiently.

The Common Dissemble (1s.).—After committing, or during the commission of, an offence against the Rumble Act, attempting to avoid the penalty by behaving in such a way as to lead members to believe that the aircraft concerned belonged to any other Unit.

The Lyndle (2s. 6d.).—Wantonly and with reckless abandon to allow oneself to deceive members on the ground by conversation, dress, or aviation into confusing one with any well-known aviator.

The Scrabble (1s.).—To deface the Rumble book by scrabbling, scribbling, or otherwise attempting to obliterate an entry either to contest it or to avoid a rumble fine.

The Common Bramble (6d.).—When committing, or having just failed to commit, an offence under Section 25 (The Humble), causing an aircraft to disintegrate and/or carry off portions of or complete gorse bushes.

The Amble (1s.).—Any member who commits the following offence, that is to say, does not entirely shut off both his engines upon commencing to glide in to land, shall be deemed to have committed an offence under the aforesaid Act, and shall be mulcted in the sum of 1s.

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The C 19 Machine, with device for starting the rotor blades.

The Autogiro constitutes the first practical solution of the problem of completely controlled flight.

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Hanworth Club
(The London Air Park)
Berks, Bucks & Oxon Light Aeroplane Club
Hull Aero Club
Yorkshire Aeroplane Club

N.F.S. Membership now embraces four Clubs.

THE conditions of membership of the N.F.S. provide that a member of any one Club automatically becomes an honorary member of all other N.F.S. clubs. Four of these clubs are now open to receive members, and, upon completion, the N.F.S. organisation will embody a chain of 71 clubs and landing grounds.

Members of N.F.S. are entitled to the use of each club-house, and free landing at all the N.F.S. stations, wherever such units may be established. At every provincial Air Park there will be a comfortable club-house, hangars and workshops, and lock-up garages for members who keep their own machines. A normal complement of four light aeroplanes will be kept constantly in commission for training members of the club, for hiring out to members, for joy-ride flying, and for taxi service and commercial flying generally, and this establishment will be increased when the demand justifies it.

A limited number of members are now being enrolled at the following favourable rates:—

HANWORTH CLUB: Flying Members, 5 gns. entrance fee, 5 gns. annual subscription; Non-flying Members, 3 gns. in each case.

OTHER CLUBS: Flying Members, 3 gns. entrance fee, 3 gns. annual subscription; Non-flying Members, 1 guinea in each case.

Reduced rates are available for "Life," "Family," and "Overseas" membership. No entrance fee is payable by Serving Officers of H.M. Regular Forces, nor by Members of the Corps Diplomatique.

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Write for our booklet giving full details of the services offered by National Flying Services to those who wish to fly.

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'Natflying, Westrand, London.'

LONDON AIR PARK, HANWORTH, MIDDX.
Phone—Feltham 236.
Station:—
Feltham, Southern Railway.

Come to the HULL AIR PAGEANT
Thursday, 10th October.
Official opening of Hull Air Park by H.R.H. Prince George.

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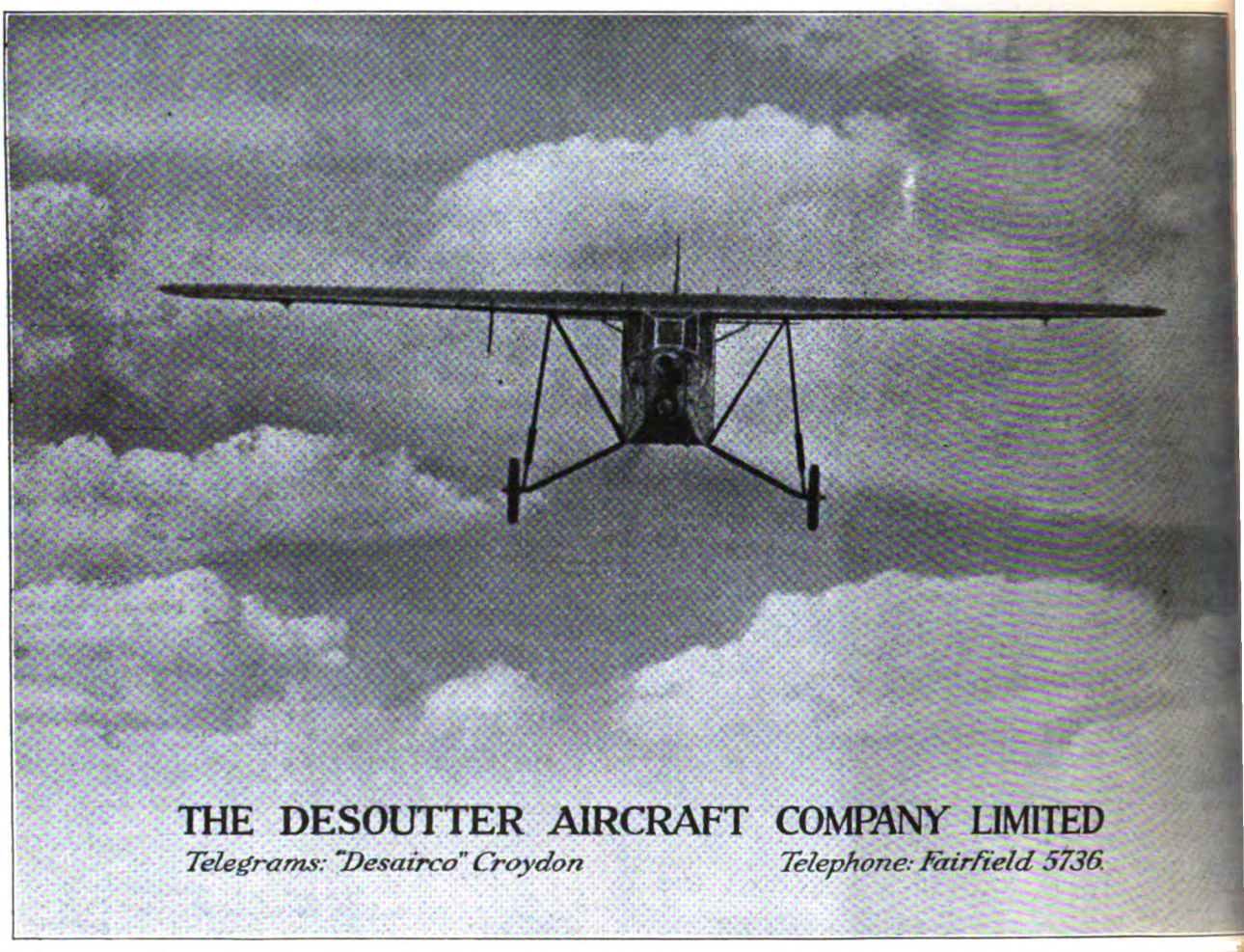

HANDLEY PAGE
AUTOMATIC SLOT CONTROL

"The dangers of stalling, or loss of flying speed are practically eliminated. Thus the greatest of aerial risks is almost banished."

Colonel THE MASTER OF SEMPILL, A.F.C.,
in "THE GRAPHIC,"
3rd AUGUST, 1929.

HANDLEY PAGE, LTD.,
Cricklewood,
London, N.W.2.

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COMMERCIAL AERONAUTICS.

IMPERIAL AIRWAYS.

The fifth Ordinary General Meeting of Imperial Airways as held on Sept. 26. The Rt. Hon. Sir Eric Geddes, G.C.B., .B.E., Chairman of the Company, presided.

The Chairman, in the course of his Report, said that ord Chetwynd had resigned his seat on the Board on the ounds of ill-health.

Referring to his own resignation from the Chairmanship the Board, which was announced at the last meeting, Sir ric Geddes said that he had found it difficult to sever his nnections with the Board owing to several pending nego-ations, and also to the pressure of his colleagues that he ould retain the Chairmanship.

The Balance-Sheet.

There was a further substantial improvement in the position of e company, both from the balance-sheet and the trading point of ew. On the asset side, Aircraft and Engines, less cost of units ritten-off or otherwise disposed of, stood at about £225,000. No new rcraft had been brought into service during the year under review, it an item of about £64,000 was shown for Progress Payments on rcraft under construction. One of these was a new flying-boat for e new Mediterranean section of the India service, and the remainder d been ordered under the normal construction programme for re-acement of obsolescent units. They were now in commission, and ere being worked on the European services.

Premises, Lease, and Plant had increased from about £43,000 to 47,000. During the year £11,000 was accounted for by the purchase a motor depôt and salvage ship and other equipment for the Medi-rranean Division. This ship was stationed at Crete. The slight icrease in Stores, Spare Parts, and Tools represented part of the st of the inauguration of the Mediterranean Division.

Cash and Investments

Cash and Investments amounted to over £270,000. Three items of reliminary expenses, underwriting commission, and inauguration and urvey commission, had disappeared. The last item of £25,000 was in espect of the 25,000 Deferred shares issued to the Air Ministry in onsideration of the Company's complete release from all obligations repay any subsidy and as a condition of the grant of the increased ubsidies now enjoyed. The Board proposed to provide for the amor-isation of this amount during the next ten years, the period of the ew main agreement with the Government.

The profit for the year amounted to nearly £79,000, almost a ten er cent. improvement over last year.

Profit and Loss Account.

The gross profit on the trading account was £140,000, as compared ith £132,000 for the previous year. As there was no extension in he magnitude of the Company's operations (the India service did ot come into being until the current year), this might be regarded s satisfactory.

The Directors' fees had increased from £5,000 to £7,000 per annum. This was due to special missions and duties undertaken by the Directors in connection with the extension of the services in India nd beyond.

The Aviation and General Insurance amounted to about £12,000. The proportion of this which belonged to the insurance of the leet amounted to a premium of slightly over three per cent. of the ost value. The Board believed that no other air transport com-pany in the World could obtain cover at this figure. The high tandard of safety was reflected in the low insurance rate.

Obsolescence of Aircraft and Engines.

The obsolescence allocation of £36,000 was some £4,000 lower than he previous year's figure. The decrease was due to certain aircraft aving been sold and others written off during the year, but repre-ented a normal rate.

The question of obsolescence and its companion item "New Con-truction" had received the very close attention of the Board. In ecognising the principle that larger aircraft were more economical o operate than smaller ones, the Company were moving towards arger and initially more costly units when traffic prospects justified t. The additional cost of operating these large craft showed itself n the expenditure side of the trading account immediately they ame into commission, while the additional revenue they were apable of earning would grow gradually. The Obsolescence Reserve hould, therefore, be increased to a larger figure than normal when he Company was able to do so. An additional sum of £20,000 had een placed this year towards the Obsolescence Reserve. The Com-pany were beginning to provide for obsolescence for aircraft not yet uilt.

Dividend and Profits.

The Board recommended the payment of 7½ per cent. dividend, which would absorb £35,558, leaving a sum of £6,688 to carry for-ward. This result had been attained upon less subsidy and after clearing the balance-sheet of all inauguration expenses and of all urvey and development expenses to date.

Traffic and Operations.

The traffic revenue for the year under review had increased by 29½ per cent. compared with the previous year. The turnover of he European services had more than doubled during the three years beginning on March 31, 1926.

The traffic revenue on the Cairo-Baghdad-Basrah service had in-creased by 48 per cent. compared with the previous year. The first turning-point in the economics of commercial aviation had been reached two years ago, when, for the first time, the company earned a gross profit on the prime costs of operation. In Europe, in order to earn the subsidy, the Company had to fly an annual minimum mileage. Actually they had flown in 1928-9 ninety-four per cent. more than the minimum required. Thus step by step the Company was getting nearer towards being independent of subsidies. The Near East service had supplemented its revenue by flying 12,500 of non-subsidised miles in Palestine and 'Iraq.

Statistics of Operations.

During the year the Company's aircraft had flown 1,032,842 miles, and had carried 34,757 paying passengers and 873 tons of mail, freight, and excess luggage. Of the capacity provided 74½ per cent. had been filled with paying traffic in Europe and 61 per cent. in the Near East. Of the services scheduled in Europe, 92.85 per cent. had been completed, although the weather conditions were probably less favourable for flying than anywhere else in the world. The regularity achieved on the services in the Near East had been 99.37 per cent. The goal of 100 per cent. had been lost because of severe dust-storms.

For the fourth year in succession the regular services had been free from accident involving injury of any kind, and it was with deepest regret and sympathy that he referred to the wonderful record being marred in the fifth year. No transportation company could expect to be entirely free from accidents, but anything that skill and forethought could do was devoted to upholding the wonderful record for safety.

The Fleet.

The Company had ordered eight of the largest aircraft ever built for regular commercial services. Some of these were for the European services and some for the India service. They would be fitted with four engines with a total of 2,000 h.p., and would be capable of carrying about 40 passengers in addition to the crew. These aircraft should show a remarkable advance in the development of aircraft design, efficiency, and comfort.

The England-India Service.

The England-India service had been inaugurated in March, 1929, and had been working with remarkable regularity ever since. It was the longest organised air route in operation in the world. Its length was almost 5,000 miles, of which 1,800 miles were operated by marine aircraft across the Mediterranean. The service operated over ten countries speaking seven or eight different languages and utilizing nine different currencies. He was sure his hearers would join him in congratulating the staff at home who had done the planning, training, and construction programmes, and the staff overseas who had operated the service. He would make a special mention of the pilots who had shown such skill and magnificent devotion to their duty throughout the whole line. He would also pay a very warm tribute to the Air Ministry for the support and assistance they had given in the arrangements which had been concluded with foreign Governments on the route and to the staff of the Air Ministry and to the Royal Air Force for their invaluable assistance, particularly in regard to the ground wireless chain and the meteorological organi-sation.

During the recent disturbances in Palestine the Royal Air Force in Egypt and Palestine had given invaluable help, which had enabled the Company to continue the service with little deviation from schedule.

Need for Public Support.

The most profitable and constant source of revenue on the India and other routes was mails. The growth of mail traffic on the India route was steady, but it was not increasing as rapidly as they had hoped. He would urge every shareholder to use his or her personal endeavours to preach as well as practise tthe "Air Mail" habit.

The passenger traffic was in its infancy on the route from England to India. The provision of good ground accommodation for passen-gers was a problem which could only be solved progressively. At present it was frankly not luxurious, but until the night halting-places were permanently fixed and the route finally selected, with security of tenure, it would be folly to sink capital in buildings in the desert or down the Persian Gulf or through the African Equato-rial forests. Night flying or a change of schedule, or route might make such accommodation useless.

At present the schedule for the service from London to Karachi was 7½ days. By gradual improvements in the ground organisation this was going to be systematically diminished until, by perhaps another year or so, a five-days schedule to Karachi with satisfactory air connections across India would mean a little over six days for Calcutta.

Extension of the India Service.

The Board aimed to extend the India line all the way to Aus-tralia, and were in negotiation with the Government of India for the operation of a service between Karachi, Delhi, and Calcutta. Imperial Airways had offered to charter to the Government of India aircraft for a service between Karachi and Delhi, and possibly on to Calcutta, on a temporary basis, for a period of two years, to connect with the England-India line.

Egypt to South Africa.

The concluding stages of an agreement between Imperial Airways and the British Government at home, acting with the Governments of South Africa, Kenya, Uganda, Tanganyika, Sudan, and Rhodesia for the operation of a service between Egypt and South Africa, had been reached, and now awaited ratification. The Cobham-Blackburn Air Lines, Ltd., were associated with Imperial Airways in this ven-ture, and Sir Alan Cobham and his colleagues would join the Board of the subsidiary company which was to be formed to operate this section of the route. The northern half of the line, from Egypt to Lake Victoria Nyanza, should begin operations this time next year, and the southern half to Cape Town about six months later.

Air Mails.

With regard to the air mails, the postal authorities retained a proportion of the air mail fees paid by the public. On the India

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air mail the Post Office charge to the public was 21s. 3d. per pound, and the Post Office paid for Air Mail service from Croydon to Karachi 14s. 1d. per pound. The interesting result of this was that the Post Office would deliver a letter by ordinary mail in India for 1½d., but to hand it to Imperial Airways at Croydon they charged 2½d. a letter.

A Review of Five Years' Operations.

In the first year, traffic amounted to a total of 391,000 ton-miles, and in the fifth year 803,000 ton-miles, an increase of over 100 per cent. In the first year the Company completed 75 per cent. of the flights scheduled; this figure improved year by year until in the fifth year it was almost 93½ per cent.

The Board had examined many propositions for internal flying in the British Isles, and in none so far had they found conditions to show, in the present stage of the development of aircraft design, a service that could be profitably operated. The efficient railway services, together with the poor average flying weather and the high percentage of terminal delays owing to the shortness of the routes, were some of the chief factors which went to lessen the likelihood of success.

The Company's relations with all Government Departments were cordial. The relations of the Company with its staff and employees was also of the happiest, and the executive of the Company was a team full of enthusiasm and determination. To them throughout, and to Mr. Woods Humphery in particular, the Company owed thanks and appreciation.

LIKE A ROCKET IN THE SKY.

On Sept. 30 Herr Fritz von Opel succeeded, after two abortive attempts, in rising from the ground and flying a short distance in a rocket-launched and rocket-driven aeroplane.

The dissimilarity between the Press accounts may be accounted for by the thick clouds of smoke and flame which surrounded the aircraft and its inventor, thereby obfuscating the issue and making the reporters draw upon their imagination.

The glider which had been converted for these experiments carries a tail unit on outriggers which ensure that the control surfaces are not harmed by the exhaust gases which pass beneath. Experiments had already been made by towing the glider behind a car and firing the rockets in the air.

On the occasion of the public demonstration, the glider was mounted on a trolley running upon thirty feet of rail with a buffer at one end. This trolley was propelled by rockets. When the trolley hit the buffer and catapulted Herr von Opel and his glider into space, rockets carried in the rear of the glider's nacelle continued the propulsion.

Unfortunately two attempts met with failure as the rockets in the glider failed to ignite. The third attempt was successful and a short flight was made. This appears to have resembled the trajectory of a projectile. Apparently his "fiery chariot" described several curves and finally landed abruptly. A startled onlooker who was the first to reach Herr von Opel found him "feeling the effects of his experience" securely strapped in his asbestos-covered cockpit and surrounded by a mass of red-hot and smoking tubes. One feels that Herr von Opel should be congratulated for his courage.

EUROPE TO CALIFORNIA IN SEVEN DAYS.

Western Air Express and the United States Lines have completed arrangements whereby passengers from Europe by any of the ships of the United States Lines may avail themselves of what is virtually a seven-day boat, train and aeroplane service from Europe to California.

Passengers from Europe on arriving at New York take a train to Kansas City where they arrive 34 hours later. Here they transfer to an aeroplane belonging to Western Air Express and fly to Los Angeles in 12 hours.

The total time from New York to Los Angeles is 46 hours and the fare $245 (£49), which includes transportation to and from airports and the midday meal in the aeroplane.

The time across the States with only one change is claimed to be faster by two hours than any other existing air and rail combination.

UNSUBSIDISED AIR TAXIES.

Northern Air Lines have decided to reduce their passenger rates for "Air Taxies" by 33⅓ per cent. per mile.

The fare for one passenger will now be tenpence instead of one shilling and threepence, and for two or more ninepence per mile each person.

This reduction has been made possible by an interesting circumstance. When Northern Air Lines started, an estimate was made of the probable time that would be flown each year. Owing to the unexpected popularity of the "Air Taxies" this number of hours has been exceeded by more than one hundred per cent. although the Company has only been working six months.

The public have patronised the service so well that the estimated allowance for "overheads" has been drastically reduced and this advantage is to be shared with the public.

It is felt that the reduced prices will lead to still more business and that further reductions may be possible next year.

It is believed that the new rates are the lowest charged by any firm for the hire of private passenger "Air Taxies."

A NEW AUSTRALIAN CIVIL AVIATION COMPANY.

A company known as the Eyre Peninsula Airways, Ltd., has been formed in Adelaide with a capital of £10,000. The object of the company is to operate a passenger and freight service between Adelaide and Streaky Bay, by way of Wallaroo, Cowell, Tumby Bay, Port Lincoln, and Elliston, with an alternative service between Adelaide and Yorketown by way of Ardrossan, Maitland, and Minlaton.

The company has acquired a Junkers F-13 four-seat monoplane.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 16; Monday, 39; Tuesday, 38; Wednesday, 34; Thursday, 33; Friday, 41; Saturday, 38.

Imperial Airways Ltd.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich London—Ostend—Brussels—Cologne and return: Machines 92, passengers 662, freight 42 tons. India Route: Inward (delayed), outwards, passengers 3, mail 745 lbs.

Air Union:

Paris—London and return: Machines 65, passengers 244, freight 30⅔ tons.

K.L.M.:

Amsterdam—Rotterdam—London and return: Machines 24, passengers 146, freight 8¾ tons.

Sabena:

Brussels—London and return: Machines 12, passengers 49, freight 3½ tons.

Deutsche Luft Hansa A.G.:

Amsterdam—London and return: Machines 26, passengers 61, freight 11½ tons.

Miscellaneous:

British machines 19, passengers 20.

Foreign machines 1, passengers 1.

Total number of trips by British machines 111, carrying 682 passengers. Foreign machines 128, carrying 501 passengers.

COMPARATIVE FIGURES.

Week ending Sept. 28:

Machines, 239; Passengers, 1,183; Crews, 558; Total personnel, 1,741.

Corresponding week, 1928:

Machines, 184; Passengers, 998; Crews, 355; Total personnel, 1,353.

Corresponding week, 1927:

Machines, 161; Passengers, 914; Crews, 314; Total personnel, 1,229.

Corresponding week, 1926:

Machines, 95; Passengers, 536; Crews, 125; Total personnel, 661.

Corresponding week, 1925:

Machines, 94; Passengers, 381; Crews, 122; Total personnel, 503.

Corresponding week, 1924:

Machines, 113; Passengers, 484; Crews, 142; Total personnel, 626.

Corresponding week, 1923:

Machines, 79; Passengers, 238; Crews, 108; Total personnel, 346.

Corresponding week, 1922:

Machines, 98; Passengers, 330; Crews, 159; Total personnel, 489.

Corresponding week, 1921:

Machines, 75; Passengers, 227; Crews, 98; Total personnel, 325.

Corresponding week, 1920:

Machines, 131; Passengers, 222; Crews, 152; Total personnel, 374.

CROYDON NOTES.

Our energetic Under-Secretary of State for Air, Mr. Montague, accompanied by Mr. Bertram, Deputy Director of Civil Aviation, has just completed a five day tour of the Foreign Air Lines of Europe.

Starting on Sept. 24 by Dutch K.L.M. from Croydon to Amsterdam, he connected with the A.B.A. Swedish line from there to Malmo. By French Farman and German Luft Hansa, he made his way from Malmo to Berlin and Dresden the following day, and from Dresden to Vienna via Prague he made use of the Czechoslovakian Air Transport Company. From Vienna to Cologne, Mr. Montague flew by Luft Hansa on the fourth day of his tour, and the Belgian Sabena brought him home to Croydon from Cologne on the fifth day according to schedule.

Mr. Montague as a business member of a business Government has thus done exactly what an enlightened business man would do. Instead of sitting in his own factory with cotton wool in his ears, praising his gods that he was an Englishman, he has sallied forth and visited the factories of all the most important foreign houses in the same line of business as himself and has doubtless come home brimful of good ideas which will eventually be to the improvement of British Commercial Aviation.

An uninterrupted decade of Air Line operation under one management is at present something of a rarity. This does not, of course, mean the somewhat furtive celebration of ten years' work which is made up of the scant years of the actual celebrant firm added to those of predecessors who either vanished naturally or became amalgamated in the manner of a rabbit effecting a reluctant merger with a python.

A genuine tenth anniversary will be quietly celebrated at the Hague on Oct. 7, when it is not only the tenth birthday of K.L.M., but also the tenth anniversary of Mr. Albert Plesman's connection with the firm as Director. Mr. Plesman founded the K.L.M. and has identified himself so closely and untiringly with it ever since, that the world-wide reputation of the K.L.M. all over the World for efficiency and good organisation is Mr. Plesman's personal reputation also. Mr.

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Plesman is more to his Firm than a mere director whose chief function appears in some cases to be that of looking important in a limousine behind a large cigar and observing with satisfaction the terror of his office boys. Mr. Plesman is a personal friend to his employees and that is why many of them have been with him close on ten years.

K.L.M. is essentially an international organisation in spite of being a Dutch National Company, and in it are to be found English, Russian, German, French and Scandinavian employees, all working happily together. English is the official language of the Firm, but conferences are held and letters written in four or five different languages at the Head Office, The Hague. In this way, a broad outlook upon what should essentially be an international business has always been maintained by the Directors of K.L.M. towards commercial Aviation.

Belated efforts are being made to get up some sort of athletic association at Croydon Aerodrome, but facilities for anything but team work are lacking. Employees of the various firms find it extremely difficult to band themselves together at a given time into elevens or fifteens and sports of this sort are not altogether what are wanted. Many of us are getting too old for rugger, although we still feel capable of making the younger generation see stars on a football field.

Actually, however, we should probably crack up if we took to the more strenuous games again, and, anyway, we have not time for this class of thing.

Many people here work from 7 or 8 a.m. on Monday morning until 7 or 8 p.m. on Saturday evening and on Sundays as well.

Part of these hours may be spent in standing by for late machines or in the case of pilots, as stand by or reserve pilots, with nothing especial to do except stay on the Aerodrome in case of need. What these people with the odd hour or half hour to spare obviously need is a gymnasium, fives court, or facilities for squash racquets or hard-court tennis. When the new Aerodrome only existed as a blue print we made urgent representation to the Air Ministry for a Squash Court, pointing out that it was at least as important for Commercial Aviation folk to keep fit as it is for the R.A.F. if not more so.

The Air Ministry, notorious for the economical way they do things, could not at that time see their way to "wasting money" on so frivolous a thing as a Squash Court. Now there are certain financiers at Gwydyr House or elsewhere who never cease counting the piles of sixpences and twopences which pour in from visitors to the Aerodrome or to the public enclosure. These visitors pay their money to see the aircraft of various Firms and the organisation of those Firms. They are thrilled by arriving and departing Argosies, Fokkers, Golden Rays and the like, and by the sight of pilots and others in magnificent uniforms, and they are not even shown the mummy of a Government official in a glass case. Thus, the majority of the profit made by the Air Ministry on visitors, which is quite a fat profit now, and will increase year by year, morally belongs to the Firms who provide most of the fun. Either it should be taken off the rentals which are the highest in Europe, or, better still, saved up until there is enough to build a Squash Court. What about it Whitehall?—No reply.—SPRY.

PARCELS TO PARIS.

The Postmaster-General announces that the senders of air parcels for Paris may now undertake payment of the Customs and other charges that would normally be collected from the addressees. The parcels will be subject, as regards acceptance, to the general conditions applicable to parcels sent to France by the ordinary service for delivery free of charge.

THE COMPASS SWINGING BASE AT CROYDON.

Air Ministry Notice No. 49 of the year 1929 announces that a new and improved form of Compass-swinging Base is available at Croydon aerodrome.

The charges for use range from 5s. for a machine with an empty weight of less than 3,000 lbs. to £1 for machines weighing over 10,000 lbs.

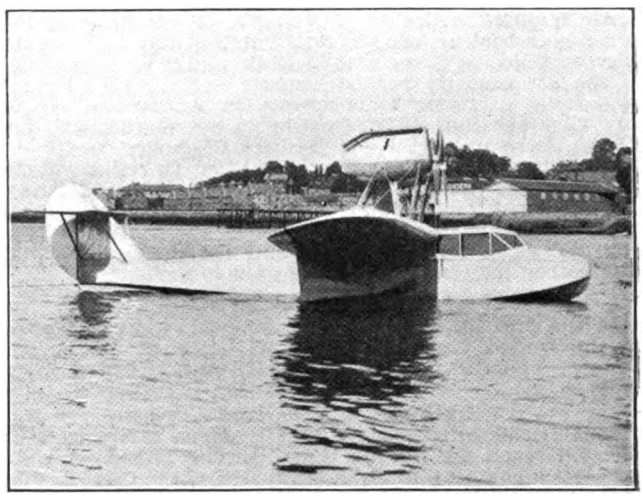
Applications for use should be addressed to the Chief Aerodrome officer, who will detail a traffic hand to superintend the use of the base.

The notice includes instructions for the correct use of the base.

THE REWARD OF VIRTUE.

Mr. A. V. Heaton and his mechanic, Mr. J. Exley, both of Berkshire Aviation Tours, Ltd., had a forced landing at Scarborough on Sept. 12. The machine was alleged to be an *Avro Bristol Fighter*!

The point of the story is, however, that to avoid killing anybody on the crowded beach, Mr. A. V. Heaton alighted on the water. Fortunately, neither he nor his mechanic were hurt. They were brought ashore and the machine was salved later.



CUTTY SARK

CABIN FLYING BOAT.

LONG years have passed since the *Cutty Sark*, famous old-time clipper, battled for supremacy over the world's trade routes. To-day, inheriting that famous name, comes a new *Cutty Sark*, carrying the speed, grace of line and seaworthiness of its predecessor to a higher pitch, and adding to them the final virtue of flight.

Cutty Sark flying boats are equipped with either one, two or three engines. The smaller model seats four in an enclosed cabin. The larger seats eight and has a top speed of 135 m.p.h. All have Saunders-Roe easy-repair all-metal hulls and Saunders-Roe plywood cantilever wings. Twin engined models can fly level with one engine out of action.

Saunders-Roe also produce refuelling tenders, petrol and oil scows, floating docks for marine aircraft, high-speed tenders, bomb loading barges, and other seaplane servicing units.

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THE ROTATING RADIO BEACON AT ORFORDNESS.

Air Ministry notice to Airmen No. 56 of the year 1929 announces that an experimental rotating radio beacon has been installed at Orfordness, Suffolk, and is being operated.

The Air Ministry are particularly anxious for all pilots and radio operators to co-operate in testing this beacon, and they ask that all results should be recorded and sent to the Secretary of the Air Ministry (Signals).

Air Ministry Pamphlet No. 38, entitled *Orfordness Rotating Wireless Beacon. Instructions for taking Bearings.* Price 3d. net, and obtainable from H.M. Stationery Office, gives a brief description of the beacon, the method of working, details of signals emitted and the manner in which the beacon may be utilised as an aid to navigation.

THE U.S. AIR MAIL.

In the first six months of this year Air Mail contractors in the United States carried 1,548.9 tons of mail over a distance of 6,379,776 miles, for which they received a sum of $7,280,441.

GERMAN CIVIL AVIATION.

The Berlin correspondent of *The Times* states that the belated report for 1928 of the Deutsche Lufthansa shows receipts amounting to 31,754,883 marks (£1,587,744), and expenditure to 31,745,387 marks, leaving a bare surplus of 9,496 marks (1927, receipts 30,615,321 marks, expenditure 30,596,267 marks, surplus 19,054 marks). The income consisted as to two-thirds of public subsidies and as to the remainder of working receipts. A total distance of 10,217,529 kilometres (about 6,250,000 miles) was flown in passenger flights and mail services (1927, 9,208,029 kilometres).

The Lufthansa regards the coming years as decisive for Germany's place in international air communications, and considers the most important of its immediate tasks to be the organisation of the Far Eastern and South American services. The first of these is temporarily delayed by unsettled political conditions and the second by the stage of technical progress. The second task is the development of communications with the industrial centres of Europe, particularly for freight and mail traffic. Next to these in importance come the longer internal stretches, for which the development of night flying and blind-flying methods is considered essential.

INCREASED SWEDISH AIR TRAFFIC.

The passenger, goods and mail traffic on the Swedish air lines this year has shown a great increase, according to the latest reports published in Stockholm. The number of passengers using the Stockholm—Berlin and Malmo—Amsterdam lines has risen considerably since the preceding year, and the Stockholm—Helsingfors passenger traffic this season shows an increase of 67% over 1928.

At the Bulltofta airport near Malmo, which is the most important aerial centre for Continental traffic, the number of in- and out-going passengers during the first eight months of this year was 3,869. The number of arrivals and departures of machines during the same period was 1,693, and the total quantity of in- and out-going goods and mail about 160,000 kilograms.

The increasing public interest in aviation is further evidenced by the number of short flying trips at the Stockholm and Malmo stations, which this year covered a total stretch of 17,000 kilometres. The sight-seeing flights above Stockholm this year attracted 1,177 passengers against only 690 in 1928.

Several ambulance flights to out-of-the-way places in the Stockholm archipelago have been successfully performed, bringing patients in a critical condition into the Stockholm hospital.

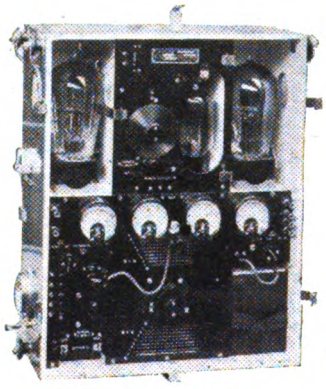
AERONAUTICAL EXPANSION IN POLAND.

The Aeroplane of Sept. 4 announced the signing of an Air Traffic agreement between Germany and Poland. The opinion was then expressed that this agreement would probably result in a service between Berlin and Warsaw.

A correspondent writing from Warsaw on Sept. 13 to *The Manchester Guardian* is able to confirm this opinion with definite information.

In 1930 a direct air line between Warsaw and Berlin will be opened, and as the Poles very shortly expect to negotiate an Air Traffic agreement with the Soviet, this Berlin—Warsaw line should be extended to Moscow.

A new air line is proposed which will join Berlin, Breslau, Kattowitz and Lodz. Reports state that the Poles and Rumanians are negotiating with the idea of opening a direct service between Warsaw and Bucharest.



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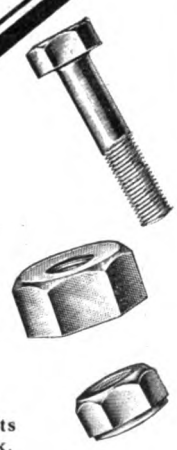

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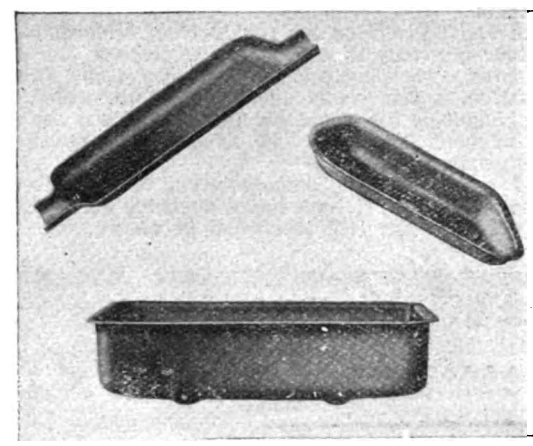

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WHAT OTHER NATIONS DO AND THINK.

The following letter from a Greek reader of The Aeroplane in Greece will be of interest to those readers in the British Aircraft Trade who have the intelligence to appreciate all that it implies:—

I was very much surprised to read in your article on the "*Challenge International de Tourisme*" that the only two British entrants out of 50 odd were flying under the French flag.

Of course if either one or both of the entrants come first, it will be a great honour for England but how much better if they were entered under their own flag.

If the Aero Club, working on the prevailing economy campaign, could not see its way to pay the paltry sum of £200—paltry in view of the great advertisement, could not its members or even the public have been asked to contribute? I for one would gladly have given my contribution, and am certain that a far larger amount than that needed would have been collected.

But unluckily advertisement seems a thing hated by Britishers, and this is the chief reason why, anyhow in this part of the world, everyone talks mostly of French, Italian and German achievements. As an example, may I quote the following:—

The Greek Government, deciding to change the type of aeroplanes used by the Army Air Services, applied for tenders. From the 10th to the 20th Aug. any firm wishing to compete would have to send over a machine to be flown and shown off in Athens. English, French, Italian, German, Czechoslovakian firms are competing and every day flying is taking place at the Tatoï aerodrome.

British machines were very much admired, but the French in order to attract the public's attention arranged for a visit of the "*l'Oiseau Canari*" piloted by Assolant, Lefevre and Lotti, and have also sent over their best aerobatic pilot, Doré.

A great campaign was started in the papers and numerous French achievements were mentioned.

The French Legation organised for Sunday a flying exhibition under the auspices of the French Minister for which numerous invitations were sent. Special trains and 'bus services were arranged. The other day Doret flew over Athens and gave an exhibition of aerobatics, and all Athenians are now under the impression that France leads in the air.

Nothing in the papers regarding British machines and achievements.

Cobham arrived here on his return from Australian and African tour and only drew a couple of lines in the daily press. Scarcely anything was mentioned of Capt. Broad's demonstration, a few weeks ago, on a Moth, which was promptly bought by the Naval Air Service. Was it not then the ripe moment for the British Legation to organise as well a demonstration?

When I mentioned this demonstration to a number of friends no one seemed to have heard anything about it, and personally I, who am still interested in an amateur way with flying, only heard of it two days before Capt. Broad's return to England.

Greece owing to its situation and bad communications is in great need of an air service and now, when the formation of civil air-lines and of an Aero Club is under discussion, is the time to strike out an advertisement campaign.

As regards communication may I just mention an example that in order to go from Athens to Sofia one must either go via Nich (Yugoslavia) 48 hours, or by boat via Dedeagatch, and from thence via Adrianople (Turkey), whilst by air it is a question of a few hours. Mails from and to Sofia take 3 to 4 days, i.e., as long as a letter takes from London.—"Dick."

WHAT ENTHUSIASM CAN DO.

The cost of an aeroplane is often quoted as the reason which prevents everyone from flying. Everybody would fly if they could afford the pastime. Mr. S. Buckle, of Dratton, near Abingdon, has shown everyone how one may fly for less than £20 in their own aeroplane.

Mr. Buckle has bought a number of scrap aircraft parts originally belonging to a variety of types. These parts he has tied together to make a high-wing monoplane, which was flown by Mr. J. S. Tanner for the first time on Sept. 19. The engine appears to be a 60 h.p. Anzani.

AN IMPERIAL (?) AIR DERBY.

To call an international air race starting in the United States and finishing in Canada an "Imperial Air Derby" seems a little inaccurate. On consideration the name becomes obviously more inappropriate as the effect will be to demonstrate American-built aircraft in Canada.

Mr. Charles O. Stillman, President of the Imperial Oil Company, has announced that this company proposes to offer £10,000 towards promoting a race of this kind next year.

THE EXPANSION OF TRADE.

T. B. Browne Ltd., who describe themselves neatly as "Incorporated Practitioners in Advertising," have just issued the 1929 edition of *The Advertiser's A.B.C.* This issue thoroughly upholds the reputation which the book has had for the last forty years as the most valuable work of reference for advertisers.

As yet the Aircraft Trade does not, or cannot, afford to indulge in general advertising. But we are rapidly arriving at the time when on certain occasions firms will find local advertising of considerable value. And in *The Advertiser's A.B.C.* they will find the names of all the publications of any real importance in every town or every district in the United Kingdom and in the British Empire as well as the names of the leading papers in all countries all over the World.

When flying meetings are being held in certain places people who want to sell aircraft to private owners may very well advertise in the local papers. And when a firm is making a deliberate attack on the business of one particular nation it may very well advertise in the leading papers in that country, if only for the sake of getting good editorial attention. And the 21s. which *The Advertiser's A.B.C.* costs is little enough to spend on getting that information.

CAPTAIN P. D. ACLAND.

Captain P. D. Acland, of Vickers (Aviation), Ltd., has now sufficiently recovered from his recent illness to be able to leave the Empire Nursing Home. It is not expected, however, that he will be able to resume his duties for several weeks. In the meantime, any letters addressed to him at Vickers House will be forwarded.

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AUTHORISED AIR MINISTRY SUPPLIERS
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PERSONAL NOTICES.

Death.

LOTHERINGTON.—On September 28, at Ewell Park Nursing Home, Blanche Gertrude, beloved wife of Flg. Off. H. A. Lotherington, R.A.F.O., "Green Man," Ewell.

Forthcoming Marriages.

CARTER—MACANDREW.—The engagement is announced between Flt. Lt. G. P. H. Carter, R.A.F., Maidsmere, near Bromsgrove, Worcestershire, and Esther M. D. MacAndrew, daughter of the late Maj.-Gen. Sir Henry J. M. MacAndrew, K.C.B., D.S.O., and the late Mrs. MacAndrew, Aisthorpe, Inverness.

SADLER—MANNERS.—The engagement is announced between Sq. Ldr. John A. Sadler, R.A.F., younger son of Geoffrey E. Sadler, of Abbots Langley, Herts, and Rebecca, daughter of Mrs. Manners and the late T. N. Manners, of Penzance, Cornwall.

STUDD—NEW.—The engagement is announced between Sq. Ldr. Theodore Quintus Studd, D.F.C., R.A.F., son of Mr. and Mrs. E. P. Studd, of Exeleigh, Starcross, Devon, and Esther Mary, elder daughter of Mr. and Mrs. H. H. G. New, of Craddock, Cullompton, Devon.

Births.

BOYCE.—On Sept. 23, at Luctons, Lee-on-the-Solent, to Constance (*née* Browning), wife of Sq. Ldr. G. H. Boyce—a daughter. (Ottawa, Canada, papers, please copy.)

BROUGHALL.—On Sept. 25, the wife of Flt. Lt. H. S. Broughall, M.C., D.F.C.—a daughter.

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MISCELLANEOUS ADVERTISEMENTS.

All Advertisements for this column should arrive at this office by first post Monday, to ensure insertion.

For the convenience of Advertisers, replies can be received at the office of The Aeroplane, Cannon House, Pilgrim Street, London, E.C.4.

Special PREPAID Rate—18 words 4/6, 3d. per word after; 13 insertions, 18 words, 4/-; 26 insertions, 18 words, 3/6; 52 insertions, 18 words, 3/-, 2d. per word after. Situations Wanted ONLY—18 words 1/-.

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Coley Ltd., Aircraft Surplus. Main Oil Tanks, 10s.; Windscreen frames and brackets, without glass, 2s.; K.L.G. Plugs F.9, new in maker's boxes, doz., 9s. 9d.; Smith's Revolution Indicators, 600-2,600 r.p.m., with 3 ft. drive, 22s. 6d.; Cross Levels, 1s. 6d.; Dashboard new spotlamps, 2v. bulb and length of wire, 1s. 9d.; Above postage paid. Free List obtainable. Coley Ltd., Ordnance Works, Queen Elizabeth Road, Kingston-on-Thames.

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Air Survey Co. Ltd., 39, Grosvenor Place, S.W.1 (Sloane 6048), Dum Dum, Calcutta, and Monkey Point, Rangoon.

The Aircraft Operating Co. Ltd., 8, New Square, Lincoln's Inn, London (Holborn 8131), and Bulawayo, Southern Rhodesia; Cairo, Egypt; Rio de Janeiro, South America: Contractors to the Ordnance Survey. Laboratories and Subsidiary Company for aerial photography in the British Isles. Aerofilms Ltd., Colindale Avenue, Hendon (Colindale 6183 and 6184).

AIRCRAFT FOR SALE.

Authorised Moth Agents. Machines taken in part exchange. Phillips and Powis Aircraft (Reading) Ltd., Reading Aerodrome. 'Phone Sonning 114.

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Copies of Aeroplane Photographs (indicated as such in the inscriptions under the pictures) may be had from:—The Aeroplane Office, 175, Piccadilly, London, W.1. Single prints, 6 in. × 8 in. cost 2s. 6d. each, and 1s. 6d. per print for three or more. Larger sizes or larger quantities may be had at special prices.

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Wainwright's Flying Equipment.—Wainwright Flying Helmet (passed by A.M.) lined chamois, 22s. 6d., in Black or Tan, Fur trimmed helmets 12s. 6d., 15s. 6d. White helmets, pique or drill, 12s. 6d. Flat type earphones, complete with connections and "Y" pieces, 12s. 6d. Flying mask goggles, clear or anti-dazzle, 12s. 6d. Genuine R.A.F. Sidcots 57s. 6d. Chrome Leather flying coats, 84s. to £8 8s. Write for catalogue, Wainwright's, 300-302, Euston Road, London, N.W.1. 'Phone: Museum 6280.

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Required immediately, Assistant for Stressing Department. Write stating experience, age and salary required to Handley Page Ltd., Cricklewood, N.W.2.

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Send full particulars of your second-hand aircraft to the Brooklands School of Flying. You'll get a better bid for it there. And a better deal when you buy a new machine in part exchange for your own. The School's Sales Manager knows the second-hand market intimately and pays the full market price

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OCT. 9, 1929.

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Aeronautical Engineering

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ON THE LAST COMPETITIONS OF THE YEAR.

When the composite and comprehensive report of the Schneider Trophy Contest appeared in THE AEROPLANE of Sept. 11, certain readers complained that after they had read it, although they had a very graphic mental picture of everything that happened during and was concerned with the Contest, they did not know who had won or what the times were. People have become accustomed to seeing results so displayed that even the half-witted can understand them. Apparently these particular readers did not grasp the idea that all the results were displayed in the best possible manner in a photograph of the official score-board. The notion of showing results in a photograph instead of in a long, strung-out table was too new for them.

This time there shall be no mistake. So, to avoid straining the intellects of a minority of THE AEROPLANE's readers, here are the results of the races at the Meeting of the Newcastle Aero Club on Oct. 5—which, thank Heaven, is the last full-dress flying meeting of an exhausting year.

THE RESULTS.

The Air League Challenge Cup.

HEAT 1.—1, J. D. Irving (Gipsy Moth); 2, Miss Leathart (Spartan).

HEAT 2.—1, Norman S. Todd (Moth); 2, S. A. Thorn (Avian).

HEAT 3.—1, P. Michelson (Avian); 2, R. N. Murray-Phillipson (Moth).

FINAL.—1, N. S. Todd (Newcastle Aero Club), handicap 1min. 55sec., speed 94 m.p.h.; 2, J. D. Irving (Newcastle Aero Club), handicap 43sec., speed 104¾ m.p.h.; 3, S. A. Thorn (R.A.E. Aero Club), handicap 1min. 11sec., speed 98½ m.p.h.

The Grosvenor Challenge Cup.

HEAT 1.—1, G. S. Kemp (Moth), Newcastle Aero Club; 2, W. L. Runciman (Spartan), Newcastle Aero Club.

HEAT 2.—1, J. D. Irving (Moth), Newcastle Aero Club; 2, R. G. Cazalet (Widgeon).

HEAT 3.—1, H. L. B. Dixon (Moth), Newcastle Aero Club; 2, A. Goodfellow (Avian), Lancs. Aero Club.

FINAL.—1, G. S. Kemp, time 20min. 16sec., speed 98 m.p.h.; 2, Dr. Dixon, time 20min. 50sec., speed 93½ m.p.h.; 3, A. Goodfellow, time 20min. 51sec., speed 93½ m.p.h.

The S.B.A.C. Challenge Cup.

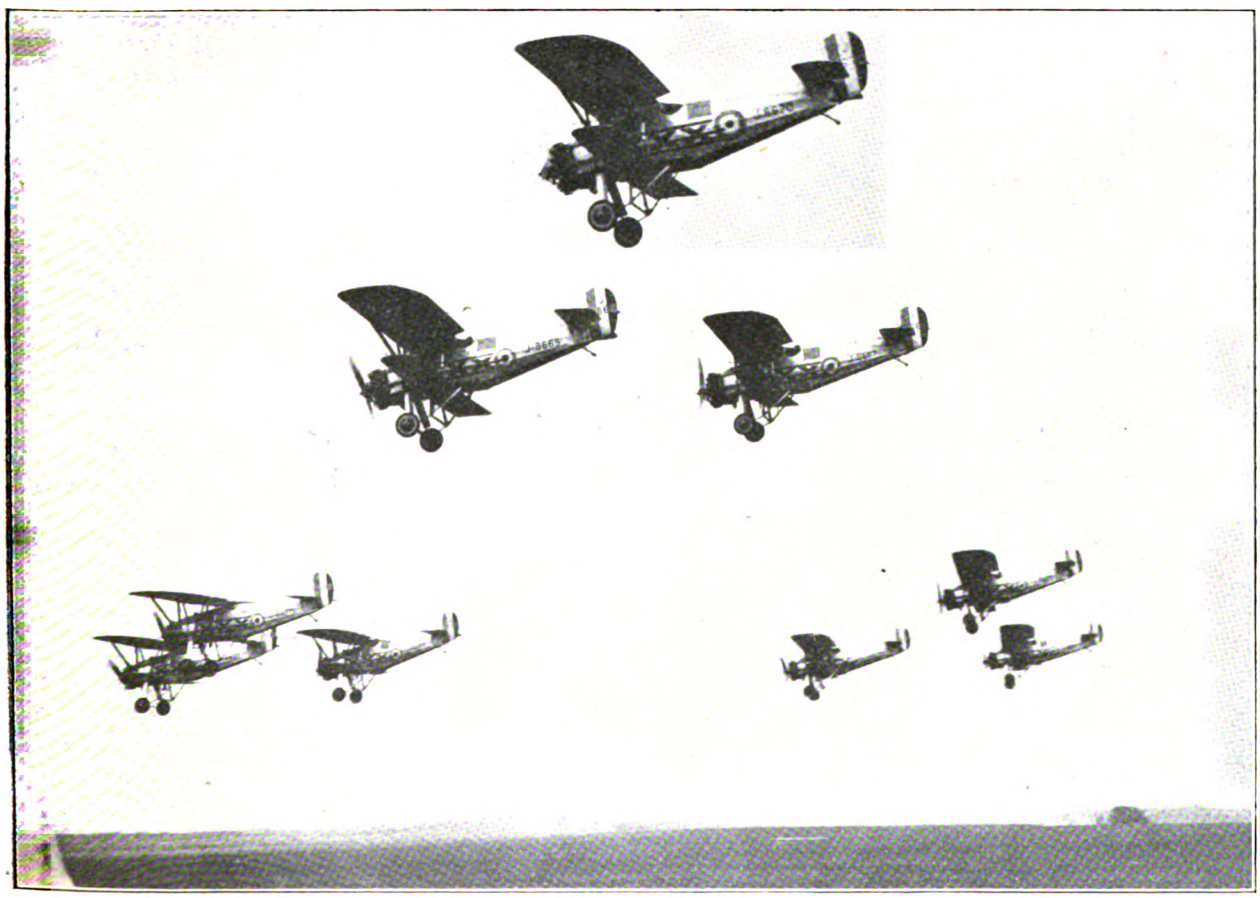
1, Dr. H. B. L. Dixon (Newcastle Aero Club); 2, J. J. Hofer (London Aeroplane Club); 3, D. Wilson (Newcastle Aero Club).

A NORTHUMBRIAN TRIUMPH.

There is quite a good joke about these results, apart from their being a Northumbrian triumph. The Air League Challenge Cup, the Grosvenor Challenge Cup, and the S.B.A.C. Challenge Cup were all won on the Newcastle Club's old Moth G-EBPT, with a Cirrus II. engine.

As the results show, Mr. Todd, an *ab initio* member of

"LAST, THE TRAINED SQUADRON, FULL CHARGE—— THE SOUND OF A GOING."—(KIPLING—"*The Centaurs.*")



AT CRAMLINGTON.—XXIX Squadron, R.A.F., in formation.—("*Aeroplane*" *photograph.*)

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the Club, trained by Mr. Parkinson, flew the machine in the Air League Race, Mr. G. S. Kemp, the Club's instructor, who succeeded Mr. Parkinson, flew it in the Grosvenor Race, and Dr. Dixon, also an *ab initio* member of the Club, trained by Mr. Parkinson, flew it in the S.B.A.C. Race.

PT is a genuine antique. Originally it belonged to Lord Ossulston, who sold it to the Club when he bought a Gipsy-Moth. It was badly crashed and was rebuilt by the De Havilland firm. For the racing on Saturday it was rigged by Mr. Alex Bell, who was the first Secretary of the Newcastle Club, and is now a fully fledged Ground Engineer with Cramlington Aircraft, Ltd., the enterprising venture recently formed by Miss Constance Leathart and Mr. W. L. Runciman, who are both members of the Newcastle Club, also trained *ab initio* by Mr. Parkinson.

The engine, a genuine Mark II. Cirrus, was carefully tuned by the Club's Ground Engineer, Mr. W. Dunning. Everybody concerned—the Club, and Cramlington Aircraft, Ltd., and Mr. Bell and Mr. Dunning—are all prepared to swear that there was no faking about the engine. The only departure from standard was that it had stub exhausts instead of the usual long exhaust pipe.

Furthermore, members of the Newcastle Club won two second prizes and a third. Which means that they collared six out of the nine prizes which were to be won.

Whichever way you look at it, the result was an all-round day out for the Newcastle Club. The handicappers, Messrs. Davey and Rowarth, did their best, and they provided time after time those excitingly close finishes to which Mr. Goodman Crouch and Mr. Dancy have accustomed us in the past. They were simply defeated by extraordinarily efficent tuning of the engine and rigging of the aeroplane, and by really clever flying by pilots who knew the course backwards as well as forwards. After winning the Air League Cup, PT was pulled back in the handicap for the Grosvenor Cup, and proceeded to win that. She was pulled back again for the S.B.A.C. Race, and still won.

The pilots said that she was only flown at full throttle for the one lap of the S.B.A.C. Race. But in all the races she showed herself to be just about as fast as the Gipsy-Moths flown by other people. Which only shows what can be done by skilful tuning and piloting

The Luck of the Weather.

Saturday, Oct. 5, was evidently the Newcastle Club's lucky day. Apart from winning two-thirds of the prizes, the Club had quite a good day financially, and the most wonderful luck with the weather.

On Thursday and Friday the weather was perfectly beastly. The pilots who journeyed to Newcastle on Thursday had about as bad a time as anybody could have. Miss Slade, of Heston, who flew to Newcastle all alone in her Mk. I. Moth, was at one point near Durham thrown clean out of her seat, away from her rudder-bar and control-stick, and had to hold onto the edge of the cockpit with both hands. And even the more bulky pilots who completely filled their safety belts said that they had hard work to stay put.

On Friday, when most of the pilots arrived, there was so much mist over Newcastle that those experienced aviators Mr. Alan Goodfellow and Mr. Michelson, of the Lancashire Club, missed Cramlington altogether, and sailed gaily on till they were compelled by shortage of petrol to land, when they found themselves in a field near Haddington, about ten miles from Edinburgh.

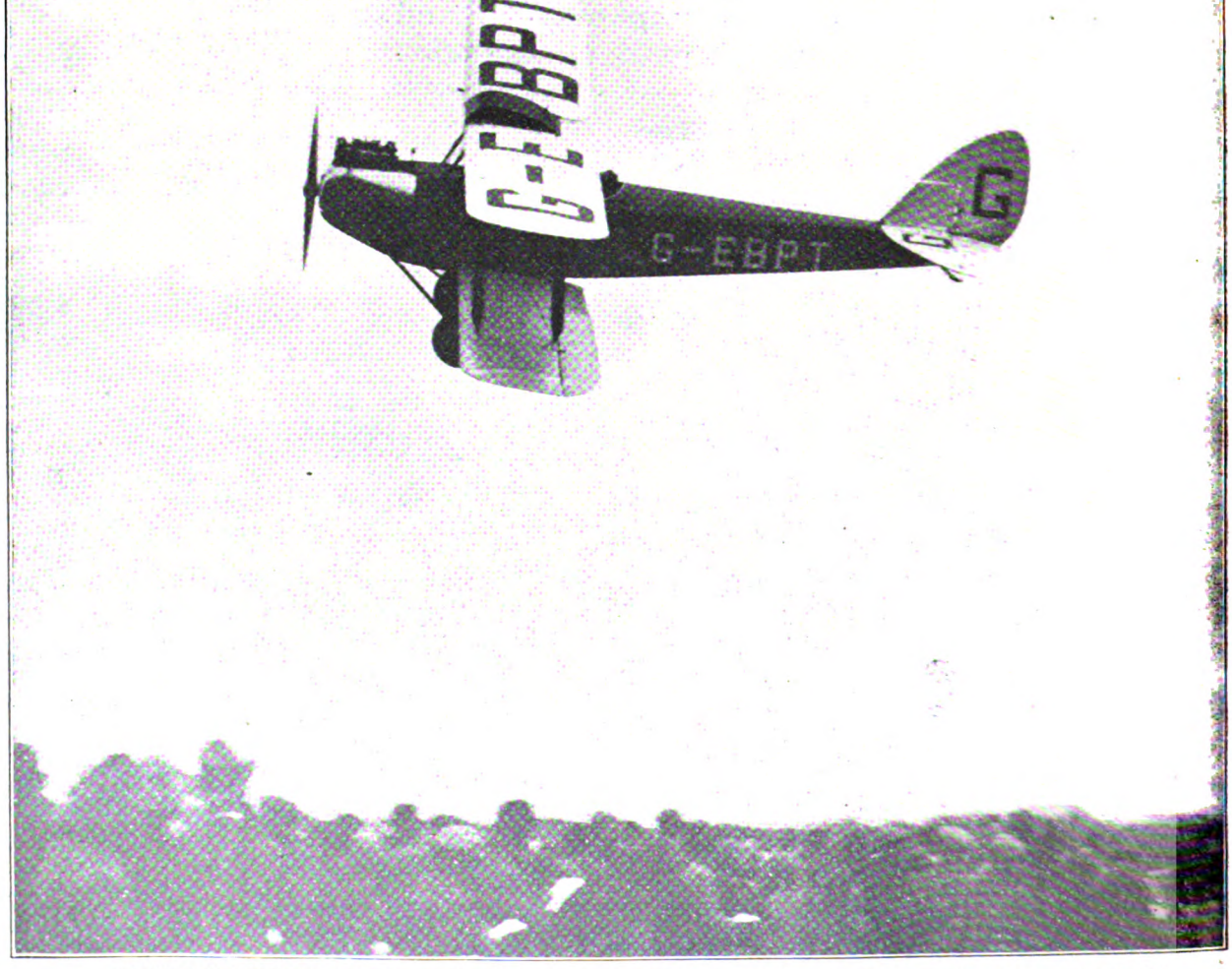
Even the ten Siskins of 29 Squadron had quite an uncomfortable journey, and a Moth conveying Wing-Commander K. R. Park suffered along with the other light machines.

Saturday itself, though it looked very threatening in the morning, and still more threatening at times during the afternoon, remained dry and not too windy, until an hour after the show was over, and then the rain came down in those driving sheets which are peculiar to the North Country.

The Assistance.

The indigenes of Newcastle, being accustomed to the climate, were in no wise deterred from going to Cramlington. The Club said that they wanted 35,000 people to make a real success. They did not get quite that number, but they certainly got something over 20,000. And they might have got more if the approaches to the aerodrome had been easier.

Everybody tried to get there at once at about 14.00 hours—after lunch. The result was that between 14.00 and 15.00



THE HERO OF THE DAY.—Old PT in the S.B.A.C. Race at Cramlington.—("Aeroplane" photograph.)

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British Air Triumphs

1918 A Napier-engined D.H. aeroplane climbed to a height of 30,500 feet in 66 minutes. At this time no human being had ever soared so high.

1919 A Napier-engined D.H. aeroplane won the Aerial Derby. Speed 129·3 m.p.h.

1921 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 163·4 m.p.h.

1922 A Napier-engined Supermarine flying-boat regained the Schneider Trophy for Great Britain at a speed of 149 m.p.h.

1922 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 180 m.p.h.

1923 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 192·4 m.p.h.

1926 The first non-stop crossing of South Atlantic ocean carried out by Commandante Franco, flying a Dornier flying-boat with two Napier engines.

1926 First formation flight from Cairo to Cape Town and back to England. Four Fairey aircraft, each fitted with Napier engine, covered 56,000 engine miles without trouble.

1927 Schneider Trophy won by a Napier-engined Supermarine-Napier seaplane flown by Flight-Lieut. S. N. Webster, A.F.C. Speed 281·669 m.p.h. Only two machines completed the course, both Supermarine-Napier seaplanes fitted with Napier engines.

1927 World's speed record over 100 kilometres set up by Flight-Lieut. S. N. Webster, A.F.C. Speed 283·313 m.p.h.

1928 Flight-Lieut. D. D'Arcy Greig, D.F.C., A.F.C., flying Supermarine-Napier seaplane, fitted with Napier engine, set up speed of 319·57 m.p.h.

1928 Capt. H. S. Broad, flying D.H. Hound, fitted with Napier engine, secured three World's speed records whilst carrying loads of 500 and 1,000 kilogrammes.

1928 The greatest formation flight ever carried out was made with four Supermarine-Napier Southampton flying-boats, each fitted with two Napier engines. The machines flew from England to Australia, round Australia and back to Singapore, covering 180,800 engine miles without mechanical trouble.

1929 The first non-stop flight from England to India was carried out with a Fairey monoplane fitted with Napier engine. 4,130 miles in 50 hrs. 38 mins.

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The finest aero engine in the World

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hours the long straight road leading to the aerodrome from Newcastle was blocked with cars for well over a mile, and after the show was over the grass verges of the road were still lined with cars, some of them populated and some abandoned by their owners, who had been keen enough to walk to the aerodrome.

If there were 20,000 people who had paid for admission, there must have been at least another 30,000 "hedge-guests" all along the road which runs past two sides of the Aerodrome. A good Northumbrian explained that nobody could grudge these folk their free show, because the Mining Industry has been so bad in the North that the poor things "simply hadn't a bob to pay for entrance," and that their keenness in tramping many miles to see the flying was all to the good as a way of spreading airmindedness. And very good flying they saw.

The net result, in spite of this, was that the Club collected something well over £700 in gate-money, sold over £100 worth of programmes, and raked in about £120 worth of advertising. So that altogether the Club looks like being between £400 and £500 on the right side of its balance-sheet.

Being oneself a Northumbrian, one can write of the Newcastle Club more or less as a member of the family, and so one can say that the Club really deserves its good luck, because it has had the sense to learn the lesson which was taught it by the unholy mess which it made of its first meeting two years ago. That meeting was about the worst-organised thing that ever happened, and last Saturday's meeting was certainly one of the best.

The Flying.

The heats for the Grosvenor Race and the Air League Race had been flown on the Friday, with the results already indicated. The final of the Air League Race—for the handsome cup presented to the League some years ago by Sir Sefton Brancker (as he says, in a moment of indiscretion)—started only a few minutes after Zero Hour.

There was some argument as to whether Mr. J. D. Irving was entitled to second place. A good many people held that he ought to have been disqualified. The loud-speaker—which, by the way, was operated most effectively and intelligently—had said quite clearly that competitors had to fly round the wind-stocking at the south-east corner of the Aerodrome. And Mr. Irving most distinctly flew on the inside of it. But, seemingly, the Stewards held that he had crossed the starting-line correctly, and that what he did afterwards was his own affair.

Consequently, Mr. Todd got the £25 First Prize, Mr. Irving got the £10 Second Prize, and Mr. Thorn, R.A.F., of the Royal Aircraft Establishment Aero Club, only got the £5 Third Prize.

Aerobatics.

The next event, according to the programme, was an Aerobatic Display by Mr. Broad. Unfortunately Mr. Broad was unable to be present, as he had to go to Martlesham for some important tests, so his place was taken by Mr. H. H. Leech, in the Martlet built by the Southern Aero Club with the new A.B.C. Hornet engine (a flat double-opposed four-cylinder).

Those who saw Mr. Leech's amazing flying at the opening of the Hanworth Aerodrome know what his ability is. Certainly the Martlet is a wonderful little machine to handle, and the Hornet engine gives it plenty of spare power. But nobody other than a first-class pilot could make it perform in such wise. But one does wish that he would keep a little further off the ground when he is stunting.

Nobody doubts either his ability or the machine's to do what he does. But he never allows himself any margin for recovery if he should happen to make a mistake owing to a foot slipping on a rudder-bar or the breaking of a control-wire, which is always possible, even in the best aeroplanes. The difference between being fifty feet off the ground and a couple of hundred feet off the ground may just make the difference between a bad crash and a clever landing. And Mr. Leech is too good a pilot to be wasted—apart from the fact that he has cost the country quite a good deal to train, at Cranwell and since.

Still, the display was as good as anything that has ever been seen, and it certainly did impress the crowd enormously.

The Grosvenor Cup.

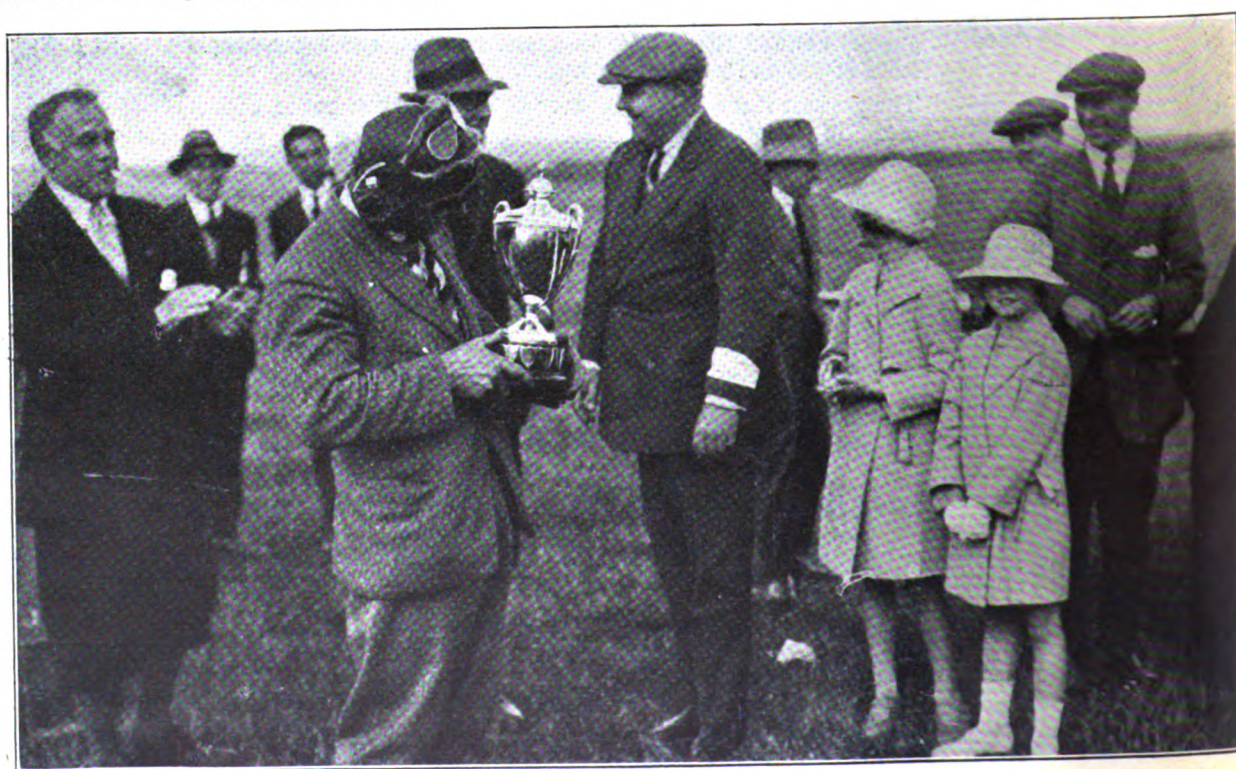
Following this came the final of the Race for the Grosvenor Challenge Cup, presented to the Royal Aero Club by the late Lord Edward Grosvenor. Here, as already indicated, Mr. G. S. Kemp, the Club Instructor, was first. He won £100, presented by *The Evening World*, the new Newcastle paper owned by Lord Rothermere's group. Dr. Dixon won the £15 Second Prize in the Club's other Moth, QV, with a Cirrus II., and Mr. Alan Goodfellow, of the Lancashire Club, won the £10 Third Prize in the Lancashire Club's Avian, with a Cirrus II. Both the Second and Third Prizes were presented by Sir Charles Wakefield.

The fastest time in this race was done by Mr. R. G. Cazalet in a Widgeon III., with a Cirrus-Hermes engine. Although he was handicapped out of it and finished about fifth, his speed was 111 miles an hour, which shows that, barring specially faked racing machines, the Widgeon is still the fastest light aeroplane. And the Hermes makes a particularly pretty job of it.

The R.A.F.'s Display.

After this the really spectacular event of the day was flown,—a display by No. 29 Fighter Squadron, R.A.F., under Sq.-Ldr. M. L. Taylor, A.F.C., in Armstrong Whitworth Siskins (Jaguar engines).

The wind was distinctly bumpy, and was blowing all the dirt from the collieries over us. But somehow the lowering sky made the display of war machines all the more impressive. And, needless to say, the flying itself was as nearly perfect as anything human can be.



A MEMORY.—The late Lord Edward Grosvenor and his daughters at Lympne on August Bank Holiday, 1925, after presenting his cup to Flt. Lt. Chick, R.A.F.—Mr. Harold Perrin on the left and Mr. (now Sir) Frank McClean behind.—(*"Aeroplane" photograph.*)

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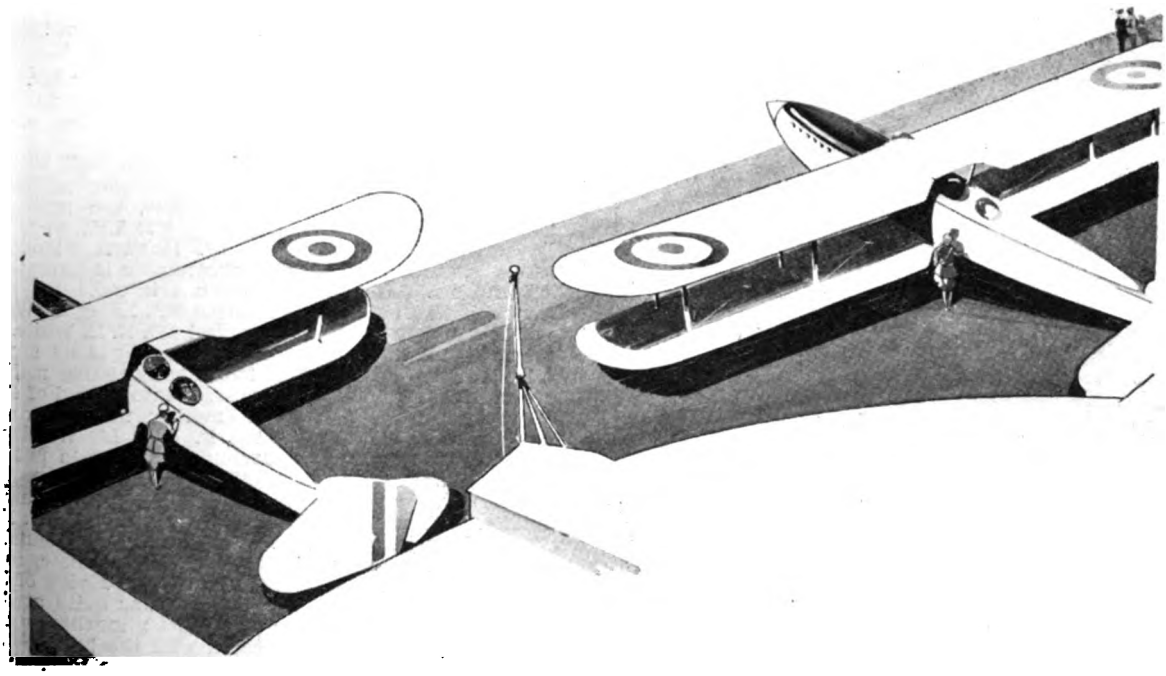
HIGH PERFORMANCE SERVICE AIRCRAFT.



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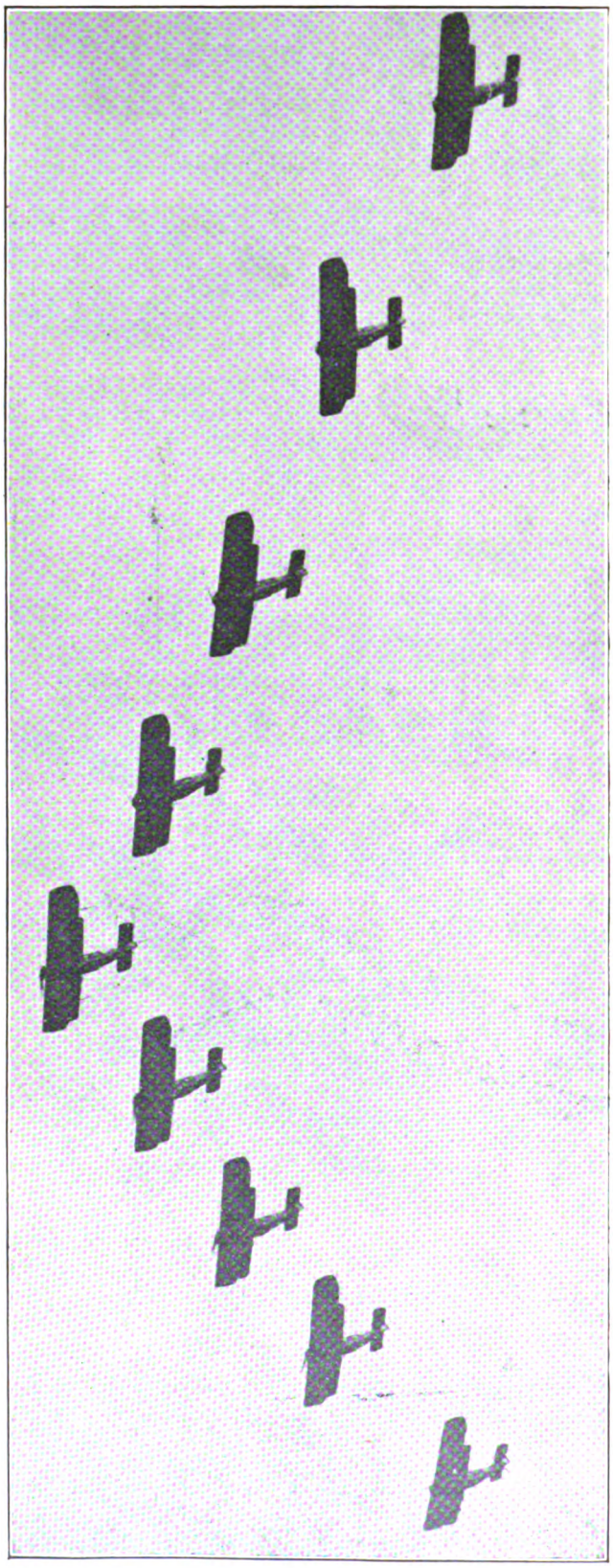
Event A was an exhibition of squadron formation flying, including the usual Vee formation, flights astern, echelon to right, squadron Vee, line abreast, and so forth. The wheeling and forming and re-forming was beautifully done, and the squadron flew low, so that everybody had a good look at them as they passed overhead. The only possible criticism is that perhaps the formation kept too much to the east of the aerodrome and did not give the people in the cheaper enclosure at the west end as close a view as they might have had.

Partly because of the bumpiness of the wind, and partly because the Cramlington Aerodrome is distinctly hilly, the squadron broke up and landed independently instead of landing in formation. This was a wise precaution which a less canny leader might have neglected for the sake of showing off.



XXIX.—The squadron in Vee formation. (This picture is seen at its best when held over-head.)
—("Aeroplane" photograph.)

FRIENDS OF THE FAMILY.—The men of the Automobile Association, who are doing such good service at all the flying meetings.

Event B was an exhibition of aerobatics by Mr. R. W. Letchworth. He showed himself to be fully up to the highest standard of R.A.F. piloting. His spinning and rolling in his Siskin was particularly neat.

Incidentally, these manœuvres were very well illustrated in the programme. This, one may add, was printed and produced by M. S. Dodds, of Newcastle, the principal of which firm is Major Brian Dodds, late R.A.F., who, in the early days, was a partner of Mr. Howard Flanders, at Brooklands. The work in this programme is exceptionally good, with modern type, and clean printing.

Event C was an Air Fight between Flt. Lt. O. E. Worsley, late of the 1927 Schneider Team, and Mr. N. E. White. One of the most difficult things in flying is to put up anything that looks like a fight between two exactly similar machines. The performance is apt to degenerate into a kind of follow-my-leader competition, because neither machine can get away from the other, nor catch it. Flt. Lt. Worsley and Mr. White, by skilful manœuvring, managed to put up a show which was full of verisimilitude.

Event D was a Converging Attack on an Encampment by Flt. Lt. E. Brewerton, Mr. John Clarke, Mr. R. W. Letchworth, and Serjeant-Pilot T. W. Morton. Two tents were stuck up on the brow of the aerodrome, where, in this case, the cheaper enclosures had a very good view of them. The flying was excellent, the bombing was quite good, the tents burned furiously, the subsequent machine-gunning was very impressive, and, in accord with the best war practice, after doing their machine-gunning, the machines got away low down over the heads of the crowd in different directions—so low as to make people duck and give them a real thrill. This may be reprehensible, but it certainly brings home the horrors of war,—and it is in accord with proper ground-strafing tactics.

Event E was a demonstration of Combined Aerobatics by Mr. John Clarke and Serjeant-Pilot Morton, the pair who were runners-up in the competition between Fighter Squadrons for the honour of doing this show at the R.A.F. Display at Hendon. This pair did, in fact, perform at Hendon, as well as the winning pair. Their show at Newcastle was every bit as good as their show at Hendon.

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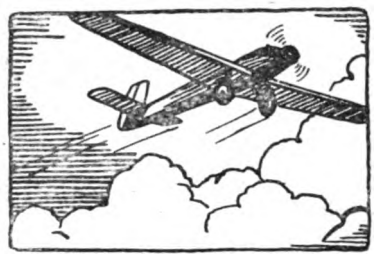
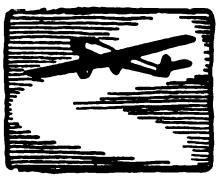
"Bristol"

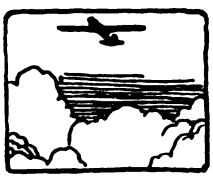
Of the World's Records homologated by the F.A.I. more are held by aircraft fitted with Jupiter Engines than by any other power unit.



ABSOLUTE RECORD
GREATEST ALTITUDE
Junkers W 34—420 h.p. "Bristol" Jupiter air-cooled engine.
12,739 *metres*—41,795 *feet.*
Herr Willi Neuenhofen,
May 26th, 1929.

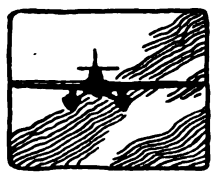


ALTITUDE WITH A LOAD OF 500 Kgs.
Junkers W.34.
9,190 *metres.*
Sept. 14th, 1928.

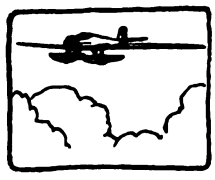


ALTITUDE WITH A LOAD OF 1,000 Kgs.
Junkers W.34.
7,907 *metres.*
Sept. 14th, 1928.

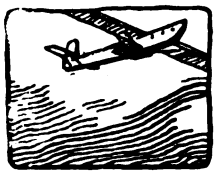
ALTITUDE WITH A LOAD OF 500 Kgs.
Junkers W. 4 (Seaplane).
7,458 *metres.*
Nov. 6th, 1928.



SPEED OVER 1,000 Kms. WITH A LOAD OF 500 Kgs.
Junkers W.34 (Seaplane).
181·447 *Kms. per hour.*
May 11th, 1927.

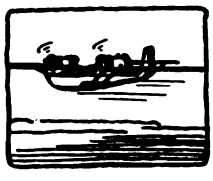


ALTITUDE WITH A LOAD OF 1,000 Kgs.
Junkers W.34 (Seaplane).
6,389 *metres.*
Nov. 7th, 1928.

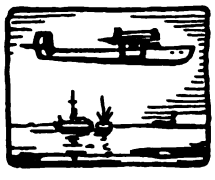


SPEED OVER 1,000 Kms. with LOAD OF 1,000 Kgs.
Dornier Superwal D.R.
177·279 *Kms. per hour.*
Feb. 5th, 1928.

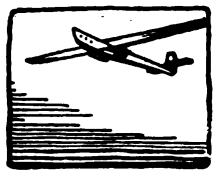
SPEED OVER 100 Kms. with LOAD OF 2,000 Kgs.
Dornier Superwal D.R.
209·546 *Kms. per hour.*
Jan. 20th, 1928.



SPEED OVER 500 Kms. with LOAD OF 2,000 Kgs.
Dornier Superwal D.R.
179·416 *Kms. per hour.*
Feb. 5th, 1928.



SPEED OVER 1,000 Kms. with LOAD OF 2,000 Kgs.
Dornier Superwal D.R.
177·279 *Kms. per hour.*
Feb. 5th, 1928.



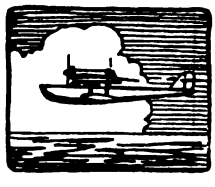
DURATION WITH A LOAD OF 4,000 Kgs.
Dornier Superwal D.R.
6 *hrs.* 1 *min.* 56 *secs.*
Feb. 4th, 1928.

DISTANCE IN A CLOSED CIRCUIT (Load 4.000 Kgs.).
Dornier Superwal D.R.
1.000·160 *Kms.*
Feb. 5th, 1928.

ALTITUDE WITH A LOAD OF 4,000 Kgs.
Dornier Superwal D.R.
2,845 *metres.*
Jan. 23rd, 1928.

SPEED OVER 100 Kms. with LOAD OF 4,000 Kgs.
Dornier Superwal D.R.
209·546 *Kms. per hour.*
Jan. 20th, 1928.

SPEED OVER 500 Kms. with LOAD OF 4,000 Kgs.
Dornier Superwal D.R.
179·416 *Kms. per hour.*
Feb. 5th, 1928.



SPEED OVER 1,000 Kms. with LOAD OF 4,000 Kgs.
Dornier Superwal D.R.
177·279 *Kms. per hour.*
Feb. 5th, 1928.

THE BRISTOL AEROPLANE CO., LTD.
FILTON, BRISTOL.

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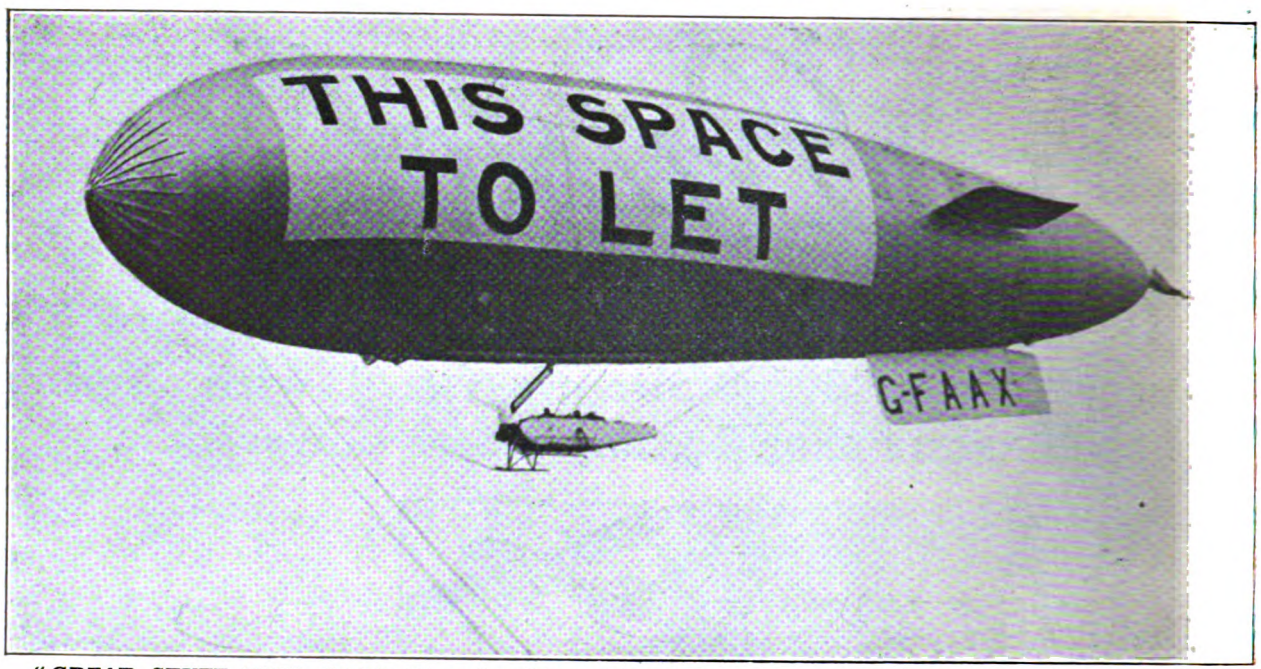

"GREAT STUFF THIS GAS."—The advertising ship produced by the Airship Development Company Ltd., which was built in the old R.A.F. airship shed at Cramlington, making its first public appearance.
(*"Aeroplane" photograph.*)

Comic Relief.

Hereabouts we were treated to a display by the little airship which has just been produced by the Airship Development Co., Ltd. The machine, as the photograph shows, strongly resembles a war-time Blimp. It is, however, of completely new construction, and embodies a certain amount of new design.

The envelope was built by the R.F.D. Co., Ltd., of Guildford, and it is a very good job indeed. Mr. Dagnall was in charge of the construction of the envelopes of Airships, Ltd., the lighter-than-air branch of Mr. Holt Thomas' great concern, The Aircraft Manufacturing Co., Ltd., and what he does not know about making airship envelopes is not worth knowing.

When the airship first appeared the R.A.F. people were just about to start their display, so it hung about in the offing nose-down and head-to-wind, with its engine just going ahead enough to keep it stationary over one spot. Its peculiar attitude quite gave the impression that it was trying to dive home to its shed and could not make any headway against the strong wind which was blowing. But as soon as the R.A.F. people had landed and the air was clear, the pilot of the comic little craft opened out his engine and made distinctly perceptible progress over the ground towards the aerodrome.

Whether he ever had his engine flat out or not one cannot say, but the wind aloft must have been doing something well over 30 m.p.h., and the ship was certainly doing another ten or fifteen m.p.h. over the ground against the wind. It seemed to handle quite well, so evidently the people who have to do with it really do know something about airships, which is more than one would care to say about some of the people in British Airships, Ltd., with which certain of them had the misfortune to be associated some years ago.

Judging by the amount of attention which the craft excited on the aerodrome, there certainly is a good deal to be said for the behest "Advertise by Airship," which was the legend on the side opposite to that shown in the photograph. The question is whether the cost of gassing-up and handling even a small airship can be kept low enough to make the business a paying proposition at any possible advertising rates.

The S.B.A.C. Race.

After the R.A.F.'s display, the Race for the S.B.A.C. Challenge Cup was flown. This race is for pilots trained *ab initio* by the Club which enters them. Unfortunately, the only Clubs represented were the London Club, the Lancashire Club, and the Newcastle Club.

As already recorded, Dr. Dixon won the £50 First Prize for the Newcastle Club, Mr. Hofer, of the London Club, won the £15 Second Prize, and Mr. D. Wilson, of the Newcastle Club, won the £10 Third Prize. All these prizes, as well as the cup, were presented by the Society of British Aircraft Constructors.

A New Star.

Following this came a display of aerobatics by Mr. F. Fry, the chief pilot of Cramlington Aircraft, Ltd. Mr. Fry was flying one of the new three-seater Spartans specially built for taxi work, which the Leathart-Runciman firm have just acquired. Considering that the machine is supposed to be a mere taxi, it displayed amazing agility, and Mr. Fry showed himself to be a very clever pilot indeed.

As a matter of fact, he was rather on his mettle because he was a Serjeant-Pilot Instructor in the R.A.F. and had taught several of the officers of 29 Squadron how to fly. So evidently he thought that it was up to him to show that he could still instruct in the art of flying. And he certainly did so.

The next event was a Parachute Descent by the undefeatable Mr. John Tranum, who was taken up in, and dropped from, his brand-new Slotted Moth by Lord Ossulston. One nearly referred to Mr. Tranum as the "irrepressible," but that which is irrepressible is something which cannot be

REJUVENATED.—Mr. R. G. Cazalet's Widgeon with its handsome Hermes cowling.—(*"Aeroplane" photograph.*)

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THE NORTH.—Left to right, Dr. Dixon and Mr. Kemp, of the Newcastle Club, and Mr. Alan Goodfellow, of the Lancashire Club,—with old PT.—(*"Aeroplane" photograph.*)

stopped from going up, whereas Mr. Tranum simply cannot be stopped from going down—per parachute.

As usual he timed his drop perfectly, and landed precisely in the middle of the aerodrome. Certainly Mr. Tranum is a master of his peculiar art.

As a fitting end to the proceedings, Mr. G. S. Kemp, the Newcastle Club's Instructor, gave a display of aerobatics, quite equal to anything which we had already seen. He certainly showed that where knowledge of flying is concerned, the Newcastle Club can put complete faith in its Instructor.

Northern Hospitality.

The North Country is proverbially hospitable. It has to be, if it is to average up on its reputation for hardness in a business deal. And certainly Newcastle lived up to its reputation for hospitality.

The night before the Meeting, the officers of No. 29 Squadron R.A.F. were entertained to dinner by the Lord Mayor of Newcastle, Alderman Lambert, and they had an excellent time. Meantime, the various visiting pilots, aided and abetted by the members of the Newcastle Club, managed to put in quite a cheery evening together.

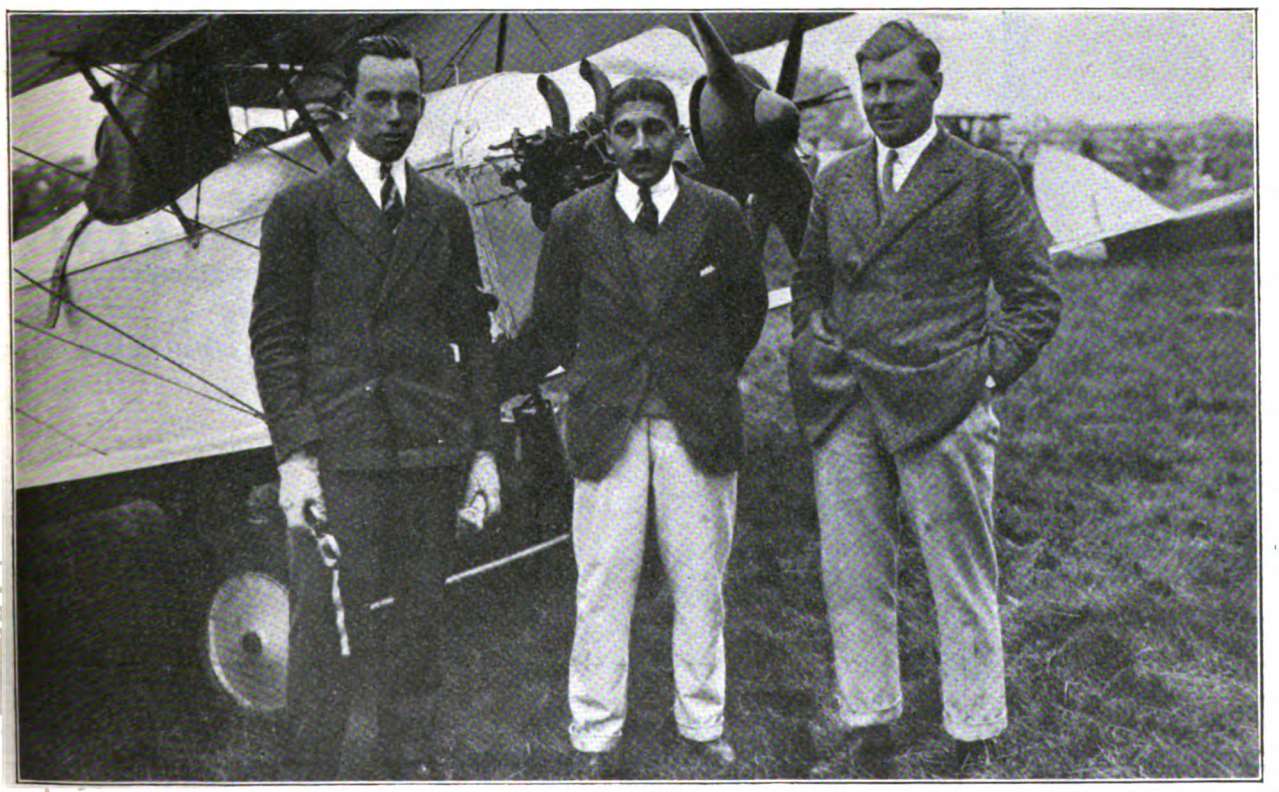
A Timely Word.

Hereabouts seems the right place to say a few words on a subject which distinctly needs attention.

Although the majority of the people concerned with Civil Aviation are good sportsmen and good sorts generally, there is unfortunately a certain percentage of hooligans among them—and for the good of the reputation of civil aviators as a class these hooligans ought to be suppressed.

The officers of No. 29 Squadron were stopping at the Turk's Head Hotel, and so were a number of civil aviation people, some of whom apparently put themselves down in the visitors' book as belonging to the R.A.F., on the strength of having served in the Air Force during the War 1914-18.

There seems to have been something of a riot in the Turk's Head, and one room was rather badly wrecked. Next morning the manager of the hotel came to an R.A.F. officer and lodged a complaint that the R.A.F. had done



THE SOUTH.—Mr. Leech, R.A.F. (actually a Northumbrian), Mr. Bellairs, and Mr. Miles, of Southern Aircraft Ltd., of Shoreham, with the Martlet (A.B.C. Hornet).—(*"Aeroplane" photograph.*)

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GROSVENOR CHALLENGE CUP
AIR LEAGUE CHALLENGE CUP
S. B. A. C. CHALLENGE CUP

ALL

CIRRUS ENGINE

At the Newcastle Meeting o
important CHALLENGE CUPS r
conclusive triumph for Cirrus en

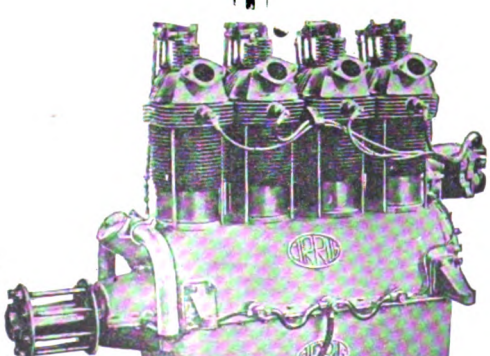
GROSVENOR CHALLENGE CUP

AIR LEAGUE CHALLENGE CUP

S. B. A. C. CHALLENGE CUP

FASTEST TIME o

Capt. R. G. CAZALET ON



85/95 h.p. CIRRUS MARK III.

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89, KINGSW

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N ON CIRRUS ENGINES!

5th October, the races for the
ove took place and resulted in a
t as follows:—

st.	G. S. KEMP.	CIRRUS - MOTH
nd.	Dr. H. L. B. DIXON.	CIRRUS - MOTH
rd.	A. GOODFELLOW.	CIRRUS - AVIAN
th.	W. L. RUNCIMAN.	CIRRUS - SPARTAN
st.	N. S. TODD.	CIRRUS - MOTH
rd.	F/O. S. A. THORN.	CIRRUS - AVIAN
st.	Dr. H. B. L. DIXON.	CIRRUS - MOTH
rd.	D. WILSON.	CIRRUS - MOTH

DAY WAS OBTAINED BY

RMES - WIDGEON.

NGINES LTD.
ise,
NDON, W.C.2.

105/115 h.p. CIRRUS-HERMES.

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considerable damage to the hotel's property. He was told that the R.A.F. personnel had been at the Lord Mayor's party, and had had nothing to do with anything that happened in the hotel.

When he was asked what room had been wrecked, the manager indicated a room several floors above those occupied by the R.A.F. officers—all of whom had behaved in a strictly proper manner. Nevertheless, the story got round that these Air Force people had been rioting about the hotel and breaking things up.

Therefore, one makes no excuse for appealing to the better-class people concerned with Civil Aviation to use their influence to stop unseemly behaviour which is likely to give civil aviators a bad reputation. And one advises the R.A.F. in future to take care that they do not stop in the same hotel as the civil aviation people. Nobody objects to a cheery time generally. But there is a big difference between all-round cheeriness and a drunken brawl.

The Club Dinner.

On Saturday night, the Club gave a dinner to the competitors, with Sir Joseph Reed, the President of the Club, in the chair. It was a thoroughly jolly affair, and the Station Hotel did it very well. One gathered from an outside source that the excellent organisation was largely due to Mr. W. L. Runciman. The original intention was that there should be two or three speeches and that people should then have a chance of meeting and talking with each other. But unfortunately the speeches went on and on and on till closing-time.

The Speeches.

Sir Joseph Reed led off with a commendably short speech which was very much to the point. He began by quoting the journalist who was asked what was the difference between a speech and a few words after dinner, the journalist's answer was, "About three-quarters of a column." He said that the Club had to thank the handicappers for providing such good finishes to the races.

He said that Newcastle had to depend on its industry and that he was glad to see new industries springing up. He referred to Cramlington Aircraft, Ltd., whose workshop had overhauled PT so successfully, and to the Airship Development Co., Ltd., whose little engine-driven balloon, which he said was similar to those used early in the War for anti-submarine patrols, we had seen cruising about the aerodrome that day.

He announced that the conditions for the competition for the Trophy which was to be presented to the Club by *The Evening World* would be settled by the Lord Mayor and Sir Sefton Brancker. And he reminded us that Sir Sefton was himself the donor of the Air League Challenge Cup.

Thereafter, by way of entertaining the visitors, the members of the Newcastle Club sang the Tyneside anthem, "Bladon Races." Mr. John Bell, the Secretary of the Club, sang the solo parts and the Club members sang the choruses. It certainly is one of the best local anthems of to-day, and though the twenty-five verses (more or less) only date to about 1840 or so, the tune is in the best folk-song manner, and must be centuries old. Incidentally, Mr. Bell only gave us three verses, which was a pity, for he has a good voice, and exactly the right delivery.

Captain J. H. Boyd, the Chairman of the Club, proposing "The Visitors" in particular, said that the Club was particularly fortunate in having such a galaxy of aviation talent, and included in particular Commander Perrin. He said that the Club had been particularly lucky to be so successful after so much organisation. He thanked in particular those who had helped to make the Meeting a success.

He said that No. 29 Squadron R.A.F. had been selected in particular to represent the Air Force because of their particular talent as aviators. One particular incident on the aerodrome had struck him. He saw three men of the R.A.F. working to start an engine belonging to one of the civil aviators, which showed that they took a particular interest in their work and did not regard it merely as a duty.

He thanked the Press in particular for the amount of publicity they had given the Meeting, and the Automobile Association for seeing to the parking of the aircraft, and the police for regulating the traffic, and the competitors, and the petrol companies, and Mr Tranum, the parachutist, in particular.

Wing-Commander K. R. Park, M.C., D.F.C., replying for the guests, started with a story that deserves to be better known. A number of Christian martyrs were in the arena at Rome to be eaten by lions. Lion after lion was released from its den, and each was met by one of the elders of the Christians, who said a few words to it, after which the lion slunk back to its den. The elder was haled before the Emperor, who promised him his life and liberty if he would explain how he defeated the lions. The elder said that he merely told each lion that he would be expected to say a few words after dinner.

On behalf of the Air Force, Wing-Commander Park said that 29 was merely a representative first-class squadron, in no way superior to its fellows. The success of such squadrons depended on the airmen, and he thanked the Club and the authorities at Newcastle for the hospitality shown to the other ranks in entertaining them and in giving them passes for the North-East Coast Exhibition.

He said that he thought that the hardest-worked men in Civil Aviation were the Club Instructors. And to illustrate his point, he told the story of the fool pupil who showed no air sense. For those who do not know the story, one may record that to teach the pupil that he must learn how to land, the instructor, after telling the pupil that he must do exactly as the instructor did in flying, took up with him a spare control-stick, and after giving the pupil some landing practice, told him that he had got to land the machine himself next time, whereupon he waved the spare stick in the air and threw it overboard—leaving the pupil to think that everything depended on his getting the machine down safely.

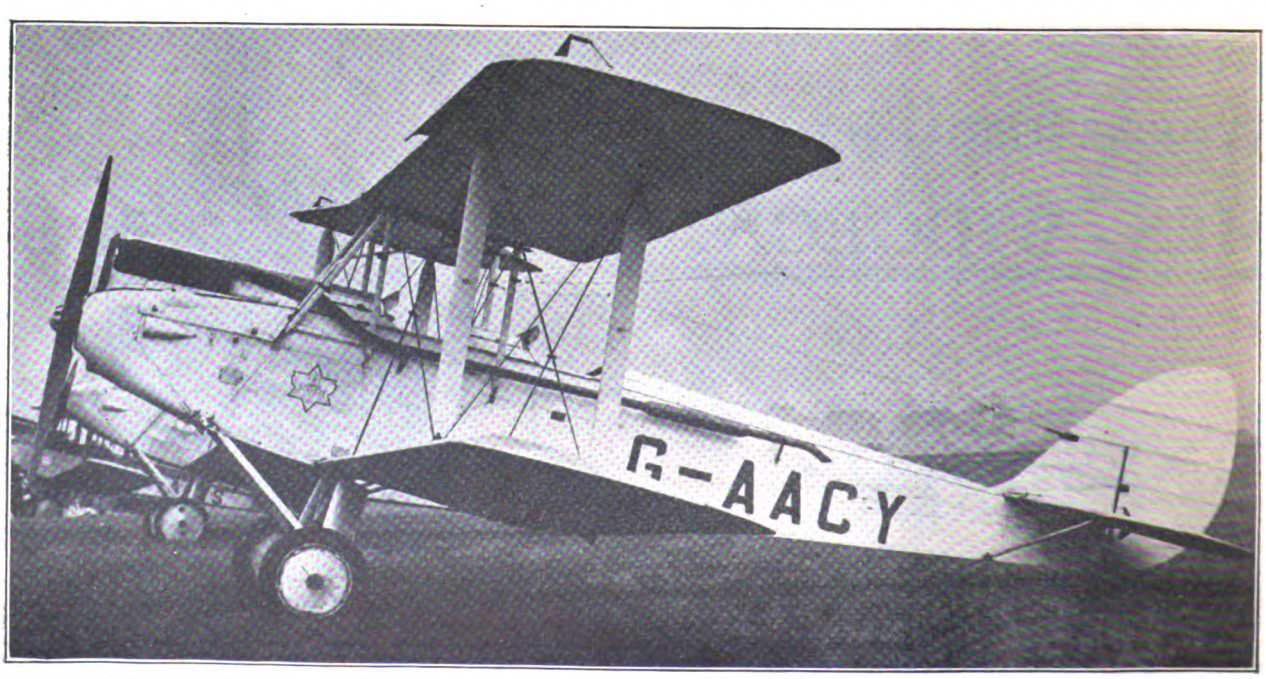
To his amazement, the pupil copied him exactly. He stooped down into the cockpit, came up with the control-stick in his hand, waved it, and likewise threw it overboard. Whereupon the instructor followed the sticks overboard with his parachute, leaving the pupil to his fate.

The pupil circled the parachute all the way down and made a perfect landing. When the shocked instructor got to him and demanded what it all meant, the pupil said that he had overheard the instructor's plot, and had himself taken up a spare stick.

Sir Sefton Brancker said that he agreed with the man who said that if speeches had got to be, he would rather listen to himself than anyone else. He admitted having given the Air League Cup to the Air League, but said that it was one of his slips-up.

Concerning the small amount that is known about Civil Aviation officials at present, he said that on the previous morning he had called on Sq. Ldr. Taylor of 29 Squadron at his hotel to discuss with him something about the Meeting, and had sent his name to Sq. Ldr. Taylor by one of the hotel boys. This boy told Sq. Ldr. Taylor that there was a gentleman downstairs who wanted to see him; he had not given his name, but he thought that he was Sq. Ldr. Taylor's banker. Sq. Ldr. Taylor told him that he could not quite understand why his banker from London should call on him in Newcastle at that time of the morning.

Continuing, Sir Sefton said that he was disappointed at the small



THE TALKIE.—The new "wireless" Moth, with Amplion apparatus, at Cramlington.—(*"Aeroplane" photograph.*)

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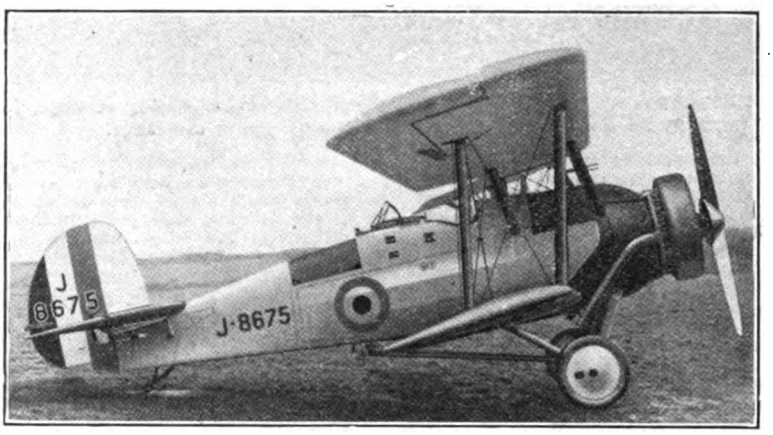
ARMSTRONG WHITWORTH
AIRCRAFT



THE ALL STEEL ATLAS

(ON WHEELS, FLOATS OR SKIS)

THE all-steel Atlas is the best aircraft for land or sea reconnaissance.

It is the standard Army Co-operation two-seater of the Royal Air Force.

Its steel construction accounts for its unrivalled durability and ease of maintenance. Fitted with the world-famous Armstrong Siddeley Jaguar engine (plain or geared type), its speed, climb and ceiling fulfil the severest Service requirements. It is produced on the grand scale by the best equipped aircraft works in Europe.

PERFORMANCE FIGURES

ATLAS WITH JAGUAR ENGINE AND TOWNEND RING

Fuel, 75 gallons (337 litres). Oil, 7 gallons (32 litres) Military Load, 880 lbs. (400 kgs.)

	Plain Engine	Geared Engine
Approx. total weight	4000 lbs.	4115 lbs.
	1820 kgs.	1870 kgs.
Speed at ground level	143.5 m.p.h.	149 m.p.h.
	231 km.p.h.	240 km.p.h.
" " 5000 ft.	139.5 m.p.h.	145 m.p.h.
" " 10000 ft.	134 m.p.h.	140 m.p.h.
" " 15000 ft.	125 m.p.h.	131 m.p.h.
" " 1000 metres	226 km.p.h.	236 km.p.h
" " 3000 metres	216 km.p.h.	225 km.p.h.
" " 5000 metres	193 km.p.h.	204 km.p.h.

	Plain Engine.	Geared Engine.
Time to 5000 ft.	5.25 minutes	4.25 minutes
" " 10000 ft.	12 5 "	10.5 "
" " 15000 ft.	26 "	21.75 "
" " 1000 mtrs.	3.5 "	2.5 "
" " 3000 "	12.5 "	10.25 "
" " 5000 "	34 "	27.5 "
Absolute Ceiling	19000 ft.	19100 ft.
	5800 metres	5830 metres
Service Ceiling	17300 ft.	17700 ft.
	5280 metres	5400 metres

Maximum allowable R.P.M. 2200. Normal R.P.M. 2000

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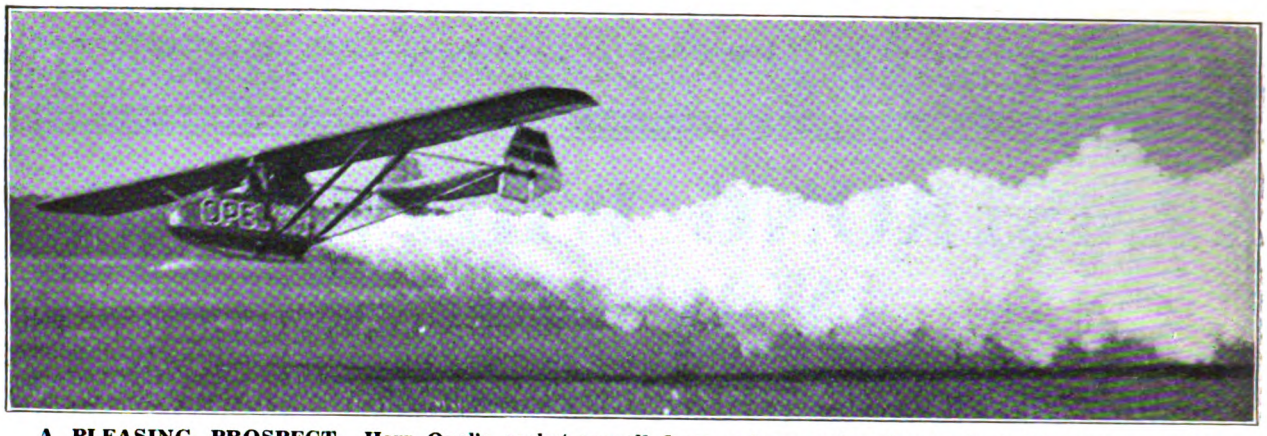


A PLEASING PROSPECT.—Herr Opel's rocket-propelled monoplane performing on Sept. 30.—Such a machine may be one of the attractions at next year's meetings.

number of Clubs represented at the Newcastle Meeting. The only Clubs there were the London Club and the Lancashire Club, which were subsidised, and the Halton Club and the Southern Club, which were not, which seemed to show that unsubsidised Clubs were just as enterprising as those which were subsidised.

Referring to the winning of all the prizes by the Newcastle Club, he said that he really felt that he must be North of the Tweed, and he said that he must have a look at G-EBPT, for its performance suggested that there must be something wrong with its Certificate of Airworthiness.

On behalf of Civil Aviation he thanked *The Evening World* for the £1,200 Trophy which that paper had promised to the Club. He hoped that this would be the first of a series of classic air-races belonging directly to different parts of the country, just as classic horse-races belonged to certain localities.

Miss Winifred Brown, of the Lancashire Club, rising in response to public demand, thanked everybody for a good time, and hoped that they would all be at Newcastle the following year.

Sq. Ldr. Taylor, on behalf of 29 Squadron, said that there had been some wonderful bouquets and also some "raspberries" distributed that night. So far as 29 Squadron was concerned, they were pleased to be selected for this Meeting. They had enjoyed their few hours in Newcastle, which included quite one-and-a-half hours' sleep. He congratulated the Newcastle Club on their fine flying.

He said that he hoped that *The Evening World* Trophy would not be like the Schneider Trophy, but that it would be something which the winner could fill, so that the losers could get some consolation out of it. He also congratulated the Club on the skilful way in which their members land habitually on an aerodrome which is not itself at all brilliant.

Dr. Dixon, also rising in response to public demands, proposed the toast of the Ground Staff, which was duly and deservedly honoured.

Mr. Harold Perrin warned Sir Sefton Brancker that the associated Light Aeroplane Clubs still firmly intended going to the Air Ministry to ask for subsidies after their present term had expired.

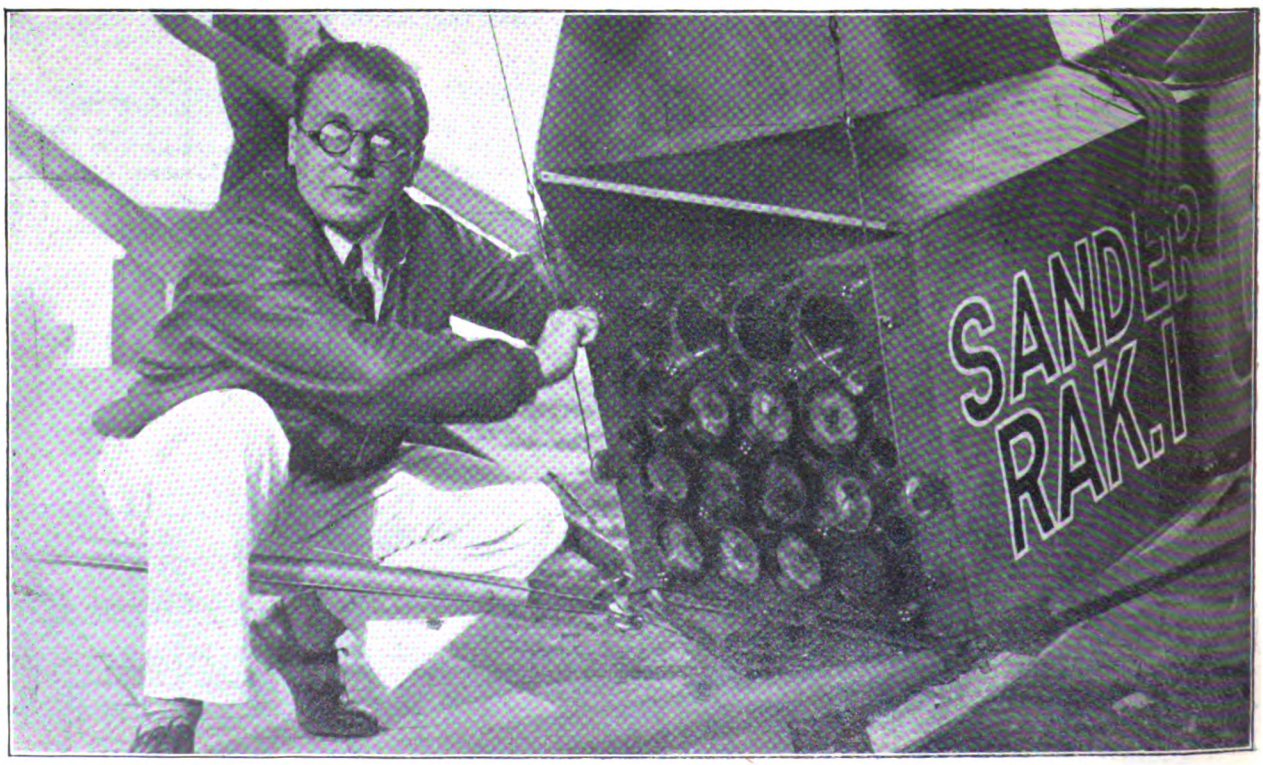
Referring to the much-talked-about *Evening World* Trophy, Mr. Perrin said that he was glad to hear that a handsome sum had been collected in Newcastle by exhibiting the Schneider Trophy winner, the Supermarine Rolls-Royce S.6. He said that he hoped that the money would not be spent on an expensive Trophy. Cups were cheap, and he would much prefer to see all the money, except a matter of perhaps £50 or so, invested so as to bring in annually a decent sum of prize-money for the winner.

Hereabouts is one of the really great jokes in Northumbrian aviation, and Mr. Perrin is to be congratulated on letting it out.

Those who have read so far will recall that previous previous speakers had referred to *The Evening World* Trophy as if it were an outburst of spontaneous generosity on the part of that paper, in accord with the late Lord Northcliffe's policy of advertising his papers by means of munificent prizes for flying events, which were duly boosted by the Northcliffe Press. However that may be, apparently the money for this particular piece of munificence has, in fact, been provided by the people of Newcastle themselves.

For the benefit of those who do not already know, the fact must be recorded that *The Evening World* is a comparatively new paper established by Lord Rothermere as an antagonist to *The Newcastle Evening Chronicle*, which belongs to the group controlled by Sir William Berry and Sir Edward Iliffe, the chief paper of which is *The Sunday Times*.

After the Schneider Trophy Contest, *The Evening World*, with typical Harmsworthian shrewdness, managed to borrow the Supermarine Rolls-Royce S6, and installed it in *The Evening World* pavilion at the North-East Coast Exhibition, which has been going on in Newcastle for some months. There a charge of a shilling per head was made for this particular side-show—though what right a newspaper has to charge admission to see a machine which is Government property is a question which might very well be put to the



THE ROCKETEER.—Herr Fritz von Opel displaying the driving apparatus of his machine.

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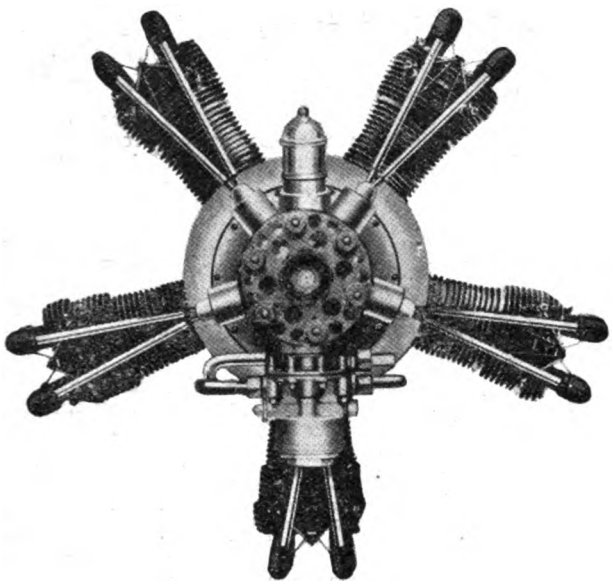
A New Armstrong Siddeley Engine —the GENET MAJOR



Front view showing the enclosed Valve Gear and streamline rocker covers.

THE 100-110 h.p. Genet Major represents the results of ten years' continuous progress in the design and manufacture of air cooled radial engines. It embraces many of the most successful features of the latest Jaguar, Lynx and Mongoose engines and is specially suitable for powering light aircraft and multi-engined aeroplanes.

LEADING FEATURES:

5 cylinders 4.25" or 108 mm. x 4.5" or 114.3 mm. 319 cubic inches or 5.23 litres. Compression ratio 5.23 to 1. Normal r.p.m. 2200. Rated normal B.H.P. at sea level 100, actual 103. Maximum B.H.P. at sea level 110. Weight complete with two magnetos, carburettor, air intake, propeller hub and tachometer drive 250 lbs. or 113.5 k.g. Overall measurements: diameter 38" or .95 m., length 36.2" or .905 m.

ARMSTRONG SIDDELEY

MOTORS LIMITED

Head Office and Works: Coventry. London: 10 Old Bond Street, W.1

FLOWN AND KNOWN ALL OVER THE WORLD.

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Secretary of State for Air when Parliament again assembles.

Anyhow, *The Evening Chronicle*, which has for months been carrying on controversies of all kinds of subjects with *The Evening World*, along lines which are simply a highly cultivated version of the kind of slanging-matches in which the newspapers of the Wild Western States used to indulge began to be quite rude about what the Harmsworth Press intended to do with all the money that they were getting out of the visitors to the Exhibition by exhibiting Government property.

And so, finally, *The Evening World* Trophy was announced.

So far as one can gather, the sum available is about £1,250, which represents the money paid for entrance to the peep-show, less the cost of transporting the machine to Newcastle and back and assembling and dissembling it there.

Everybody in aviation will certainly wish that collective and competitive benevolence of a similar nature may be organised elsewhere for the good of Civil Aviation and for the gaiety of the Nation. Properly run, more money could thus be extracted from the British Public than even the hundreds of thousands of pounds which Sir Charles Wakefield, the Patron Saint of Aviation, has given to aviation out of his personal wealth.

Meantime, Northumbria will have a particular interest in *The Evening World* Trophy, because everybody who paid his or her shilling to look at the S.6 will have that pleasing boy-scout feeling about it.

Mr. Alan Goodfellow, of the Lancashire Club, also rising under protest, thanked the Club on behalf of the visiting pilots who between them had won £20, of which £10 belonged to him. He could assure them on behalf of the visitors that G-EBPT looked lovely from behind. He said that he was glad to meet 29 Squadron again, because when he knew the Squadron in the R.F.C. at the time of its birth it succeeded in getting one-and-a-half aeroplanes to France.

Apropos somebody's opulence or munificence, or something, he told an excellent story of a man who had acquired considerable wealth by being concerned in one of the great city swindles, and was living in style on the proceeds after coming out of prison. While he was celebrating his release with a number of his friends his butler brought word that there was a man in the hall who wanted to see him and claimed to have been a friend of his in Wormwood Scrubbs Prison. The host went out, and returned in a few minutes very angry and said to his guests: "That chap's a dead wrong 'un. He was never in Wormwood Scrubbs at all."

Mr. A. Weir MacColl, of the Airship Development Co., Ltd., thanked the Club for inviting him to the Dinner, and assured them that, contrary to the account which had been published in one of the local evening papers, the engine of the airship had not broken down, and that its tail was not drooping that afternoon. On the contrary, its tail was well up. He said that he hoped to do for the small airship what the Club was doing for light aeroplanes.

Finally, rising under protest, not being a speechmaker, and not being a guest of the Club, but of an individual member, and being on one's native heath, so to speak, one suggested that the hour was then too late for speechmaking, and that the company would probably much rather adjourn to their individual ideas of amusement. So that was that.

As a matter of fact, the whole thing was a jolly good show. The date chosen was obviously wrong. That could not be helped, because, owing to annual training which culminates in the R.A.F. Display at Hendon and the leave season which comes immediately after, a performance by an R.A.F. Squadron could only be had before the end of May or after the end of September. And the Club very sensibly relied on the R.A.F. as the chief attraction to draw the crowd. In which undoubtedly the Committee were fully justified.

The Club has profited by its earlier mistakes, and even before this Meeting it was in a financially sound position, possibly very largely due to the fact that it has been extraordinarily lucky in the matter of crashes.

It has an excellent Instructor, and first-class Ground Engineers, and it has on its aerodrome Cramlington Aircraft, Ltd., a thoroughly enterprising young firm with excellent equipment, which is able to do repairs promptly and cheaply when they are outside the scope of the Club's own workshop.

The present Committee are hard-working and energetic. And having this particular stroke of luck about the weather, the Club now has money in hand.

One can only hope that the money will be spent with true North Country caution and effectiveness, and that next year the Club will find itself in a still better and stronger position.—C. G. G.

FRENCH DIESEL ENGINE EXPERIMENTS.

Last week a Morane-Saulnier monoplane fitted with a Clerget-Diesel engine running on gas oil was demonstrated at Villacoublay before M. Laurent Eynac, the French Air Minister, M. Caquot, *Directeur Général des Services Techniques et Industriels*, and *Inspecteur-Général* Fortant.

So far as is known these preliminary tests have been satisfactory.

RECOGNITION BY THE R.Ae.C.

In recognition of the flight to India and back the Royal Aero Club has awarded its Gold Medal to Mr. C. D. Barnard, and an address of congratulation has been sent to Her Grace The Duchess of Bedford.

Mr. Barnard, accompanied by the Duchess of Bedford, accomplished the flight in eight days, Aug. 2 to 9, 1929, in a Fokker monoplane, with a geared Bristol Jupiter engine. The distance covered was approximately 10,000 miles.

[This award, especially in view of the fact that the journey was done in a foreign aeroplane, shows that the Aero Club Committee has developed a very proper sense of relative values.—C. G. G.]

LLOYD'S REGISTER OF AIRCRAFT.

Civil aircraft are at last to be placed on the same basis as shipping and will be registered at Lloyd's.

The Aeroplane of July 3 and July 10 referred to the formation by the British Aviation Insurance Group of an inspection department for the renewal of Airworthiness Certificates of Light Aeroplanes. The arrangement was that machines would be inspected every three months for insurance purposes. The reports of such inspections would be considered by the Air Ministry at the end of the year. If these reports were satisfactory, the Air Ministry would issue a renewal of the Certificate.

The Committee of Lloyd's Register of Shipping have now taken over the work till recently done by the British Aviation Insurance Group.

The Committee have appointed Mr. L. J. Hill, to be Lloyd's Surveyor of Aircraft. Mr. Hill has hitherto done this work for the British Aviation Insurance Group.

Besides the inspection of aircraft for insurance purposes and collaterally for the renewal of Airworthiness Certificates, the new department of Lloyd's Register will be available for the inspection of damaged aircraft. This inspection will determine the condition of the damaged machine, and the nature and extent of the necessary repairs.

A strong Aviation Committee is being formed at Lloyd's. This will include representatives of underwriters, aircraft constructors, owners of aircraft and members of organisations devoted to Aviation.

CLASSES FOR NAVIGATORS.

The following letter is important to all who aspire to become qualified Master Pilots of Aircraft:—

Sir,—The next examination for the first and second class Air Navigation Licenses will be held in April, 1930, and I have been requested by the Guild of Air Pilots and Navigators to act as honorary organiser for the next class until such time as the Guild is in a position to take over these duties.

The Air Ministry have kindly loaned instruments and tables required for this class, and the Royal Aeronautical Society have also kindly offered the use of their library at 7, Albemarle Street, W.1.

It is proposed to hold the class on Monday evening of each week from the end of October until January, and from the end of January twice weekly on Mondays and Fridays from 6—7.30 on each night.

The class will be conducted by Mr. C. B. Collins of the Air Ministry and Squadron Leader E. L. Johnston, A.F.C., of Cardington. Capt. Entwistle of the Air Ministry will also assist with Lectures on Meteorology.

The fee for the whole course of Lectures will be 5 guineas and members will also be required to be responsible for wear, tear, loss or damage to instruments, tables, etc., on loan from the Air Ministry.

As the class will be strictly limited intending applicants are requested to write at the earliest opportunity to me, enclosing their cheque for the necessary fee.

(Signed) A. G. Lamplugh (Capt.),
c/o British Aviation Insurance Group,
3/4, Lime Street, London, E.C.3.

A SYMPTOM.

Towns, municipalities, cities, and other conglomerate edifices housing the human species are known to possess semi-souls of their own and exhibit jealousy of each other. Certain omens begin to warn those who look forward that a healthy rivalry and pride is beginning to develop over the municipal aerodrome.

On Oct. 1 the Society of Bristolians held a dinner in London at which were present the Lord Mayor and Lady Mayoress of London.

At this function the President of the Society said that he thought the City Aerodrome well worth the attention of those present, and explained the widespread aeronautical ambitions of Bristol.

There is no doubt that Mayors and their Corporations all over Britain are thinking about aerodromes and are realising how important is the provision of a municipal air-park. This is good, because without municipal aerodromes there can be no boom in Aviation. Hence The Aeroplane's Special Air Park Issue, which is to appear on Oct. 23.

TO THOSE WHO FLY TO IRELAND.

Air Ministry Notice No. 61 of the year 1929 is addressed to those who may want to fly to Ireland across the Irish Sea. Such adventurers must adhere strictly to the full procedure outlined in *The Air Pilot*, Vol. I, Part 2, Sec. 5.

ORDER THE SPECIAL AIR-PARK ISSUE IN GOOD TIME.

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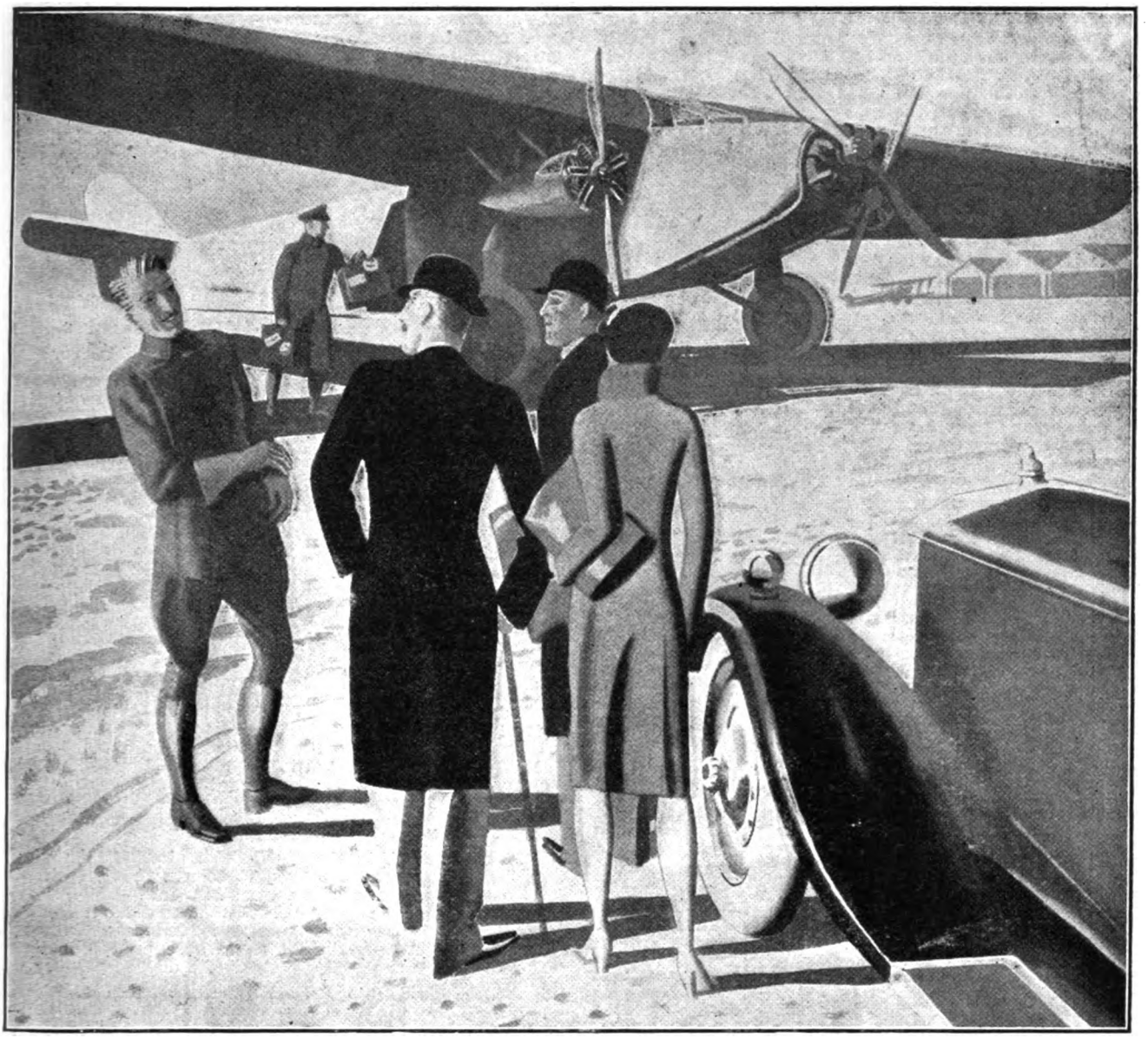

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To the man who owns an Avro 5, England is a suburb of London, and Europe—its home counties. He can travel at any time to any place in comfort, safety and privacy. Three 100 h.p. Armstrong Siddeley engines give it a cruising speed of 100 m.p.h. The cabin is comfortably furnished and ventilated and equipped with everything necessary for comfort, including electric light. The machine can land in 330 yards and may be left exposed to all weathers.

The Avro 5 is reliable and fast. It is the natural answer to the modern demand for increased comfort and saving of time.

AVRO·5

(3 ENGINED MONOPLANE)

Specifications and full particulars of the above, also of the larger Avro-10 (carrying 8 passengers) will be supplied on application. Those interested should write for free catalogue of the famous "Avian" light aeroplane.

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WORLD'S RECORDS.

The Official Reports in connection with the following performances have been considered by the Committee of the Royal Aero Club, and they are to be submitted to the F.A.I. for acceptance as World's Records:—

100 *Kilometres on a Closed Circuit.*

Sept. 7, 1929. Flg. Off. H. R. D. Waghorn, Supermarine-Rolls-Royce S.6. Speed—330.1 m.p.h. = 531.2 k.p.h.

Sept. 7, 1929. Flg. Off. R. L. R. Atcherley, Supermarine-Rolls-Royce S.6. Speed—331.6 m.p.h. = 533.8 k.p.h.

Greatest Speed over 3 Kilometre Course:

Sept. 10, 1929. Flt. Lt. G. H. Stainforth, Gloster-Napier VI. Speed—336.3 m.p.h. = 541.1 k.p.h.

Sept. 12, 1929. Sq. Ldr. A. H. Orlebar, Supermarine-Rolls-Royce S.6. Speed—357.7 m.p.h. = 575.7 k.p.h.

A NEW DISTANCE RECORD?

On Sept. 27 MM. Costes and Bellonte left Le Bourget in a Breguet biplane (600 h.p. Hispano-Suiza engine) in an attempt to beat the World's Distance Record. The machine carries 5,200 litres (1,140 gallons) of petrol and 180 litres (39½ gallons) of oil, or enough for 45-50 hours and 9,000 kms. (5,625 miles).

The machine took off in 51 secs. and disappeared into the fog in an easterly direction. No wireless apparatus was carried and the passage of the aircraft over Germany and Russia-in-Europe was unobserved. It was variously reported to have been seen over Asiatic Russia but none of these messages was confirmed.

On Oct. 6 a telegram was received at Mukden stating that an aeroplane manned by two foreigners claiming to be Frenchmen had made a landing in Northern Manchuria. The machine was out of petrol and was slightly damaged but the crew was safe.

On the same day the French Government received confirmation from the French Consul at Mukden that MM. Costes and Bellonte had landed at Tsitsihar, 200 miles N.W. of Harbin, Manchuria, on Sept. 29.

The following telegram from M. Costes has been transmitted from the French Legation at Peking to Paris:

We landed on Sept. 29 in a deserted region of the Province of Kai-lung-chang [Heilungkiang], having covered 9,610 kilometres [about 5,968 miles] in direct flight and thus breaking all records. It took us a week to reach Tsitsihar, where we arrived on Oct. 6.

Their point of landing is now given as Kannan in the Heilungkiang province, 50 miles from Tsitsihar and 260 miles from Heiho. They travelled to Tsitsihar under guard, as they had no visas and they were mistaken for Russians by the local soldiery. Chang Hsueh-Liang, the Governor of Manchuria, gave orders for their release as soon as their identity was discovered.

The distance covered as given in the telegram above seems open to question. The Great Circle course from Paris to Tsitsihar is about 4,900 miles. They may have covered 5,968 miles in flying a zig-zag course across Europe and Asia to take advantage of the best atmospheric conditions and to avoid unfavourable country but for the purposes of the World's Distance Record the Great Circle distance between the points of departure and landing is the only one recognised.

The previous World's Record was held by Capt. Ferrarin and the late Major del Prete, who on July 3-5, 1928, flew from Rome to Natal, Brazil, in a Savioa S-64 monoplane (550 h.p. Fiat A-22 engine) a distance of 7,136 kms. (4,420 miles).

THE HULL AIR DISPLAY.

An Air Ministry *Notice to Airmen* states:—

Between the hours of 13.20 and 17.20 on Oct. 10, an Air Display will be held at Hedon Aerodrome, Hull.

Pilots are requested not to land at this aerodrome between the hours of 13.20 and 17.20 on that date, and, in order to avoid collision with R.A.F. and civil aircraft taking part in the Display, they are asked to refrain from flying in the vicinity of the aerodrome in question.

Pilots of aircraft visiting the aerodrome are requested to arrive before 13.20 hours, and no machine may leave the aerodrome or take off until after 17.20 hours.

AN AFFAIR AT THE HESTON AIR PARK.

On Oct. 7 at Brentford Cecil Cornelius Arthur Morrison, 24, and Roland Pascoe Deacon, 21, were committed for trial at the Central Criminal Court charged with being concerned in breaking and entering Heston Air Park on Sept. 28.

Deacon had previously been remanded so that Morrison who had been in hospital suffering from bullet wounds in the leg, alleged to have been inflicted by the night-watchman of the Air Park, could be brought up with Deacon.

THE SINO-SOVIET FRACAS.

Reuter states that Soviet aeroplanes made three separate attacks against the town of Manchuli on Aug. 2. Six bombs were dropped and the Soviet aircraft used their machine-guns against the Chinese.

THE AUSTRALIAN EAST—WEST RACE.

The Australian Trans-continental Air Race from Sydney to Perth started, as was reported in The Aeroplane last week, on Sept. 30. Of the original 27 entries 17 started. The distance to be covered was 2,450 miles. This had to be covered in twelve stages, spread over a period of six days.

The first day's stage was from Sydney to Melbourne. The first arrival was Mr. Miller in a D.H.9, followed by Major Hereward de Havilland in a Gipsy-Moth and Mr. C. D. Pratt, also in a Gipsy-Moth. On handicap Mr. Pratt was first, Mr. Miller second, and Mr. Bardsley, in a Gipsy-Moth, third. Major de Havilland was placed sixth.

No information is available concerning the second day's stage, from Melbourne to Adelaide.

The third day's flying was from Adelaide to Ceduna, 350 miles N.W. of Adelaide. All seventeen starters reached Ceduna, with Mr. Miller and Major de Havilland first and second respectively.

A Klemm monoplane, flown by Mr. Baker, which was forced to land on the previous day lost so much time that it arrived at Ceduna too late to start on time for the next stage and was disqualified from competing for the main prize.

The next stages were from Ceduna to Forrest, from Forrest to Kalgoorlie and finally from Kalgoorlie to Perth.

The final stage was marred by an accident to Mr. Pratt. He was flying low over dead-flat country when he hit the top of a dead tree The machine was completely wrecked, and the occupants, Mr. Pratt and his passenger, Mr. Guthrie, the owner of the machine, were severely injured.

Fifteen machines reached Perth on Oct. 5 in stormy weather. Mr. H. C. Miller in a D.H.9 won the first prize of £1,000, and Major de Havilland, in a Gipsy-Moth, the second prize of £300.

Their total flying times from Sydney to Perth were 23 hrs. 58 mins. 31 secs. and 23 hrs. 50 mins. 23 secs. respectively. Mr. A. T. Cunningham, flying a Gipsy-Moth, was reported as having won the prize for the fastest time, but this has been contradicted by later dispatches.

The following telegram has been received by the De Havilland Aircraft Co. Ltd.:—

Fastest time East-West Race put up by Major de Havilland flying special single-seater Gipsy-Moth, averaging 107 over race 2,450 miles, with D.H.50 second and D.H.9 third. Handicap won by Capt. Miller flying D.H.9, with Major de Havilland second, and other Gipsy-Moths occupying third, fourth and fifth places. Most severe race through terrible wind, rain and dust storms. Ten Gipsy-Moths started, and nine finished.

[Congratulations to the one British aircraft firm which has really laid itself out to get business in civil aircraft overseas. Such a sweeping success in a race of World-wide importance should give the firm a splendid advertisement. And, be it said, the advertisement is well deserved, for if there are better-built aircraft than those produced by the De Havilland firm they have still to be discovered.—C. G. G.]

AN AUSTRALIAN MINISTERIAL TOUR.

The Hon. C. L. A. Abbott, Commonwealth Minister for Home Affairs, has recently completed an aerial tour of the Northern Territory. The tour was made in a D.H. Giant-Moth (Bristol Jupiter engine) piloted by Mr. L. H. Holden.

The total distance covered was 5,591 miles and the route followed was by way of Sydney, Narromine, Charleville, Cloncurry, Brunette Downs, Victoria River Downs, Wyndham, Darwin, Newcastle Waters, Alice Springs, Oodnadatta, Adelaide, Canberra and back to Sydney.

The machine used was the one Mr. Holden used in his successful search for the *Southern Cross*. On the tour, full wireless equipment, two emergency water tanks each holding six gallons, and a large supply of emergency rations were carried.

Except for halts of two days at Darwin, one day at Adelaide, and half a day at Alice Springs and Wyndham an average of 500 miles per day was maintained.

AN AUSTRALIAN AIR M.P.

Mr. T. W. White, T.D., one of the original members of the Australian Flying Corps, and author of "Guests of the Unspeakable," has been successful in contesting Canberra in a recent election, and thus becomes the first ex-Service aviator to be returned to the Australian Parliament, either Federal or State.

In "Guests of the Unspeakable" Mr. White outlined the early history of military aviation in Australia, and later describes his experiences in Mesopotamia with the first A.F.C. Squadron, and as a prisoner of war with the Turks. These experiences were later shared with "Contact" (Alan Bott, M.C.), when the two combined in an escape from Turkey into Soviet Russia. These later experiences are also described in "Contact's" book, "Eastern Nights and Flights."

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THE ROYAL AIR FORCE.

The London Gazette.

October 1.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—The following Flg. Offs. are granted perm. comns. in this rank (Oct. 1):—D. F. W. Atcherley, G. D. Harvey.

The following Plt. Offs. on probation are confirmed in rank (Sept. 14):—A. G. Adnams, A. F. P. Anning, C. M. Champion de Crespigny, G. H. Clarke, E. W. Downing, H. A. Fenton, H. R. Hughes-Hallett, A. E. Louks, D. S. McDougall, L. P. Rowley, J. S. Shakespeare. Plt. Off. R. David is promoted to the rank of Flg. Off. (Jan. 9) (substituted for the notification in the *Gazette* of July 16).

The following Plt. Offs. are promoted to the rank of Flg. Off.:—C. E. V. L'E. Feasey (Jan. 18); E. G. Banham, W. J. Crisham, J. H. Lock, R. Mountain, J. B. W. Pugh (Sept. 16). Flg. Off. E. G. Hordern is placed on the half-pay list, Scale B, Sept 6, 1929, to Jan. 15, 1930, inclusive.

The following are placed on the retired list on account of ill-health:—Flt. Lt. E. K. Blenkinsop (Sept. 23); Flg. Off. H. T. Satterford (Oct. 1). The following Flg. Offs. are placed on the retired list at their own request (Oct. 1):—R. B. Harnden, W. Morgan, E. Smith. Flg. Off. E. C. Foreman is transferred to the Reserve, Class A (Sept. 20); Flg. Off. E. M. Thomas resigns his perm. comn. (Oct. 1). The S.S. comn. of Plt. Off. on probation W. J. Hodge is terminated on cessation of duty (Oct. 1).

STORES BRANCH.—The following Flg. Offs. are granted perm. comns. in this rank (Oct. 1):—E. G. M. Charleson, H. M. S. Dawes, G. H. Doveton, F. W. Felgate, P. J. Mote, L. Taylor.

MEDICAL BRANCH.—Flt. Lt. E. J. Jenkins resigns his perm. comn. (Sept. 19).

CHAPLAINS BRANCH.—The Rev. S. H. Keen is granted a perm. comn. as a Chaplain with the relative rank of Grp. Capt. for duty as Staff Chaplain (Wesleyan) (Sept. 12).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—C. R. Robbins is granted a comn. in Class A as a Flg. Off. on probation (Sept. 20); Plt. Off. on probation D. H. Duder is confirmed in rank (Sept. 3). The following Plt. Offs. of the Special Reserve are promoted to the rank of Flg. Off.:—G. D. S. Horsfall (July 2); J. F. R. Hunter, W. O'B. Knox (July 27). Flg. Off. A. C. Heaven, M.C., relinquishes his comn. on completion of service (Sept. 30).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 601 COUNTY OF LONDON (BOMBER) SQUADRON.—The Right Hon. Sir Philip A. G. D. Sassoon, Bt., G.B.E., C.M.G., M.P., to be Squadron Leader and to command the squadron (Sept. 23).

The Operations in Afghanistan.

A detailed Report on the Air Operations in Afghanistan is contained in Command Paper 3400 published on Oct. 7, 1929, by H.M. Stationery Office.

The Paper is divided into two sections, (1) A copy of a letter from His Excellency the Commander-in-Chief in India to the Secretary to the Government of India, Army Department, dated Simla, April 21, 1929. (2) A report by Sir W. G. H. Salmond, K.C.B., K.C.M.G., D.S.O., Air Officer Commanding, R.A.F. (India), on the Kabul Evacuations.

The Commander-in-Chief's letter is as follows:—

I have the honour to forward, in original, a letter No. 8687/73/29/Air, dated the 21st March, 1929, from the Air Officer Commanding, Royal Air Force in India, enclosing a report on the air operations in Afghanistan between 12th December, 1928, to 25th February, 1929.

2. These operations, as will be seen, were carried out with complete success in exceedingly difficult and dangerous conditions. On several occasions the machines flying to or over the British Legation were fired upon, and in one case a machine was compelled to descend. The climatic conditions and the nature of the terrain added very greatly to these difficulties and dangers. The whole series of operations were carried out with a skill and gallantry that reflect the utmost credit upon the officers and other ranks of the Royal Air Force engaged in them. They were not, however, strictly speaking, military operations; and I propose therefore that neither the report of the Air Officer Commanding nor this letter should be regarded as a military dispatch.

3. I fully concur in the observations of the Air Officer Commanding in paragraphs 2 to 6 and Appendix "A" of Part IV of his report. Of the officers and other ranks mentioned in the Appendix, the services of the following have already been recognised by the grant of the decorations above their names:—

The Air Force Cross—

Squadron Leader R. S. Maxwell, M.C., D.F.C., Flight Lieutenant D. F. Anderson, D.F.C., Flight Lieutenant R. Ivelaw-Chapman, D.F.C., Flying Officer L. H. Anness, Flying Officer C. W. L. Trusk.

The Air Force Medal—

358520 Leading Aircraftsman G. Donaldson.

Where all have done so well, it is difficult to single out any further names for special commendation. I desire, however, to record my high appreciation of the services of the Air Officer Commanding, Air Vice-Marshal Sir W. G. H. Salmond, K.C.B., K.C.M.G., D.S.O., whose capable administration of the Royal Air Force in India during the last two years is amply demonstrated by the smoothness and efficiency with which the force carried out its strenuous and unprecedented task: and of Group Captain R. P. Mills, M.C., A.F.C., who superintended the operations and displayed the greatest ability and resource in doing so. I desire also to express my obligation to Air Vice-Marshal Sir R. Brooke-Popham, K.C.B., C.M.G., D.S.O., A.F.C., Air Officer Commanding, 'Iraq, for the promptitude with which the Victoria aircraft were mobilised and despatched to this country.

Sir Geoffrey Salmond's Report is submitted in five parts under the following headings:—

Part I gives an outline of the recent history of Afghanistan in so far as it concerns these operations.

Part II shows the strength of the Royal Air Force available in India and the acquisition of reinforcements.

Part III is a chronological survey of the operations in four phases.

Part IV contains certain lessons deduced from these operations.

Part V consists of general observations and recommendations.

All those who are interested in the work of the Royal Air Force should buy and read this Report, which is too long to be reproduced in THE AEROPLANE.

Copies may be had from THE AEROPLANE Book Dept., Cannon House, Pilgrim Street, E.C.4, for 10d. each, post free.

The High Commissioner for 'Iraq.

Sir Francis Humphreys, who was Resident British Minister at Kabul, Afghanistan, until the end of last year, when he and his household and many others were rescued by the R.A.F., has been appointed High Commissioner for 'Iraq in succession to the late Sir Gilbert Clayton.

THE HAWKER-HARRIER.—A new Day Bomber built by the H. G. Hawker Engineering Co. Ltd. It is fitted with a Bristol Jupiter VIII geared engine.—(*R.A.F. Official photograph.*)

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No. 6 (Army Co-operation) Squadron.

No. 6 (Army Co-operation) Squadron, R.A.F., which has been stationed at Mosul, 'Iraq, since June, 1924, is moving, this month, to Moascar, Egypt.

This move is not actually a reduction of the strength of R.A.F. Units in 'Iraq because No. 203 (Flying-Boat) Squadron has been posted to Basrah since the establishment was reduced to five Squadrons.

No. 6 (Army Co-operation) Squadron is equipped with Bristol Fighters and is commanded by Sq. Ldr. C. Hilton Keith.

Defending the Realm.

An Air Ministry Weekly Order draws the attention of all pilots to the fact that several instances have recently been reported of articles having been thrown from aircraft in flight. As such action is dangerous to life and property, crews of, and passengers in, aircraft are forbidden to jettison any articles whatever when flying over land, except when such a course is necessary in an emergency. Such articles as empty Very pistol cartridges, etc., are to be retained and disposed of after landing.

Special Assessments.

The Regulations governing the award of Special Assessments to officers who pass out exceptionally well from a course of *ab initio* flying training have been altered in the recent Amendment List to King's Regulations and Air Council Instructions. The Regulations now read:—

Special Assessments, as shown below, will be awarded by the Air Ministry on the recommendation of the air or other officer commanding to officers who pass out exceptionally well from a course of *ab initio* flying at a flying training school or unit.

(a) *A Distinguished Pass*, which will be known as "D," will be awarded to officers who pass well out of the school and who have shown particular keenness and attention to duty throughout the course. It will not be given to any officer who obtains less than 80 per cent. of the marks for the written portion of the examination on passing out.

(b) *A Special Distinction*, which will be known as "S.D.," will be awarded in rare cases to an officer who does exceptionally well, shows unusual ability, and has displayed great keenness and attention to his work. It will not be given to any officer who obtains less than 90 per cent. of the marks for the written portion of the examination on passing out.

The fact that an officer has been awarded "S.D." or "D." will be taken into special consideration when questions of appointment to medium service or grant of permanent commissions are being dealt with.

An officer who obtains a "special distinction" or "distinguished pass" will be exempted from the examination to the rank of flying officer.

Headquarters, R.A.F., India.

Headquarters, R.A.F., India, will move from Simla to New Delhi on Oct. 21, 1929. The full address is: Royal Air Force, Imperial Secretariat, South Block, New Delhi, India.

A Dress Regulation Amendment.

A recent Amendment List to King's Regulations and Air Council Instructions for the Royal Air Force states:—

It is left to the discretion of the C.O. of the station to permit plain clothes to be worn at the station by the following when not on duty:—(a) Officers, warrant officers and flight serjeants. (b) Serjeants in possession of two good conduct badges or in special cases those who have held commissioned rank in previous service. (c) Other airmen for purposes of recreation.

Permission may be given by a C.O. to warrant officers and N.C.O.s and to aircraftmen of "V.G." character to dress in plain clothes while on leave or pass away from their station for a period of over 48 hours.

Another Amendment states that airmen may leave the top button of the greatcoat undone with the lapels folded back when "walking out." If the weather be warm the coat may be carried over the arm.

Science and Technology.

The following officers who were selected for the University Course "B," which began in October, 1928, have satisfactorily completed the course, and have been awarded the Diploma for Advanced Study of the Imperial College of Science and Technology:—

Flt. Lt. A. F. Scroggs and Flt. Lt. F. E. Vernon.

What Happened.

Much publicity was given in the Sunday newspapers to an incident which happened on Oct. 5 at the R.A.F. Aeroplane and Armament Experimental Establishment at Martlesham Heath. The true story is this:—

A Westland IV, piloted by Flt. Lt. S. N. Webster, A.F.C., with two passengers, had just completed her full Airworthiness Tests, passing them at a load of 5,750 lbs.—which gives the machine a useful load for passengers and crew of 1,100 lbs. The Westland IV also carries complete navigation equipment, wireless, lavatory, and luxurious furnishing. In taking off on the last test a pin sheared in the oleo leg and allowed the wheel and axle to swing beneath the fuselage out of sight of the pilot, who thought he had lost them. Flt. Lt. Webster flew across the aerodrome several times, to give the passengers time to lighten the machine of all the ballast, and then climbed to about 2,000 ft., turned off the petrol and ran the collector-box dry. He then glided the machine down and made a perfect landing on the starboard wheel.

Contact with the ground caused the hanging wheel and axle, which he did not know were there, to swing into position again, and the machine actually landed on both wheels, though with a considerable list to port.

The wheel kept the machine off the ground, and very little damage was done. The low landing-speed and the controllability of the machine materially helped what was in fact a very well-judged display of piloting.

[A similar feat was performed recently by Mr. Youell, of Imperial Airways, with an Argosy full of passengers, and some years ago by the late Mr. Carter with a Bristol ten-seater.—C. G. G.]

The R.A.F. Memorial Fund.

The total amount of grants made to past and present members of the R.A.F. by the R.A.F. Memorial Fund from July 1, 1929, to Sept. 30, 1929, was £3,064 16s. 5d.

The number of cases dealt with by the office of the Fund during that period was 340.

The grants have been administered, generally speaking, under the heads of maintenance during sickness, grants of loans to establish small businesses, grants of clothing for men and families, payment for tools, rail fares, payment of arrears on rent, insurance, etc., accommodation, maintenance, funeral expenses, and grants to redeem pawned goods.

Movements of R.A.A.F. Officers.

Sq. Ldr. A. H. Cobby, D.S.O., D.F.C., who has completed a course at the R.A.F. Staff College, returned to Australia on Oct. 8, after an absence of three years.

Sq. Ldr. H. C. Harrison will leave England at the end of this year for Australia, proceeding by way of the U.S.A., where he will break his journey to study the technical development in aeronautics.

Flt. Lt. A. M. Charlesworth has completed a long Photographic Course at Farnborough and will leave England in November with an R.A.F. Survey Party on a three-months' survey of Somaliland. He will reach Australia in March 1930.

Sq. Ldr. T. R. Marsden, D.S.O., has left Melbourne, in accordance with a recommendation in Air Marshal Sir John Salmond's Report that a Senior Stores officer should spend one year in England.

Pioneering By Air.

Two Westland Wapitis of the R.A.A.F. are engaged on a Survey of some 30,000 square miles of Central Australia. The personnel of the Expedition are Flg. Offs. F. J. B. Wight and A. G. Gerrand, one fitter, one photographer, and one wireless operator, R.A.A.F., and Mr. C. T. Madigan, who, in the absence of Sir Douglas Mawson, occupies the Chair of Geology in the University of Adelaide.

The particular area to be surveyed has never been explored, and, so far as is known, has never been traversed by either whites or blacks. Four rivers disappear into this area and their courses have never been followed to their sources. Sandhills prevent approach by car, and the condition of the interior is unknown.

If the aerial survey proves promising from a geological aspect the Royal Geographical Society intends to send out a properly equipped expedition next year.

A Re-Union of No. 28 Squadron.

The Annual Re-Union of No. 28 Squadron, R.A.F., Old Boys' Association, will be held on Oct. 19 at the White Horse, Holborn (near Holborn Tube Station), at 6 o'clock for 6.30.

The Re-Union, which will take the form of a supper party, coincides with the first Saturday of the Motor Show at Olympia, and advantage can be taken of the cheap excursions.

The tickets are 3s. 6d. each, and men friends can be invited. Application for tickets should be made as soon as possible to the secretary, C. T. Hodges, 102 Camden Street, N.W.1.

The R.A.F. Football Association.

The general committee of the R.A.F. Football Association for 1929-30 has been formed under the Chairmanship of Wing Cdr. C. C. Miles, M.C., who is also R.A.F. Representative on the Council of the Football Association. The Hon. Secretary is Flg. Off. D. W. Sugden, R.A.F., North Weald. The Hon. Treasurer is Flg. Off. J. M. Hopkins, R.A.F., North Weald. The Hon. Secretary, Referee's Committee, is Flt. Lt. W. R. Castings, M.B.E., Air Ministry. The other members of the Committee are Flt. Lt. N. Keeble, D.S.C., D.F.C., Flg. Off. W. F. Quillam, Sq. Ldr. M. B. Frew, D.S.O., M.C., A.F.C., Flt. Lt. J. Oliver, A.F.C., Flt. Lt. G. A. Hadley, and S. M. Anderson.

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Capt. H. S. Broad and his mechanic after the race

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The District Representatives are:—

Eastern, Flt. Lt. S. N. Webster, A.F.C., Martlesham Heath; *Kent*, Flt. Lt. J. Walker, Eastchurch; *London*, Flt. Lt. N. Keeble, Uxbridge; *North Midland*, Flg. Off. Owen, Digby; *Southern*, Flt. Lt. L. J. Chandler, M.B.E., Lee-on-Solent; *South Midland*, Flt. Lt. V. Croome, Halton; *Wessex*, Flg. Off. W. F. Quillam, Upavon; *Western*, Flt. Lt. W. R. Westcombe, Shrewsbury.

The representative fixtures for the season are:—

Oct. 16, "A" team v. R.A.F. College at Cranwell. Oct. 30, v. Hampshire at Aldershot.

Nov. 9, v. Cambridge University at Cambridge. Nov. 13, v. Oxford University at Wycombe. Nov. 20, v. London University at Henlow.

Dec. 11, v. Spartan League at Uxbridge.

Jan. 8, v. Middlesex at Uxbridge. Jan. 9, v. Football Association XI at St. Albans. Jan. 18, v. Corinthians at Crystal Palace.

Feb. 12, v. Civil Service at Chiswick. Feb. 22, v. Wycombe Wanderers at Wycombe.

Mar. 15, v. Army at Homerton. Mar. 29, v. R.N. and R.M. at Millwall.

April 2, Senior Cup Final. April 9, Junior Cup Final.

The R.A.F. College.

A Rugby football match will be played at Cranwell on Oct. 16 between Past and Present Cranwellians. Flg.-Off. G. R. Beamish, the captain of the R.A.F. team, will select the Past team.

Water Polo in 'Iraq.

The final placings in the Hinaidi Water Polo League are as follows:—

(1) No. 70 (Bomber) Sqdn. played 20, won 19, drew 0, lost 1, goals for 76, against 4, points 38.

(2) "B" Depot Sqdn. played 20, won 17, drew 1, lost 2, goals for 67, against 12, points 35.

(3) "C" Depot Sqdn. played 20, won 15, drew 1, lost 4, goals for 50, against 24, points 31.

(4) "D" Depot Sqdn. played 20, won 12, drew 3, lost 5, goals for 37, against 25, points 27.

(5) "A" Depot Sqdn. played 20, won 9, drew 3, lost 8, goals for 29, against 32, points 21.

(6) Armoured Car Wing played 20, won 9, drew 3, lost 8, goals for 31, against 38, points 21.

(7) No. 30 (Bomber) Sqdn. played 20, won 8, drew 1, lost 11, goals for 29, against 57, points 17.

(8) Main Wireless played 20, won 6, drew 1, lost 13, goals for 26, against 75, points 13.

(9) No. 55 (Bomber) Sqdn. played 20, won 3, drew 2, lost 15, goals for 11, against 33, points 8.

(10) Air H.Q. played 20, won 0, drew 4, lost 16, goals for 0, against 21, points 4.

(11) R.A.F. General Hospital played 20, won 0, drew 3, lost 17, goals for 0, against 35, points 3.

THE BELLANCA TANDEM.

The limiting factor in any attempt on the World's Distance or Duration Records is the amount of petrol that can be carried for a given horse power.

With this fact in mind Mr. G. M. Bellanca, of the Bellanca Aircraft Corpn., of Newcastle, Delaware, who is contemplating attacks on the Endurance and Distance Records, has apparently built a fuel tank to carry 2,000 gallons of petrol and then designed around it wings, tail unit and a power-plant that would offer the least drag. The result is known as the Bellanca Tandem.

The petrol tank foundation is lense-shaped in horizontal cross-section with the longest axis placed in the line of flight. The front and rear edges are vertical. A space has been left at the back to accommodate the crew.

Another innovation in the design of the aircraft is the fitting of two engines in tandem back to back at the front of the machine and both beneath the same cowling of N.A.C.A. design. The front engine drives a tractor airscrew direct and the rear engine drives a three-bladed pusher airscrew at the rear of the nacelle by means of an extension shaft. The machine has been designed to have an endurance of about 100 hrs. with a maximum speed of 150 m.p.h., which it is claimed may be increased by detail improvement in design.

Specification.

Type.—Twin-engined sesquiplane with outrigger tail.

Wings.—Upper wing has centre-section extending from the deck of the shortened fuselage or nacelle. To this centre-section outer panels are attached and braced by sloping interplane struts to lower wing. These sloping interplane struts are of the lifting Bellanca type. The lower wing slopes down from the nacelle to the wheels and wing-bracing. Vertical "N" truts brace the extremities of lower wing to ends of upper centre-section. The structure of the wings and lifting struts are similar. Two wooden spars, with wood ribs and fabric covering. Ailerons extend along the trailing edge of the outer panels of top wing.

Fuselage.—This a really very deep nacelle completely filling the gap and terminating in a vertical knife edge behind the wing. The structure consists of 6 tubular longerons with various bulkheads. The whole framework is built of welded chrome-molybdenum steel tubes with fabric covering.

Tail Unit.—Four outriggers carry the tail unit, which consists of a tail plane of high aspect ratio with a fin and rudder placed above the middle of the tail plane. The outriggers, which are of the hollow box type, are so faired that when in flying position a section parallel to the thrust line is a streamline. These outriggers are parallel and wire-braced in plan and in side elevation are Vees with the apices below the tail plane. The feet spring from the upper centre-section and tips of lower wing. Fin is braced to tail plane. Rudder and elevators have horn balances. Structure similar to wings.

Undercarriage.—The wheels are rigidly attached to the extremities of the lower wing and are housed and faired between the wing and the sloping top wing bracing struts. The only shock absorbing is provided by the balloon tyres. Two tail-skids with oleo-shock absorbers are placed at attachment of outriggers to tail plane. Wheel track 17 ft. 10 in. (5.44 m.). Wheel brakes are fitted.

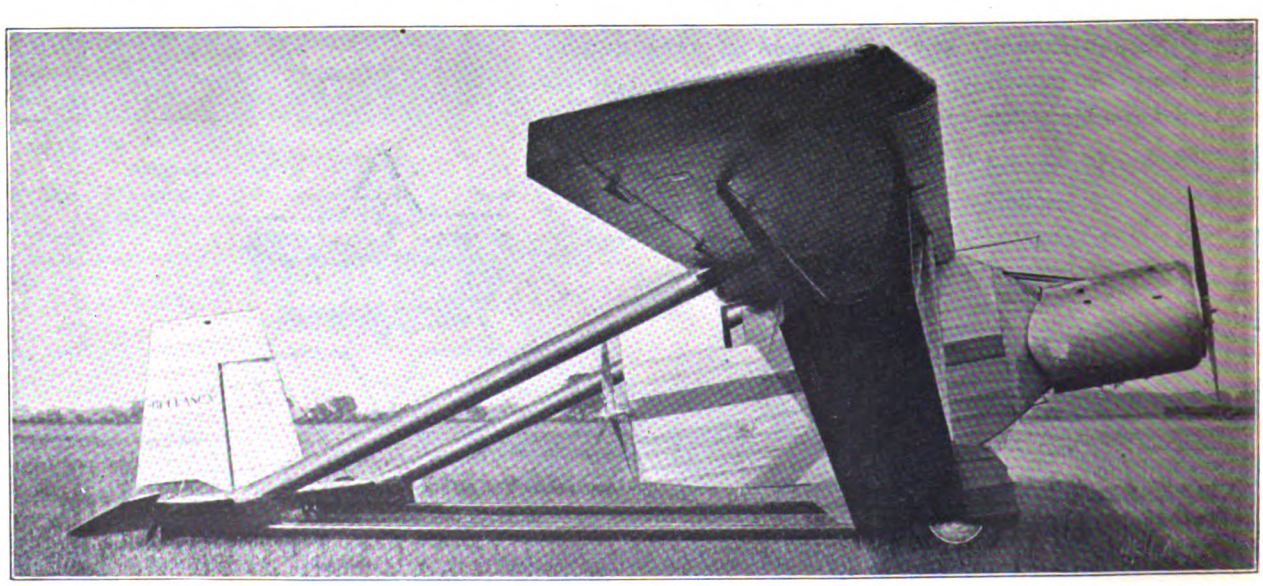
Power Plant.—Two 425 h.p. Pratt and Whitney Wasp radial air-cooled engines mounted back to back at the nose of the nacelle. They are enclosed in one cowling of N.A.C.A. type which has no secondary cowling inside it. Main fuel tank of 1,500 U.S. galls. (1,250 Imp. galls.=5,700 litres) is in front part of nacelle, with tunnel to accommodate extension shaft. Below pilot is auxiliary tank of 230 U.S. galls. (191 Imp. galls.=870 litres) and two wing tanks each of about 260 U.S. galls. (217 Imp. galls.=990 litres). Two 60 U.S. galls. (50 Imp. galls.=228 litres) oil tanks just behind engine. The front airscrew driven direct. Rear airscrew driven by 4 in. dia.×.125 in. thick tube running in self-aligning and lubricated bearings. The entire double engine-mounting is detachable.

Accommodation.—Compartment for two side-by-side in upper part of nacelle aft of wing. Dual control provided by single swing-over wheel hinged to roof of compartment. Two sets of usual type rudder pedals. Engine controls between seats. Two Pioneer Earth-Inductor compasses and special instrument board for blind-flying. Wireless compartment in extreme rear and at bottom of nacelle.

Dimensions.—Span upper 83 ft. 2 in. (25.35 m.), Length 44 ft. 2 in. (13.46 m.), Height 12 ft. 9 in. (3.89 m.), Chord (upper) 9 ft. 6 in. (2.90 m.), Wing area 912 sq. ft. (84.7 sq. m.).

Weights.—Weight empty 7,000 lbs. (3,170 kgs.), Weight loaded 18,000/21,000 lbs. (8,170/9,540 kgs.).

Performance.—No data available.



THE BELLANCA TANDEM.—The latest production of the Bellanca Aircraft Corpn. with two Pratt and Whitney Wasp engines back to back in the nose, one driving a tractor airscrew and the other a pusher by an extension shaft passing through the main fuel tank.

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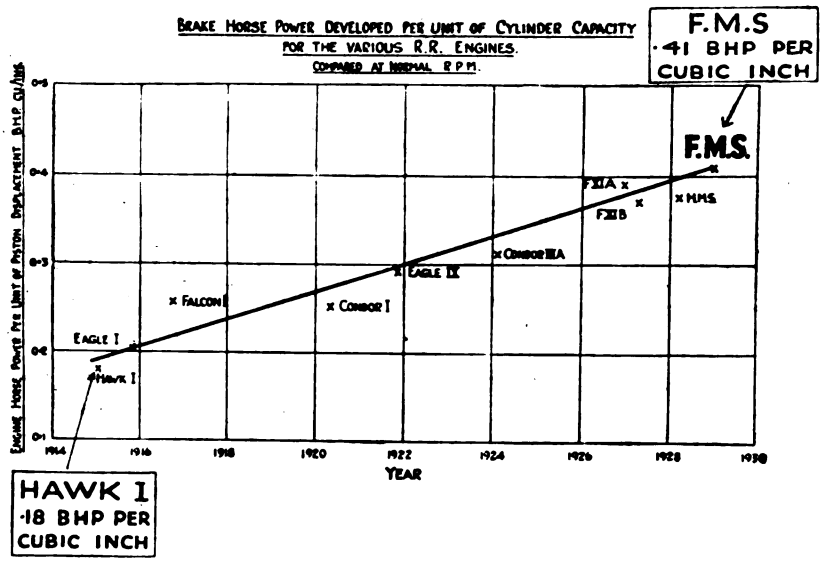

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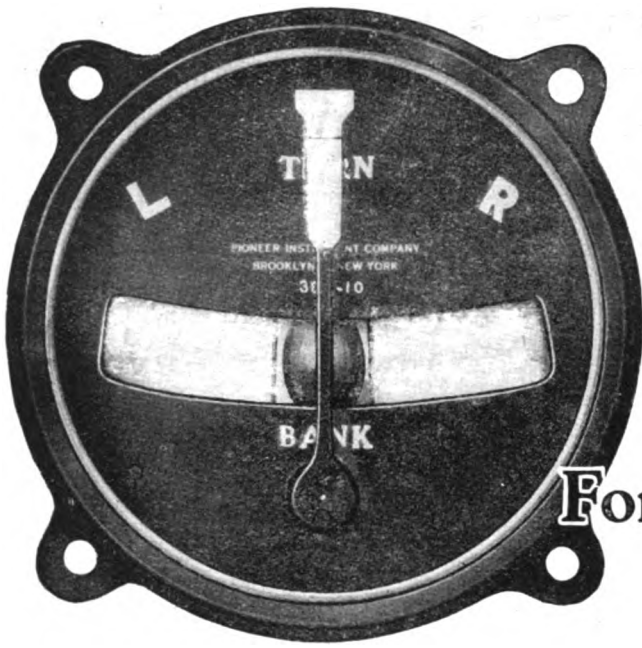

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THE VISIT TO R.101.

By L. Howard Flanders.

On Oct. 2 the Air Ministry invited the Press to inspect the R.101 and mooring-mast, preparatory to the first tests in the air. Shed tests had already been made, the engines had been run in the shed and the lift and trim verified.

Zero hour for the visit was 11.30 hours, but quite an hour before that time there was great activity in the press room.

The visitors were divided into groups and at the appointed time walked down to the shed and were shown all over the ship by guides, who explained the numerous details.

To refresh the memories of readers the leading details and dimensions are as follows:

The airship is of the rigid type somewhat similar to the *Graf Zeppelin* in appearance. Constructionally it is a great improvement on all previous designs. The great size of the ship enables steel construction to be employed in places.

The frames are structurally stiff and are not braced as is more usual by radial wires, like the spokes of a cycle wheel.

The length of the ship is 732 ft., the height 140 ft., the diameter 132 ft., and the capacity 5,000,000 cub. ft.

This bare statement of facts conveys little or no meaning to the reader, but comparison with the liner *Leviathan* will give some idea of the airship's colossal size.

The displacement of the airship's hull submerged in the sea to a depth corresponding to the draught of the *Leviathan* would be about 100,000 tons. The displacement of the *Leviathan* is 59,957 tons. The beam of the *Leviathan* is 100 ft. and that of the airship is 132 ft. The steamship is longer than the airship.

The horse-power per passenger is also interesting. The *Leviathan* has 34 h.p. for each passenger carried and the airship 55 h.p. per passenger. Had the full complement of 100 passengers, as originally designed, been carried by the airship, it would have had only 29 h.p. per passenger.

The number of passengers carried compared with the number of the crew is 2.5 for the steamship and 1.5 for the airship with its reduced accommodation.

The ratio of the speed is about two to one, consequently the running costs should not compare too unfavourably.

If the airship hull were submerged in the sea as a submarine the tonnage would be about 160,000 tons.

As many people will be familiar with large ocean liners these dimensions will enable them to visualise the airship as much larger than the largest ocean liner. They must not think that this means long promenade decks, for, except that the lounge is of ample size, the accommodation is cramped.

R.101 is designed for low altitude routes at about 2,000 ft., which would prevent its use on the Great Circle Route direct to India. The loss of hydrogen for each 1,000 ft. of altitude is 1/30 the total volume and the loss of hydrogen through leakage is about 100,000 cub. ft. per week. Consequently a climb of 1,000 ft. would cause a loss of hydrogen equal to that lost by leakage in 12 days.

The gross lift of 150 tons is for the climatic conditions of England. In Egypt the lift would be some 10 tons less and at the Equator a further 2 tons lift would be lost by the lower atmospheric density.

The normal crew is 50. This includes two watches of 17, and a third watch to act as a relief to take over when the ship is moored.

At the time of the Press visit the R.101 was inflated and air-borne in the shed. She was anchored down to 8 tons of ballast, and stayed to the top of the shed, to prevent movement. Normally there are 80 or 100 workmen passing in and out of the hull making a variable load of 12 tons which necessitated that the ship should be restrained in both directions as she was ballasted to 2 tons lighter than air.

Starting the inspection of the exterior of the hull, on the extreme point of the nose is the mooring-spindle. Below this is a ring of holes in the fabric which will be open when the airship is under way. These are for ventilation of the hull. The pressure distribution on the hull is such that air admitted at bow and stern will maintain the air pressure inside the outer covering at slightly above atmospheric pressure while the actual pressure along the sides of the hull is below atmospheric pressure. This will cause the fabric to bulge outwards and keep a streamline form.

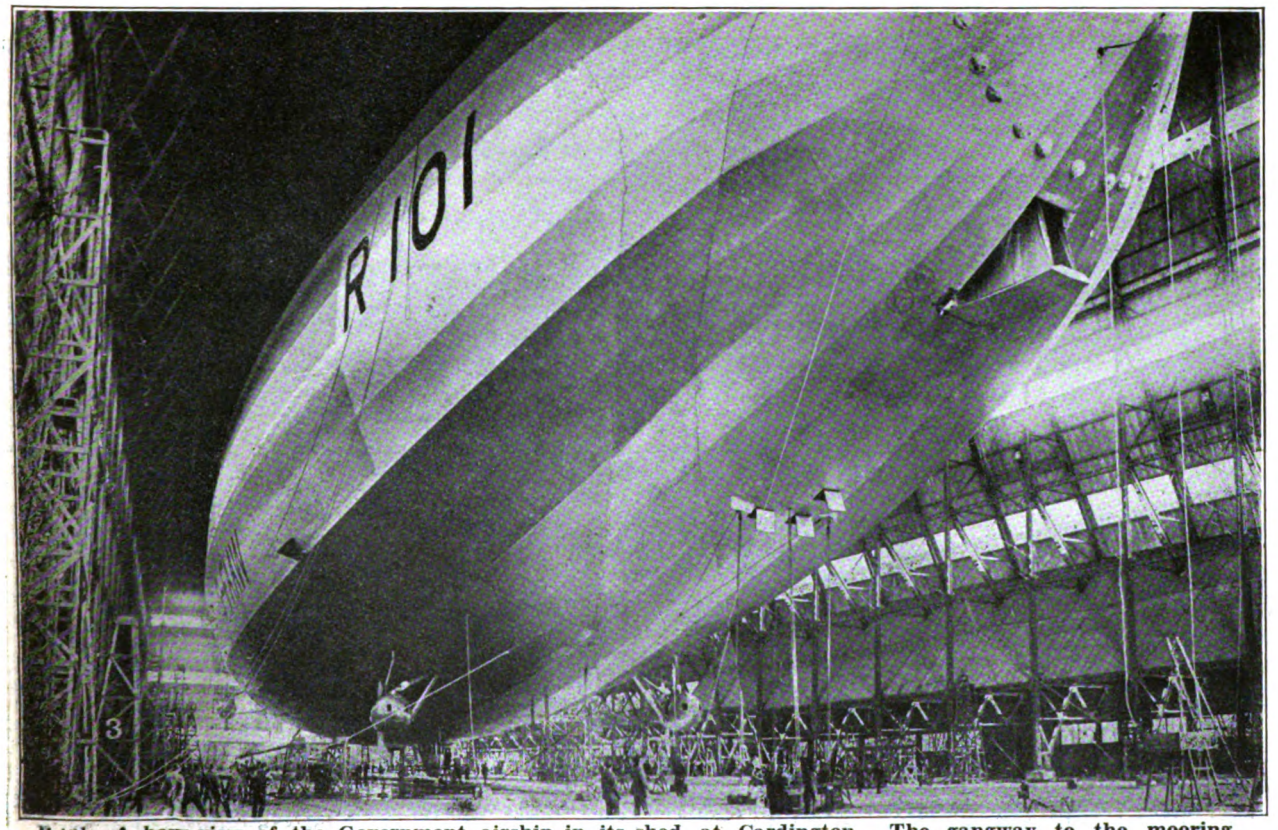
The air escapes at spring-loaded valves amidships.

Below the ring of valves in the nose is a door which when let down connects with a similar gangway on the mooring-tower.

Three small hatchways below the gangway are for the trailing and handling lines.

There are five power-cars each fitted with a Beardmore-Diesel engine of 585 h.p. They are arranged two forward of the control car, two aft of the control car (but further out from the centre-line) and one aft mounted centrally just forward of the vertical fin.

Of the two front engines the one on the port side is fitted with a reverse pitch propeller for going astern,—so this engine is not only useless for propulsion but is a constant impediment to progress.



R.101.—A bow view of the Government airship in its shed at Cardington. The gangway to the mooring tower, the hatches for the mooring and handling ropes and the two front power-cars may be seen.
(" Aeroplane " photograph.)

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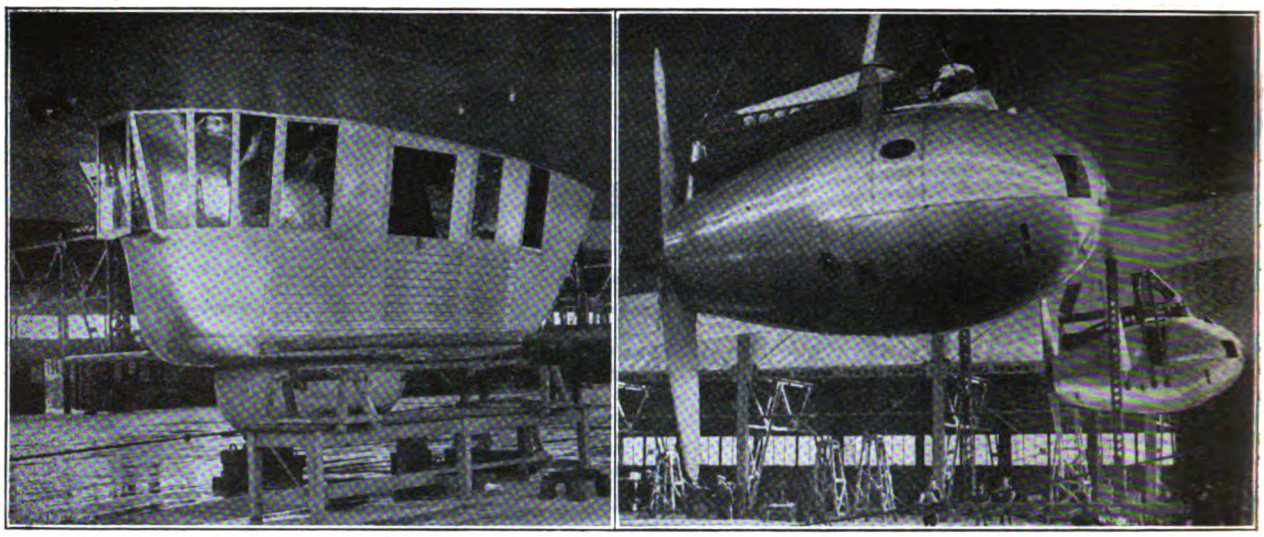

R.101.—On the left the control cabin and on the right two of the power-cars. —(*"Aeroplane" photograph.*)

The airship was designed to have variable pitch propellers of a highly-complicated design, described on Nov. 8 by Wing Cdr. Cave-Browne-Cave before the Royal Aeronautical Society, and referred to in THE AEROPLANE for Nov. 14, 1928.

These appear to be unsatisfactory as they have not been fitted. Which makes one ask why the engines were not made reversible like ordinary marine Diesel engines, or why the simple variable-pitch reversible propeller exhibited on the stand of the *Associazione Italiana di Aerotechnica* at the Aero Show this year was not fitted? This Italian propeller was tested out about 25 years ago.

The five power cars are similar and were described in the lecture by Wing Cdr. Cave-Browne-Cave.

A small petrol engine of about 30 h.p. in each car starts the large engine through the familiar Bendix gear, as used on motor-cars. Two of the cars have air compressors and the other three cars have electric generators driven by the starting engines or by a constant-speed variable-pitch windmill. The compressed air is used for moving the fuel or water ballast from tank to tank to trim the ship.

The instrument board in the car has the usual instruments,—engine-room telegraph, revolution-indicator, oil-pressure gauge, etc.

A folding ladder gives access to the power cars from the hull.

The Beardmore-Diesel engines are steam-cooled. This method of cooling maintains the water jackets at boiling temperature with a corresponding increase in efficiency, and reduces the size of the radiators to the smallest size possible.

Small triangular condensers are attached to the hull about 20 ft. above the engines for three of the power-cars. Steam from the middle engines is condensed in a retractable radiator which may be used to heat the passenger accommodation.

As this radiator is below the engines the water has to be pumped back to the water-tank. A small electric motor drives a centrifugal pump on the under-side of the radiator.

What happens in a temperature of —50°F.? It appears that this pump is always exposed even when the radiator is drawn up into the hull.

THE CONTROL CABIN.

The only bulky protuberance other than the power-cars is the control cabin. As seen in the shed, there were three wooden transverse beams passing through the lower portion of the cabin. These are for handling the ship on the ground and are not permanent fixtures.

The interior of the car contains a binnacle, with the direction helm in the middle and the altitude control on the starboard side. On the port side are the telegraphs and speaking tubes, between the engine-rooms and control sta-

R.101.—The lounge, social-focus or palais-de-danse.

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tion. The top of the control-car is open to the chart-room above.

When in the shed access to the passenger accommodation is through a hatchway, into the crew's quarters. Going up the companion way, on the right and left are a number of two-berth cabins of a somewhat primitive nature.

The berths are of canvas laced to a duralumin framework, with thin mattresses and bed-clothes. The partitions between the cabins are made of aeroplane fabric so thin and slack that if any passenger were to sneeze all the other passengers would feel the draught.

The washing accommodation is probably adequate, but not luxurious. The dining saloon, which is over the galley and smoke-room, has a dumb-waiter or lift from the galley. It is rather small, with long tables.

Further aft is the lounge, a really fine room, with glass windows to give a good view of the earth below.

On the deck below is a small smoking-room with a duralumin floor to act as an ash tray. The galley is well equipped with electric cookers, glass cupboards, and all the necessary equipment of that department. It is worth noting that the ventilation of the galley is arranged with scoops, in the slip-stream of the forward starboard engine to isolate the smell of cooking and prevent the menu from announcing itself automatically an hour or so before dinner.

Further aft is a chart-room of ample dimensions, communicating with the control-cabin below. On the port side of the chart-room are the engine revolution indicators, altimeter and other instruments. On the starboard side is a statascope and the wireless compartment.

The wireless cabin is fully equipped for transmission and reception. A rotary converter generates a 2,000-volt high-tension supply and a rotary interrupter is used for i.c.w. The transmitter may be tuned to any wave-length from 300 metres to 1,600 metres. The usual receiving apparatus is installed with extensions to various parts of the ship.

The electric power distribution board is in the middle of the crew's accommodation.

A gangway runs from end to end of the ship. Transverse gangways at each frame give access to the valves, gas-bags, and the hydroelectric servo-motors for controlling the height and direction rudders.

At the power-cars these transverse gangways give access to hatchways and ladders down to the engines.

The gangway aft to the accommodation is not open for passengers.

The forward gangway is about 3 ft. wide and leads to the entrance gangway to the mooring-tower.

A small ladder to the starboard side of the main gangway leads up to the mooring cabin.

In the mooring cabin may be seen the end of the mooring-spindle, which is stayed to a ring with tension spokes like a bicycle wheel. This ring is attached to the frames and takes all lateral loads on the spindle. Here may be seen the connections for fuel, water, and electric supply at the mast and for the telephone to the ground. A winch carries the mooring cable.

The normal fuel, a heavy oil with a high flash-point of 200° F., a low viscosity and costing only £5 per ton, is carried in cylindrical tanks distributed in various parts of the ship. This may be blown from tank to tank by compressed air to trim the ship. The water-ballast is carried in similar tanks and may be blown from tank to tank for trimming purposes like the fuel.

The normal fuel capacity is 29 tons, the maximum possible is 44 tons. Eight tons of water are carried in emergency bags, which may be emptied rapidly. And 7 tons are in tanks for trimming purposes.

The only petrol carried is in small tanks in the power-cars. These tanks may be jettisoned in case of danger of fire. Some of the heavy-oil fuel-tanks have facilities for jettisoning the fuel to get a rapid lift in emergency.

The officers of the ship are the skipper, navigator, and first and second officers. The watch is composed of engineers and riggers, direction and height coxswains.

When starting a flight or returning to the tower two engineers are required for each engine, and there are the various winches to be manned. Consequently one presumes that both watches are turned out.

It must not be forgotten that all controls must be manned while the ship is at the control-tower. Their duties, in addition to any minor repairs, cleaning and overhaul, are maintaining the static trim, manning the altitude rudder, and in bad weather keeping the engines warmed up and ready to start.

The whole construction and organisation appears very complete and inspires confidence.

The Mooring Tower.

The mooring tower is about three-quarters of a mile from the airship sheds.

A circle of anchor-blocks is set in concrete at a radius of 750 ft. from the town. The use of these will be described later.

At the base of the tower is the engine-room, which houses three steam winches, an electric generator and pumps for fuel and water. Large underground tanks contain fuel-oil and petrol.

A pipe-line is laid from the hydrogen gasometers about a mile distant from the tower.

The tower is ascended by an electric lift which, strange to say, has frosted-glass windows. Is this to prevent passengers from feeling nervous as they see the view extending over the country as they mount the 170 ft. to the gallery? The view of the level plain with a ring of distant hills which is seen from this gallery is quite interesting.

A small trolley with steps and a wind-rail runs round this gallery on rails. This trolley couples up with the entrance gangway to the airship and follows all its movements as the ship swings to the wind round the tower.

Connections for water, fuel, and gaspipes may be seen here as well as plugs for electric power and telephone.

A ladder from this platform leads up to the mooring-tackle and locking apparatus.

The controllers, which are somewhat similar to a tram controller, are situated on the gallery in positions which give a full view of operations.

Seven examples of this type of tower, originated by the Air Ministry, have been set up in the U.S.A. and have been found satisfactory.

The early type of mooring-tower was arranged to pull the airship by one cable up to the mooring spindle in a hori-

R.101.—Some of the crew and designers of R.101. From left to right: Flg. Off. M. H. Steff, Lieut.-Cdr. N. G. Atherstone, Flt. Lt. H. C. Irwin, Lieut.-Col. V. C. Richmond (Chief Designer), Major G. H. Scott (Captain), Mr. T. S. D. Collins, Mr. M. B. Fitzgerald, Flt. Lt. S. Nixon and Cdr. W. H. Watt.

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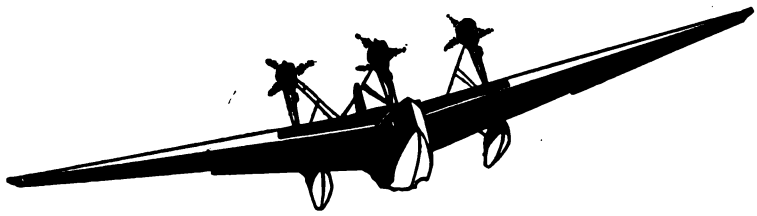

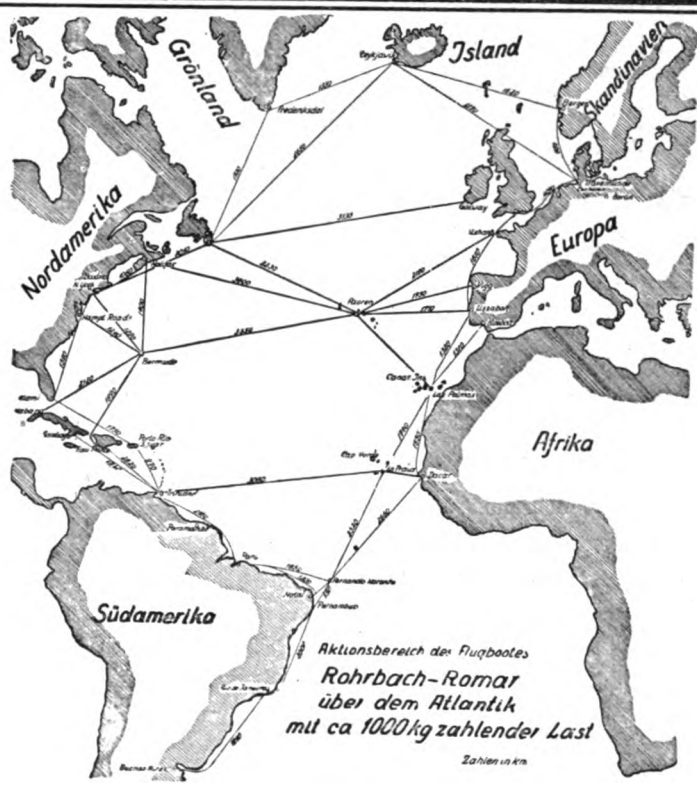

Item 1 : **Seaworthiness in a sea of force 5 (Beaufort Scale) and a range of 4,000 km. with adequate payload being guaranteed at contract conclusion.**

Item 2 : **The boat being stranded on a storm-swept night (November 16/17th, 1928), without suffering the least injury.**

Item 3 : **Standing up excellently in official seaworthiness tests (sea of force 5), on December 11th and 13th, 1928.**

Item 4 : **Crowning acceptance flights by world's record: lifting a maximum payload of 6,450 kg. to a height of 2,000 m.**

Item 5 : **Flying ten hours non-stop from Travemünde to Stockholm and back by order of Deutsche Luft Hansa.**

Item 6 : **Flying non-stop over five countries, viz.: Germany (Travemünde) — Holland — England — Norway — Denmark and back to Travemünde airport, this flight also being made by order of Deutsche Luft Hansa.**

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zontal direction. This was found to cause considerable instability

In the present system the airship drops the mooring cable and two handling lines from an altitude of about 1,000 ft. The handling lines are fed through the anchor blocks at about 60° on each side of the direction of the wind. The mooring cable of the ship is then connected to the mooring cable of the tower and the airship is hauled down to the mooring tower by three lines. This is found to give a steady mooring.

The two gangways are then coupled up for passengers, the pipe-lines are connected and the cables plugged in.

Two water-ballasted rollers are connected to the stern of the ship to hold her on an even keel under minor aerodynamic and temperature changes.

The relief watch then go on board and take charge.

The duties of the relief watch, in addition to overhaul, are to man the controls.

When a gale warning is received the engines are started and warmed up ready to leave the tower if the gale becomes violent.

A parallel to this is found in harbours in the South Seas, where a hurricane warning is the signal for all ships to leave harbour to ride the hurricane out in open water. Some years ago a steamship neglected this warning in Suva harbour. She put down extra anchors and steamed full speed ahead to relieve the tension on the cables. When the hurricane blew out she was found half a mile inland.

WHEN ONE MEETS AN AIRSHIP.

Air Ministry Notice No. 60 of the year 1929 emphasises the rules which must be observed when encountering airships, which are as follows:—

Subject to the provision that an aircraft about to land on an aerodrome be given free way, flying machines shall always give way to balloons, fixed or free, and to airships, and airships shall always give way to balloons, whether fixed or free.

An airship, when not under its own control, shall be classed as a free balloon.

The marine-minded may be tempted to inquire how long an airship can behave as a free balloon before being regarded as flotsam.

In view of the happenings at Cardington, and the general burst of airship activity, pilots are requested by Air Ministry Notice No. 62 not to fly within a three-mile radius of the Mooring Mast at Cardington.

WHY AND WHEREFORE?

[*The World, The Air and The Future.* Commander Sir Charles Dennistoun Burney, Bart., C.M.G., R.N. (Ret.). xxiii+343 pp. 31 illustrations. 2 maps. Index. Alfred A. Knopf. 21s. (Also obtainable from The Aeroplane Book Department, 27 Pilgrim Street, E.C.4.)]

Sir Charles Burney has written a book which his publishers tell us is "a brilliant survey of the problems of aviation and its rapidly increasing influence on the modern world," and they, with commendable modesty, have likened the writer to Admiral Mahan, the distinguished author of *The Influence of Sea-power on History.*

The first four chapters are devoted to preaching the necessity for developing Imperial Air Routes and these contain much of interest, although we feel that they could with advantage have been shorter.

Sir Charles Burney rightly points out that the problem of future development of the British Empire mainly resolves itself into improved collaboration between the Mother Country and all the units of the British Commonwealth of Nations, and that the future system of transport lies very largely in the air, for there is doubt whether or not the speed of trans-Oceanic steamers is ever likely to be increased beyond its present limits.

Sir Charles Burney is here preaching to the converted (for he will find, like many other authors, that few of the unconverted buy books of this character) and we feel that he would have been wiser had he appreciated the central fact that it is not the necessity of Empire Air Routes that is in question, but rather whether or not Sir Charles has, as a result of his efforts of the last seven years, provided a useful contribution to this problem of development, and we will therefore turn to the pages in which he gives an account of his work in connection with rigid airships.

We may remember that in 1919 *R*.34 made a successful return voyage across the Atlantic, and that after this the suggestion was made that this airship should make a trip to Egypt and to India, with the object of testing the value of airship transport in tropical countries. Largely through the inanition of the Airship Service, this voyage was never made.

In 1920 this country experienced the first part of the trade depression, and the Government of the day was forced to economise in all directions, and to this end gave instructions that the Airship Service was to be closed down and all the ships and stations to be sold. The next problem was to find a purchaser. Shortly afterwards, the United States' Government offered to buy *R*.38—a proposal to which the British Government agreed—a step which, of necessity, prohibited the closing down of the Airship Service, as this airship was not yet completed.

In the spring of 1921 the official statement was made that, unless the other airships were sold by private treaty, then perforce they would have to be handed over to the Disposals Board, where they would probably have been sold as scrap. Several proposals were received from would-be purchasers, but the first practical schemes emanated from Mr. A. H. Ashbolt (The Agent-General for Tasmania), Mr. M. M. Greenhill and Lieutenant-Commander W. B. Ballantyne. The first two suggested the formation of a private company for the running of an airship service to India, Australia and South Africa, but in the end their proposal was rejected by the Government because it felt that a State subsidy was not justified, and moreover, the existing airships were not suitable for commercial service. A similar fate befell the scheme of Lieutenant-Commander Ballantyne.

Shortly afterwards *R*.38 came to disaster and the wave of reaction nearly destroyed the chances of building up any future airship service.

Early in 1922, however, Commander Burney (who represented a syndicate in which Vickers Ltd. and the Shell Oil Group were mainly interested) approached the Government with the idea of forming a large company with the object of running a bi-weekly service to India with an extension to Australia. He required a subsidy from the State of such a size that the Cabinet were unable to agree to his proposals.

Nothing daunted—and here we must pay a tribute to Sir Charles Burney's pertinacity, for, had he not persevered, there is some doubt whether or not *R*.100 and *R*.101 would be in existence to-day—he proceeded with alternative schemes, until finally the previous Labour Government agreed that two airships should be built, one by the State and one by The Airship Guarantee Company (of which Sir Charles Burney is really the prime mover), which receives contributions from the State.

Since that date Sir Charles Burney has preached the gospel of the airship, both in this country and abroad—and here we may remark in parenthesis that he would have been wiser if, while writing this book, he had refreshed his memory with some of his earlier statements, particularly his enthusiastic public speeches of the period 1923-25.

Since the initiation of this programme few activities of the State have been so hotly criticised as the building of these airships, and as the mouths of those who are responsible for *R*.101 are sealed, we had hoped to find a reasoned reply from Sir Charles Burney to all these criticisms, but we are disappointed. He knew perfectly well when his airship was laid down that she was to be moored to a mast—this was the central point in the ground organisation—and yet we now find pages of his book devoted to a deprecation of this method of mooring and, *mirabile dictu*, he enlists his support from the writings of Mr. Spanner!

Sir Charles now says there is no hope for the future of airships unless they can moor to a buoy, like a ship—a by no means novel idea, for the first Zeppelin airship and the *Mayfly* were designed to be able to alight on water and to be moored thereon—we wonder if he has considered the effect of the tideway on a huge airship. He holds there is no future for the tall mooring mast and only wishes that he had been allowed to moor his airships to a floating ship, and supports his contention by quoting the successful experiments conducted in the States with the *Patoka*, but he must full well know that the *Los Angeles* was a great deal smaller than the *R*.100. We are in agreement with him when he says that the day has passed for the modern rigid airship to be man-handled, but we have grave doubts as to the economic possibility of his mooring and docking raft. He also gives a description of a new elliptical airship and a new system of propulsion, all before he has gained experience with *R*.100.

This brings us to our main criticism of the book—why has he written it? He tells us that *R* 100 is only an experimental ship, and that she must only be regarded as such and "has served her purpose admirably: and in view of what the 'experiment' has taught us, and of the new developments it has rendered possible, I claim that the time, money, and effort expended on it have been more than justified. And this is my answer to my critics."

We doubt whether they will be satisfied. Again, after the work of seven years he feels that *R* 100 will not be of much use commercially "until she has undergone the necessary alterations to enable her to use the mooring and docking raft."

We repeat, why has he written this book? Is he trying to save his face? Is it a mere "puff"? Or is it a genuine conviction? If the latter is the correct supposition, why did he carry on with the construction of the airship—or has it taken him all these years to "face facts"?

We have devoted much space to reviewing this book, but before we close we note with dismay that he has once more raised the question of the desirability of fusing the Royal Air Force into the Royal Navy. He is perfectly entitled to his own opinions, but we feel it is an error of judgment to express them in print, especially, had it not been for the help the Air Ministry gave him—as he is compelled to admit—his airship could not have been built. The knowledge is common in Service and Press circles that in the early days he did his best to play off the Admiralty against the Air Ministry, and now he would seem to be biting the hand that fed him—the hand which supplied him with his ground organisation and much technical advice.

In short, we feel that it was a mistake on his part to publish this book at the present time and a mistake not wholly free from ingratitude. Let us rather see what these two airships can do and then write about them if we wish. He ends his book in the hope "that the advent of the air age will see the inauguration of a bold and comprehensive policy of Empire development worthy of the glorious traditions of our race"—a noble ideal, but we beg leave to doubt whether this book will bring it much nearer to fruition.—S.

THE GUILD OF AIR PILOTS AND AIR NAVIGATORS OF THE BRITISH EMPIRE.

The first General Meeting of the Guild of Air Pilots and Air Navigators is to be held at the Hotel Cecil (Indian Suite) at 6.45 p.m. on Saturday, Oct. 19.

This meeting is to be followed by an Inaugural Dinner at 20.00 hrs., and as accommodation is limited all members should make early application for dinner tickets to the "Clerk to the Guild," Mr. L. A. Wingfield, 61, Cheapside, E.C.2.

Members may bring lady guests. The price of the tickets is 12s. 6d. each exclusive of wines.

Lady Cobham has kindly consented to act as hostess on this occasion.

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

MOTHS FOR FRANCE.

The De Havilland Aircraft Co. Ltd. has received official notification to the effect that the British Certificate of Airworthiness for the Moth will henceforth be accepted by the French Air Ministry.

This means that a Frenchman, if he desires to buy a foreign light aeroplane, may buy a D.H. Moth, with the added comfort that he may register the machine in France. The French authorities will only require to see the British Certificate of Airworthiness, after which the machine will be "immatriculated" with the French registration lettering and "The Moth" will become "Le Moth." This procedure applies only to private owners.

Hitherto French private-owners when buying British aircraft have had to register in England in the name of a British friend or sympathiser, and considerable trouble has arisen in the past not only with regard to Airworthiness Certificates, but also in connection with the issue of carnets or tryptiques for foreign travel by the official governing body of the nationality of the pilot or owner for a machine registered in a neighbouring country. At present there are six French private owners of Moths.

GALE FIGHTING.

On Sunday, Oct. 6, while the Dungeness Lifeboat was rescuing people from a shipwreck in the Channel, and the wind was registering 37-43 miles p.h. at Lympne, Mr. Story took off for Brussels in a Moth with Mr. H. E. Twaites, Hon. Treasurer of the Cinque Ports Club. They left at 12.53 hours and were not reported at Calais until 13.43 hours, during which time they must have had a very unpleasant crossing over a terrific sea. They finally landed safely at Brussels at 15.08 hours.

Mr. Story was the first pupil trained *ab initio* by this Club and has just over 100 hours' flying experience. He has previously put up some fine flights in bad weather, notably when he won the Rally at Conington early last year, and his recent flight from Lympne to Ireland. This last performance, however, was a very fine show and should be convincing proof of the safety and utility of light aircraft as a means of transport. Mr. Story and Mr. Twaites propose to tour the Continent for a week.

THE LONDON AEROPLANE CLUB.

The Flying Time of the London Aeroplane Club for September was:—Dual instruction (272 flights), 130 hrs. 55 mins. Solos (220 flights), 91 hrs. 55 mins. Passengers (76 flights), 29 hrs. 10 mins. Tests (103 flights), 17 hrs. 50 mins. Total (671 flights), 269 hrs. 50 mins.

The Pilot Instructors were Major H. C. Travers and Mr. F. R. Matthews, the Ground Engineers were Messrs. C. Humphries and A. E. Mitchell, and the aircraft in use were G-AABL, G-AABN, G-EBXS, G-EBZC, G-AAEX, and G-EBWY.

During the month the following members qualified for their "A" Licences:—Miss F. Surtees, M. Armstrong, B. W. Houlding, R. D. Berrington, H. V. Williams, H. T. Monyneux, M. L. McCulloch.

THE HAMPSHIRE AEROPLANE CLUB.

The total flying time for September was 214 hrs. 50 mins., of which 93 hrs. 30 mins. was dual instruction, 30 hrs. 30 mins. was solo flying, 81 hrs. 40 mins. was flying by "A" pilots and 9 hrs. 10 mins. was test and other flying.

Four machines were in commission. These were D.H. Moth G-EBOH, Avro Avian G-EBVI, D.H. Gipsy-Moth G-AAJR, and Simmonds Spartan G-AAFR.

During the month 11 new pilot members and one associate member joined the Club. Messrs. Kingston, Pleydell-Bouverie, Winn and Stisted qualified for their "A" licences.

The flying time for the month is the best this year, in spite of the fact that Mr. Dudley was the sole instructor.

On Sunday, Sept. 8, a record day's flying was achieved, namely, 23 hours.

The total flying put in by the Club machines for the nine months ended Sept. 30 exceeds 1,341 hours, which is 37 hours more than for the corresponding period last year.

THE MIDLAND AERO CLUB.

The following is the Midland Aero Club's report for the month of September, 1929:—

Instructors: Messrs. W. H. Sutcliffe and T. W. J. Nash, A.F.M. Engineer: W. J. Halland. Asst. Engineer: G. Rees. Aircraft: Two (XT, DB).

The total flying time was 141 hrs. 11 mins., 421 flights. Dual, 77 hrs. 35 mins.; Solo, 45 hrs. 45 mins.; Passenger, 13 hrs. 35 mins.; Test, 4 hrs. 15 mins.

Messrs. P. Stone, H. A. Taylor, B. P. A. Vallance and Mrs. R. Vereker passed the tests for their "A" licences.

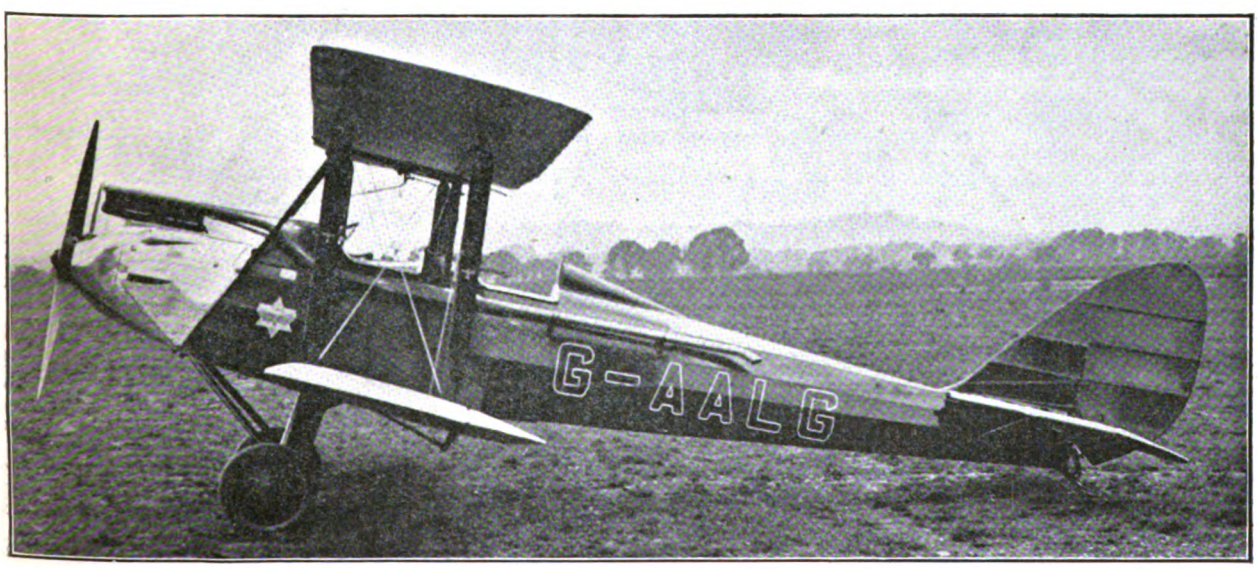
On Sept. 30 EBLT and EBLW were flown back to Castle Bromwich on completion of their fourth annual overhaul for renewal of C. of A.

THE NORFOLK AND NORWICH AERO CLUB.

The total flying time of the Norfolk and Norwich Aero Club for September was 108.45 hours, of which 52.15 were dual instruction and 49.25 to solo flying. The remaining 7.5 hours were tests and passenger flights.

Three pupils did their "A" Licence tests during the month and several more are just on the brink of their first solos.

On the whole the month has been a success and fourteen new members, six of whom active, have been enrolled. There is no scarcity of pupils. The booking sheets are full from day to day which only proves that flying is becoming more and more popular.



A ROYAL MOTH.—The Gipsy-Moth which has been supplied by the De Havilland Aircraft Co. Ltd. to be used by H.R.H. the Prince of Wales. It is painted red and blue,—the colours of the Household Brigade Flying Club. —(*"Aeroplane" photograph.*)

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At the moment we have two New Zealanders flying with us. One is a member of the Auckland Aero Club and the other a member of the New Plymouth Club. Both arrived within a day of each other. One is an old Norwich man and the other claims Norwich as the home of his antecedents.

We have advertised the fact that accommodation can be provided on the aerodrome if desired by anyone taking an intensive course of instruction. Within a fortnight of that advertisement's first appearance Mr. C. Parkerson, of New Zealand, availed himself of this accommodation.

The second of a very interesting series of flying, bombing, and landing competitions took place during the month and entries enough to keep going until dusk were forthcoming. The rules are very simple but they work extremely well and these competitions do tend to improve form.

Points were given for take off, approach, and landing. Possible points obtainable were take-off 20, approach 40, landing 40, total 100.

In the first competition it was noticed that a great many competitors lost points on their take-off and as the results were posted on the notice board they doubtlessly considered this carefully, and last time scarcely any points were lost on that score. The first prize for this competition was the Alexander Duckham Silver Challenge Tankard. This was won for the first time by W. J. Pickthorn. One of these competitions will be held every month in future.

We have been developing a photographic department in the Club during the last month and it is meeting with much success. For some time the Club has had possession of a very fine aerial camera and now an exceptionally good dark room has been fitted up with enlarger and all necessary plant. Inquiries for photographs are welcomed.

Three more members of the Club have become private owners during this month. All bought Avians. Now we have seven private owners, which is quite a respectable number for a provincial Club at this stage.

The second Annual Ball will be held in St. Andrew's Hall, Norwich, on Nov. 26, and a very large gathering is expected. Anyone wishing to attend should make very early application for tickets, for last year a crowd of people were disappointed when a fortnight before the date of the ball all tickets had been sold. St. Andrew's Hall is a fine old building and will accommodate a much larger crowd than the hall we had last year, but the demand for tickets is just as large as before.

The following have honoured us by becoming Vice-Presidents of the Club. The Rt. Hon. The Viscount Elmley, Bt., M.P., The Rt. Hon. Sir Samuel Hoare, Sir J. Field Beale, J. A. Christie, M.P., J. Cator, M.P., P. E. T. Carill Worsley, and James Hardy.

THE SCOTTISH FLYING CLUB.

The Scottish Flying Club flew 145 hours 30 minutes during the month of September. Of this time 74 hours 55 minutes was taken up by dual instruction, which constitutes a record for the Club. Although only one licence was actually awarded—to Miss E. A. R. Anderson—seven other members completed the tests for the "A" ticket during the month. Miss Anderson was the candidate chosen by the Club to benefit under the Scholarship Scheme of the Air League and is the second woman in Scotland to be awarded a pilot's licence. A noteworthy performance was put up by Mr. A. F. Wallace, who, on his first solo on Sept. 17, did 50 minutes in the air and then proceeded to do the height test, etc., for his licence on the same morning.

With the approach of Winter activity is now being transferred to indoors, and the Badminton Section, which proved so popular last season, has held its first meeting. As before, meetings will be held on Tuesdays and Thursdays of each week throughout the season at 19.30 hrs.

The first of the Club dances is to be held on Friday, Oct. 25, at the Piccadilly Club, 92 Sauchiehall Street, Glasgow. A large attendance is expected, and all interested in the movement are cordially invited. Tickets, price 5s., may be had at the aerodrome, or from Mr. H. W. Smith, 101, St. Vincent Street, Glasgow.

THE PHILLIPS AND POWIS SCHOOL.

The Report of the Phillips and Powis School of Flying, Reading, for the month ending Sept. 25, is as follows:—

Flying Time: 112 hrs. 15 mins.; Instructor: W. Giddy.

Notes: The following new pupils have joined the School—Mrs. Lavington, Mrs. Davies, Dr. Nicholson, Dr. Penny, Dr. Hoole, and Messrs. Crawshaw, Hayne, Pook, Frost, Goodbody, Owen, Chaning Pearce, Aitchison, Piper, Hull, Saunders, Turner, Rendle, Brighty, Newman, Coggin, Walton, Kemp, Peach, Cownie and Browne.

Messrs. Skuce, de Fraine and Milne passed their test for "A" licence.

The School has acquired another Moth, G-EBVC, to help with the increasing number of pupils.

A BELGIAN LIGHT AEROPLANE MEETING.

Between Sept. 25 and Sept. 28 there was held at the Evère aerodrome, Brussels, the 7th annual *Concours International d'Avions Légers et de Tourisme* for the *Coupé Challenge du Roi*, presented by H.M. the King of the Belgians.

Eleven entrants were due to arrive at the aerodrome before midday on Sept. 25. Two of the original entrants, one a Caudron and the other an Avro Avian, did not arrive.

Mr. Hubert Broad arrived at 16.00 hrs., four hours late, and the stewards put it to the other competitors to decide if he should be allowed to compete. The result of a secret ballot was negative. A Pander, flown by M. Lammertz, was disqualified for being overweight.

This left the following machines in the contest: Klemm (40 h.p. Salmson), Herr Lusser; Caudron 161 (65 h.p. Salmson), M. Delmotte; Orta-St. Hubert (85 h.p. Walter), M. Maus; Potez 36 (95 h.p. Salmson), M. Bayol; Potez 36 (60 h.p. Salmson), M. Weiss; Potez 36 (70 h.p. Renault), M. Lemoine; and Avro Avian (115 h.p. Cirrus-Hermes), E. W. Percival.

The afternoon of Sept. 25 was given over to weighing the machines and pilots and allotting the ballast to be carried. All aircraft were divided into the same two categories, as used in the *Challenge de Tourisme*, and, as in that contest, all aircraft were allowed a 10 per cent. tolerance.

Only one machine came under the lighter category, and this machine, the Klemm-Salmson, flown by Herr Lusser, was allowed a maximum weight of 308 kgs. (678 lbs.), and had to carry a load of 160 kgs. (352 lbs.).

In the other category the maximum weight allowed was 440 kgs. (968 lbs.), of which 200 kgs. (440 lbs.) had to be load carried.

All entrants had to submit their licences together with the C. of A.'s of their aircraft for examination by the *Aéro Club de Belgique* and at the same time they had to supply the price of their aircraft, as delivered in Belgium, in Belgian francs, for single examples, and for a series of six. The lowest prices was credited with 40 points.

In all tests it was possible for competitors to amass a total of 320 points. These were allotted as follows: 50 for Taking-off, 90 for Landing, 30 for Maximum speed, 20 for Minimum speed, 30 for Fuel consumption, 20 for Climb, 20 for Dismantling, 20 for Qualities, and last the 40 for Price.

The tests on Sept. 26 were to decide the various "qualities" of the machines. Out of the total of 20 points obtainable, 6 were given for robustness of construction, comfort of crew, installation of equipment, and provision of undercarriage without cross-axle and fitted with brakes; 3 for engine-starter, 3 for dual control, 2 for parachutes, and 6 for anti-fire equipment.

Thereafter the machines took off on a consumption test over a distance of 400 kms. The Potez 36 (60 h.p. Salmson engine) flown by M. Weiss, was forced to land, but all other machines completed the test satisfactorily, although for some reason known to itself the *Aéro Club de Belgique* refused to release any figures obtained.

On the following day the six remaining entrants had to do a height test, a maximum and a minimum speed test. In the last-mentioned M. Bayol, on the Potez 36 broke his airscrew and damaged his undercarriage when landing.

On Sept. 28 the remaining tests were completed. These were the Getting-off test, the Landing test, and the Dismantling test. On this day, although he was not doing any particular test at the time, M. Maus, on the Orta-St. Hubert, damaged his undercarriage and was disqualified.

The result of the Contest was that Lusser, in the Klemm-Salmson, with a total of 273 points won the *Coupe Challenge du Roi*, as collector of the greatest number of points, the *Coupe Challenge des Avionettes*, as winner of the 1st, or light, category, and a prize of 15,000 francs.

M. Delmotte in the Caudron-Salmson with 229 points was first in the 2nd category, and was awarded the *Coupe Challenge D.G. Nicolaïdes* and a money prize of 5,000 francs.

Of the remaining two finishers M. Lemoine on the Potez-Renault was third with 185 points and Mr. E. W. Percival on the Hermes-Avian fourth with 151 points.

THE BRISTOL ACCIDENT.

The inquest upon the bodies of Edward Matthias Tiarks and 2nd Lt. Edward Victor Somerset was concluded at Staple Hill (Somerset) on Oct. 4. The jury returned a verdict of death due to the accidental crashing of an aeroplane.

The cause of the accident is a complete mystery and no evidence is available to show why the machine crashed. Subsequent examination of the wreckage failed to show any defect which might have caused the disaster and both the victims were experienced pilots and in excellent state of health, thus precluding the likelihood of one fainting and jamming the controls.

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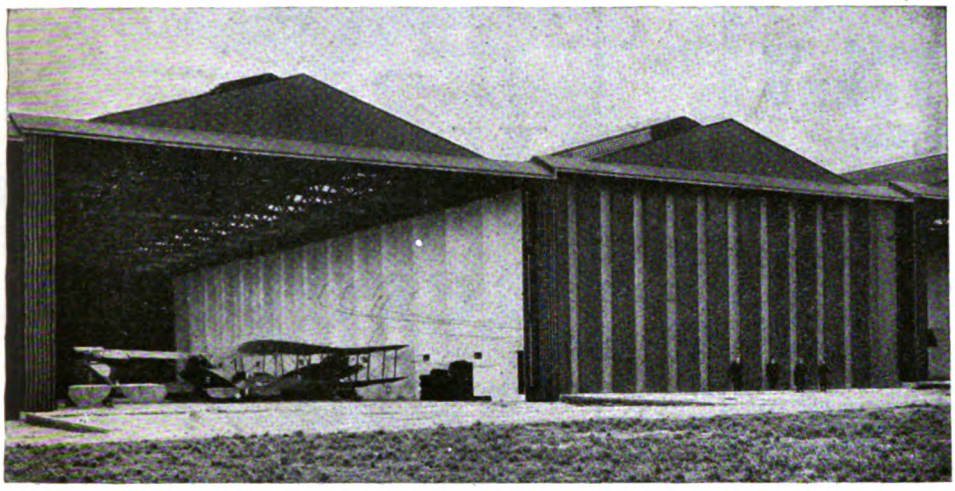

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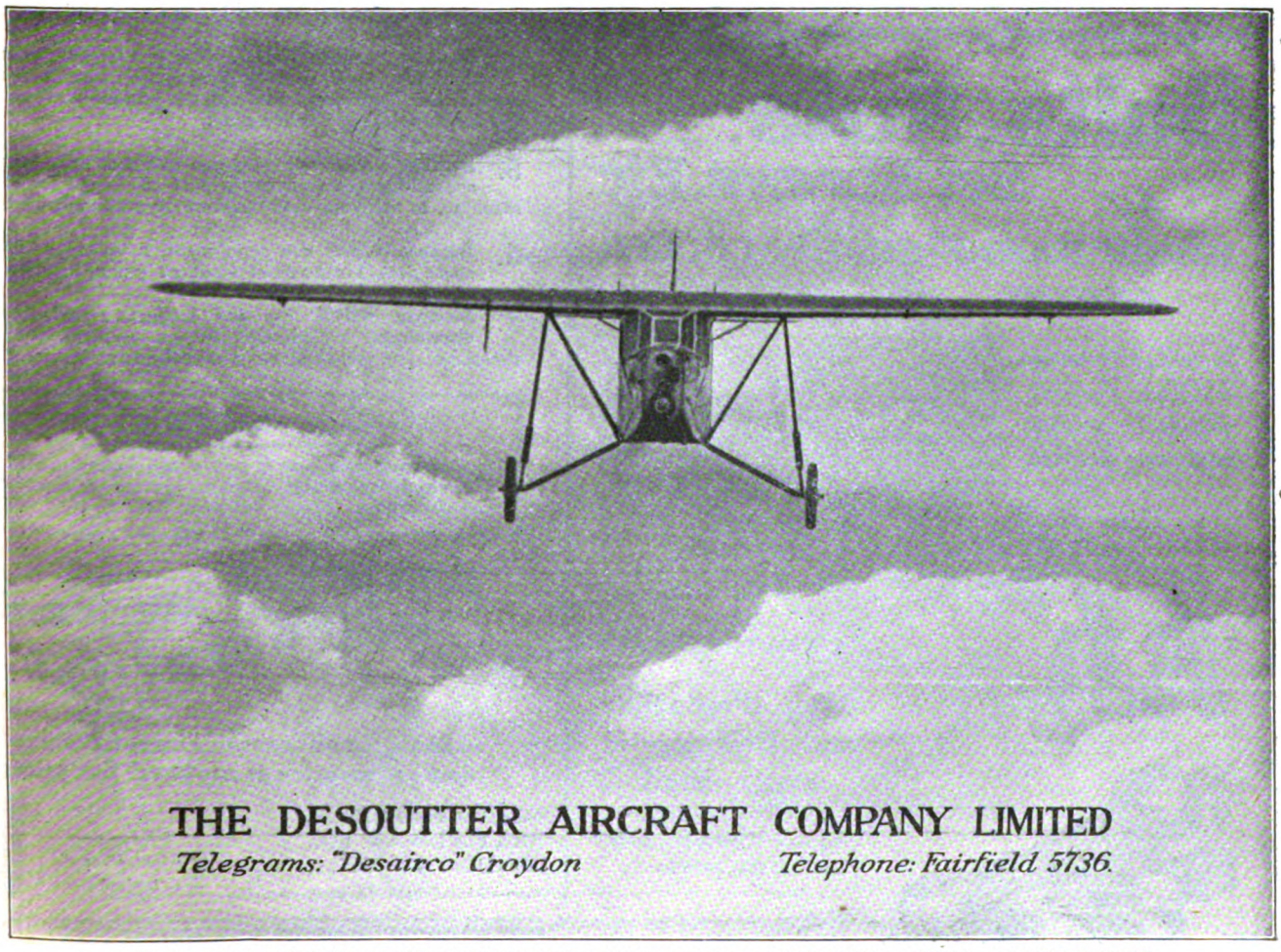

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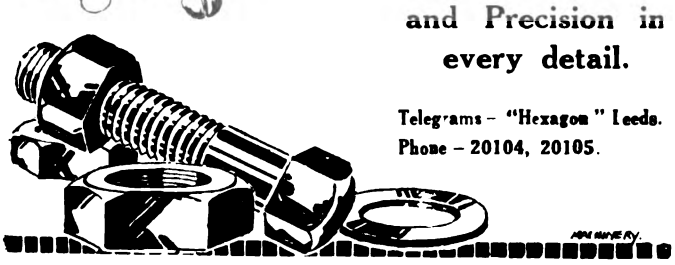

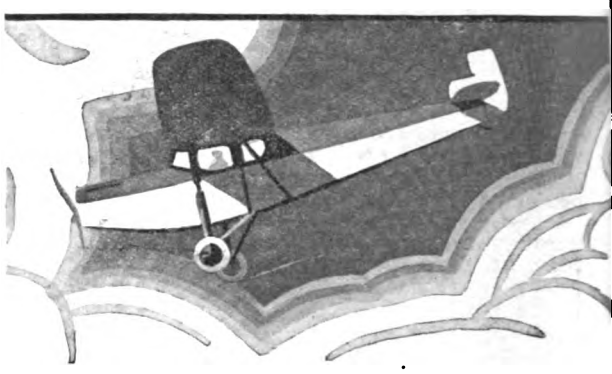

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COMMERCIAL AERONAUTICS.

SIR ALAN COBHAM'S CAMPAIGN.

A certain natural sequence may be observed in the development of any form of transport. First the vehicle itself is produced and then must come a pause while the routes used by the vehicle are developed.

The sequence can be easily observed in the development of road transport, the use of canal barges, railways, and even ships. After all, the growth of shipping was entirely dependent on adequate docking arrangements.

Civil Aviation has reached the stage now where one can say that aviation is waiting on ground organisation. The best passenger-carrying machine is useless without suitable landing grounds. In this country to-day we have facilities for producing aircraft and we have the engines, but there is insufficient ground organisation.

The people who must provide and maintain flying grounds are the people who will ultimately benefit, that is, the Towns-people. Their representative executives are the Mayors and Municipalities and their officers.

Thus one sees how soundly Sir Alan Cobham is laying the foundations of a great Industry by his recent flying campaign all over the country.

Something like 100 towns have been visited and their local notabilities have been taken for trips over their own homes. The results of the campaign will obviously take some time to mature, but at least 20 towns are likely to acquire aerodromes in the not so far future.

During the 21 weeks which the tour has lasted, the *Youth of Britain*, as Sir Alan's Giant-Moth is called, is claimed to have flown something like 60,000 miles and to have taken up 40,000 passengers during 760 hours' flying time.

On Oct. 7, a demonstration was arranged at Stag Lane Aerodrome, on the occasion of Sir Alan Cobham's return. *The Youth of Britain*, which had been circling round, landed precisely at 11.30 hrs. As the Giant Moth taxied up to the crowd there was a surge of photographers to get pictures of the machine, which looked a trifle travel-stained but in excellent condition after her long journeyings.

The Director of Civil Aviation, Sir Sefton Brancker, Mr. Frederick Montague (Under-Secretary of State for Air), Sir Charles Wakefield (whose generosity made the free trips possible for so many hundreds of school children), and Sir Edmund Phipps, Deputy Secretary of the Board of Education, and Mr. Harold Perrin, Secretary of the Royal Aero Club, were there to welcome the return of the Apostle of Aviation.

Sir Charles Wakefield, Mr. Montague and Sir Alan then

THE BRITISH AIR-PARK CAMPAIGN.—The itinerary of Sir Alan Cobham's remarkable tour, which ended last Monday, in which he visited nearly 100 cities and towns, to discuss with the local authorities the organisation of municipal aerodromes.

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"NEXT PLEASE."—Sir Alan Cobham in the Giant Moth at Stag Lane. In the foreground, are Lady Cobham and her two children, with Sir Charles Wakefield and a string of youngsters waiting their turns for a trip.

made short speeches in front of the microphone. These speeches laid stress on the number of people who had been introduced to Aviation and the reliability of the aircraft and engines.

The point that impressed the writer most was Sir Alan's statement that 40,000 people have been in and out of the machine since the start of the Tour. That alone is a remarkable tribute to the machine, for 40,000 people do a good deal of scrambling about.

While the photographs and speeches were being made, the crew had cleared out all the miscellaneous baggage and spares and were putting in the seats. When this had been done Sir Sefton Brancker, Mr. and Mrs. Montague, Sir Edward Phipps and Sir Charles Wakefield were taken up for a fly-round. And then there was an adjournment for refreshment and general conversation.

A large number of school-boys and girls formed part of the crowd. During the interval parties of them were picnicing round the machine. These children were taken for trips in the afternoon.

Quite apart from the value of the campaign as propaganda it is value as illustrating the work of the equipment. The D.H. Giant Moth and Armstrong Siddeley geared Jaguar have done their jobs efficiently and without any complaint. The engine has done 50,000 miles without a complete overhaul. The machine has been out in the open practically all the time (with a night-watchman sleeping on board), so that the Tour in itself is further and valuable evidence of the reliability and robustness of aircraft and engine.

Much of what Sir Alan has learned during his tour is embodied in the article which he has written for the Air-Park issue of The Aeroplane, which will appear on Oct. 23.

THE EAST AFRICAN VENTURE.

Sq. Ldr. the Rt. Hon. F. E. Guest, C.B.E., D.S.O., accompanied by Miss W. E. Spooner, Flt. Lt. R. C. Preston, A.F.C. (R.A.F. Special Reserve), and Mr. E. G. Hordern, R.A.F., sailed from Marseilles in s.s. *Madura* for East Africa on Oct. 5. The three D.H. Moths which they are taking with them were shipped in the *Madura* in London and will be assembled at Nairobi, which will be the headquarters of the expedition.

During the absence of Flt. Lt. Preston, Flt. Lt. Briggs, R.A.F.O., will act as Secretary of the Belfast Flying Club.

Mr. E. G. Hordern has been granted leave of absence from the R.A.F. until the end of the expedition in January, 1930.

Sq. Ldr. Guest's expedition has been organised to investigate the possibilities of commercial aviation in East Africa and although they will operate air-taxi services at the beginning the main idea is to make a survey of the country with a view to opening commercial air lines.

THE RESPONSIBLE PARTIES.—Left to right: Mr. Frederick Montague (Under-Secretary for Air), Sir Charles Wakefield (the Patron Saint of British Aviation), Sir Alan Cobham (his apostle), Sir Sefton Brancker (Director of Civil Aviation), and Sir Edward Phipps (Deputy Secretary of the Board of Education).

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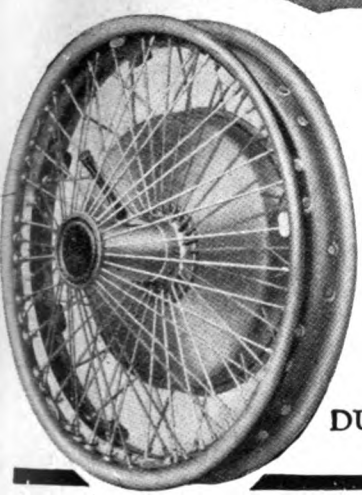

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NORTHERN AIR LINES.

Northern Air Lines began operations at their Manchester Branch on April 11, 1929. From that date until Sept. 30 their aeroplanes have flown a total of seventy-eight thousand one hundred and sixty-five (78,165) miles. No passenger or employee has been injured. Over ninety-nine per cent. of the scheduled journeys reached their destination.

The Company has a total of ten aircraft, but only seven machines have actually been in use at one time during this period. The remaining three have been reserved to replace those undergoing overhaul.

This mileage has been put up on three classes of work, Air Taxi work, that is the hiring of a private aeroplane with pilot to take people to various destinations, Joy-Riding (pleasure flights for the public at 5s. per flight), and Instruction—tuition or teaching people to fly and also the hiring of aeroplanes to private pilots.

The total time flown in the five months amounts to 1,116 hrs. in the air.

24,280 passengers have been carried, and, as we said before, without injury.

The Company announce a reduction of 33⅓% in their charges, and tney are now doing Air Taxi work at 10d. per mile.

Five pilots are permanently employed and two other pilots are engaged temporarily. A number of the people who have been taught to fly now hire aeroplanes and go away for week-ends, etc.

An increasing business in overhauls and repair work is being built up.

AVRO FIVES AND TENS.

A. V. Roe and Co. Ltd. has sold several machines of the Avro Five four-passenger monoplane type (three Genet-Major engines) which was exhibited at the Aero Show at Olympia. One has been sold to Wilson Air Lines, of Nairobi, Kenya Colony, and another has been acquired by an air transport company in Queensland, Australia. Two more have been ordered by an unnamed firm for air survey work in the Sudan.

The Avro Ten, which is the British version of the Fokker F.VII-3m, has also attracted considerable attention. Four of this type have been sold to Australian National Airways Ltd., which company intends to operate a service between Brisbane and Sydney. Mr. Kingsford Smith, who is one of the directors of this company, has flown one of the type and has expressed himself highly satisfied with the performance and construction of these machines. Another Avro Ten has been bought by an air transport company in Queensland.

FREIGHT FOR THE DUTCH EAST INDIES.

The K.L.M. (Royal Air Traffic Company), of Holland, now offer facilities to business firms for sending air freight goods to the Dutch East Indies. The freight rate will be £2 10s. a kilogramme (2 lbs.), with a minimum consignment of one kilogramme.

Air mail will still have a preference, however, and merchandise can only be accepted if the necessary loading space is available. Goods for dispatch must be delivered the evening before the departure of the aeroplanes at the company's offices in Amsterdam (K.L.M., Leidsche Plein), or Rotterdam (K.L.M., Coolsingel).

SLOTS FOR SWEDEN.

The Swedish Government have acquired a licence to fit Handley Page slots to all Government machines in Sweden. This is the first country in Europe to acquire such a licence.

The Handley Page Bulletin for September points out that the average figures of fatal accidents per month in the R.A.F. for the first seven months of this year are 3.7; for the whole of 1928 the figures were 6.33 per month, and in 1926 the figures were 7 per month.

As the number of squadrons in the R.A.F. have been considerably increased since 1926, considerably more flying has been done, this makes this low figure all the more creditable. As the decrease coincides with the adoption of the slot by the R.A.F., the H.P. firm's conclusion that the slot must be responsible for this improvement seems justified.

USEFUL INFORMATION.

Rowland Hill and Sons, Ltd., of Coventry, have produced a booklet called *Alpax* (*R.H.*). This booklet outlines the uses and advantages of the Aluminium-Silicon alloy known as Alpax. This name is applied to these alloys after *modification*. The modification consists of the addition under definite conditions of Sodium Salts to the alloy when in a molten condition.

Alpax is well known in the Aircraft Industry now, but no doubt many who are familiar with the alloy will be glad to learn the machining speeds and similar useful information which is to be had in this booklet. It will be sent on request, gratis and post free, to anyone who mentions The Aeroplane.

PETROL POETRY.

The amusing verses which have recently appeared in the newspaper advertisements of the British Petroleum Co. Ltd. have been collected into a booklet called *The Motorist's Rhyme-Book*.

A copy of this booklet will be sent, free of charge, to any reader who applies, mentioning The Aeroplane, to the British Petroleum Co. Ltd., Britannic House, Moorgate, E.C.2.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 14; Monday, 36; Tuesday, 39; Wednesday, 28; Thursday, 26; Friday, 26; Saturday, 32.

Imperial Airways Ltd.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 77, passengers 633, freight 35 tons. India Route: Inward, passengers 1, mail 756 lbs.; outwards, passengers 5, mail 796 lbs.

Air Union:

Paris—London and return: Machines 55, passengers 206, freight 25 tons.

K.L.M.:

Amsterdam—Rotterdam—London and return: Machines 24, passengers 159, freight 10¼ tons.

Sabena:

Brussels—London and return: Machines 12, passengers 32, freight 3¼ tons.

Deutsche Luft Hansa A.G.:

Amsterdam—London and return: Machines 24, passengers 58, freight 6¼ tons.

Miscellaneous:

British machines 9, passengers 13.

Foreign machines 0, passengers 0.

Total number of trips by British machines, 86, carrying 646 passengers. Foreign machines 115, carrying 455 passengers.

Week ending Oct. 5:

COMPARATIVE FIGURES.

Machines, 201; Passengers, 1,101; Crews, 475; Total personnel, 1,576.

Corresponding week, 1928:

Machines, 156; Passengers, 897; Crews, 307; Total personnel, 1,204.

Corresponding week, 1927:

Machines, 129; Passengers, 779; Crews, 241; Total personnel, 1,020.

Corresponding week, 1926:

Machines, 84; Passengers, 367; Crews, 103; Total personnel, 470.

Corresponding week, 1925:

Machines, 95; Passengers, 369; Crews, 121; Total personnel, 490.

Corresponding week, 1924:

Machines, 111; Passengers, 466; Crews, 137; Total personnel, 603.

Corresponding week, 1923:

Machines, 60; Passengers, 132; Crews, 89; Total personnel, 221.

Corresponding week, 1922:

Machines, 101; Passengers, 305; Crews, 163; Total personnel, 468.

Corresponding week, 1921:

Machines, 80; Passengers, 214; Crews, 109; Total personnel, 323.

Corresponding week, 1920:

Machines, 123; Passengers, 196; Crews, 143; Total personnel, 339.

NEW COMPANIES.

Cramlington Aircraft Ltd.—Private company. Registered Sept. 30. Capital, £2,000 in £1 shares. Objects: To acquire the business of carriers of persons for pleasure flights in aircraft, proprietors of air-taxis, aerial photographers and overhaulers and reconditioners of all types of aircraft and engines now carried on by W. L. Runciman and Constance R. Leathart as "Pleasure Flying Services." The directors are: W. L. Runciman, Sydenham House, Newcastle-on-Tyne. Miss Constance R. Leathart, Low Angerton, Morpeth. Secretary: A. H. Bell. Solicitor: J. C. P. Thompson, Milburn House, Newcastle-on-Tyne. Registered office: Cramlingtohn Aerodrome, Northumberland.

PERSONAL NOTICES.

MARRIAGE.

THOMPSON—HILL.—On Oct. 3, at St. Mark's, North Audley Street, Flt. Lt. D. R. W. Thompson, R.A.F., to Aileen Millicent Hill, daughter of the late the Rev. J. Seymour Hill and Mrs. Seymour Hill, of Park House, Southwell, Nottinghamshire.

FORTHCOMING MARRIAGE.

BARNETT—BOMER.—The engagement is announced between Flt. Lt. Percy J. Barnett, M.C., R.A.F., younger son of the late Mr. John V. Barnett, of Tyndalls Park, Clifton, and of Mrs. Barnett, Heathcote, Gerrards Cross, and Marjorie Anna, younger daughter of Mr. and Mrs. Edward Bomer, Marsham Manor, Gerrards Cross.

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For the convenience of Advertisers, replies can be received at the office of The Aeroplane, Cannon House, Pilgrim Street, London, E.C.4.
Special PREPAID Rate—18 words 4/6, 3d. per word after; 13 insertions, 18 words, 4/-; 26 insertions, 18 words, 3/6; 52 insertions, 18 words, 3/-, 2d. per word after. Situations Wanted ONLY—18 words 1/-.

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Coley Ltd., Aircraft Surplus. Main Oil Tanks, 10s.; Windscreen frames and brackets, without glass, 2s.; K.L.G. Plugs F.9, new in maker's boxes, doz., 9s. 9d.; Smith's Revolution Indicators, 600-2,600 r.p.m., with 3 ft. drive, 22s. 6d.; Cross Levels, 1s. 6d.; Dashboard new spotlamps, 2v. bulb and length of wire, 1s. 9d.; Above postage paid. Free List obtainable. Coley Ltd., Ordnance Works, Queen Elizabeth Road, Kingston-on-Thames.

AIRCRAFT WANTED.

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AIR TAXIS.

Air Taxis Ltd., Stag Lane Aerodrome, Edgware. 'Phone: Colindale 6307.

Aerofilms Limited, Aerial Tours, Taxi Work, Aerial Photography, Air Survey. Colindale Avenue, Hendon, N.W.9. 'Phone: Colindale 6183 and 6184.

British Air Lines.—Croydon Aerodrome. Cabin monoplanes for charter, day or night, all machines fitted with wireless telephony. Our own private car picks you up anywhere within a radius of 25 miles, free of charge. 'Phone:—Fairfield 5824. Telegrams:—Britalyne—Croydon.

PATENTS.

STANLEY, POPPLEWELL AND FRANCIS, Chartered Patent Agents, Jessel Chambers, 88, Chancery Lane, W.C.2. Telephone, Holborn 6393; Telegrams, "Notions, London."

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HENDERSON FLYING SCHOOL.—Lt.-Col. Henderson offers unique terms both for "A" and "B" licences. All technical coaching arranged for. Personal attention. Minimum rates. Write to Croydon Aerodrome.

CINQUE PORTS flying club (Subsidised). **WINTER RATES** commence Oct. 1. 6 months' sub. 31s. 6d. Entrance fee 21s. Monthly sub. 21s. No entrance fee. Seven of our members took "A" licences in 4 weeks ending Sept. 26. Under 2 hours by car from London. Enlarged Club Room and Bar. Send 6d. to Hon. Sec., Hythe, Kent, for illustrated brochure. **"LEARN AT LYMPNE."**

CHEAPEST FLYING IN THE WORLD! at the Norfolk and Norwich Aero Club. Subscription £3 3s. Instruction rates 25s. per hour. Accommodation can be arranged on Aerodrome. Applications to Secretary, Mousehold Aerodrome, Norwich.

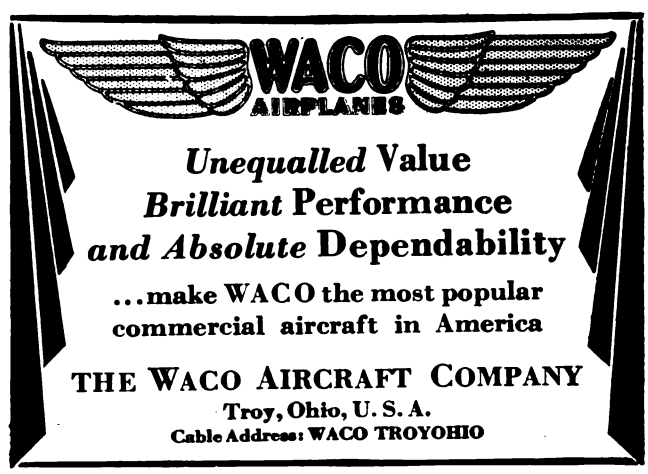
Learn to Fly at the Midland Aero Club. Four tuition machines, two fully qualified expert instructors. No waiting. Particulars Hon. Secretary, 22, Villa Road, Handsworth, Birmingham.

Learn on latest types of Gipsy Moth, Hermes Avian, and Gipsy Bluebird light aeroplanes. Chief Instructor, Captain V. H. Baker, M.C., A.F.C., Airwork Limited, Heston Air Park, Hayes 410.

Southern Aero Club.—Thorough Avro Tuition, no waiting list. "B" licences instruction arranged. Apply Secretary, Shoreham Aerodrome, Sussex.

The De Havilland School of Flying, Stag Lane Aerodrome, Edgware, Middlesex. Fourteen machines: Nine Moths, five advanced training machines. Seven Pilot Instructors, Lecture Classes, Restaurant and Recreation Pavilion. The largest and most up-to-date civilian organisation for flying tuition in the British Empire.

Phillips and Powis School of Flying.—An "A" licence in the shortest time and the lowest cost at Reading. Personal attention, no waiting, concentrated instruction. Gipsy Moths. The School is very successful in turning out good pilots in a minimum time. Write for particulars of recent successes. Special offer, trial lesson 12s. 6d. 45 minutes Paddington—Reading Aerodrome. 'Phone Sonning 114.



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AIR SURVEY.

Air Survey Co. Ltd., 39, Grosvenor Place, S.W.1 (Sloane 6048), Dum Dum, Calcutta, and Monkey Point, Rangoon. **The Aircraft Operating Co. Ltd.**, 8, New Square, Lincoln's Inn, London (Holborn 8131), and Bulawayo, Southern Rhodesia; Cairo, Egypt; Rio de Janeiro, South America: Contractors to the Ordnance Survey. Laboratories and Subsidiary Company for aerial photography in the British Isles. Aerofilms Ltd., Colindale Avenue, Hendon (Colindale 6183 and 6184).

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AVIATION INSURANCE.

Advice given and rates quoted for all classes of Insurance.—Apply to Bray, Gibb and Co., Ltd., Aviation Insurance Specialists, 166, Piccadilly, W.1, or 14, Sherborne Lane, E.C.4. Founded 1866.

Aircraft Comprehensive Insurance.—Aeroplane owners requiring Insurance covering damage, 3rd party, accident and life *should first consult* Services and General Insurance Agency, 108, Victoria Street, Victoria, S.W.1. *Special terms according to experience.*

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ON THE NORTH COUNTRY'S LEAD.

Wherever the English language is spoken, the names of Hull, Hell, and Halifax are inseparably linked. Having had experience so far of the first and last, one can vouch for the fact that there are many worse places than Hull. And at the present moment Hull is taking a place in British Aviation which entitles it to high respect among the cities of the Empire.

On Thursday last, October 10, Hull earned the distinction of opening the first Municipal Aerodrome in the British Isles, and of having the opening ceremony performed by a Royal Prince—which was very fitting, seeing that Municipal Aerodromes are of the highest importance to the future of the British Empire.

Admittedly, Manchester planned to have a Municipal Aerodrome long before Hull did. But unfortunately Manchester chose to put its Municipal Aerodrome in a bog where it cannot become fully effective for a very long time. And consequently Manchester's air traffic has been worked by Northern Air Lines, Ltd., from a temporary aerodrome which, although it is much nearer and handier to the centre of the city, and has a very much better surface, than that which is ultimately to be the Municipal Aerodrome, must sooner or later be discarded municipally.

So, although Manchester thought first, Hull has acted first, and carries away the honours.

The person who is primarily responsible for this action, which will make Hull prominent in the air history of the British Empire, is Mr. Benno Pearlman, the Lord Mayor—and he has been ably seconded by Mr. J. R. Howard Roberts, the Town Clerk. Mr. Pearlman began his efforts towards the organisation of a Municipal Aerodrome as soon as he took office a year ago. And he has the deserved satisfaction of seeing the Aerodrome opened and operating before he retires at the end of his term of office.

Hull's Air Port.

A year ago, Hull's Municipal Aerodrome at Hedon was a large field with a surface of the worst kind of ridge and furrow. To-day, barring one or two soft spots which will duly settle down, it has the best and flattest surface of any aerodrome one has seen, with the possible exception of the Heston Air Park. One gathers that Mr. T. Thomas, the City Engineer, has been in charge of operations.

To the East and North there is fine, open country, and the approach to the aerodrome against the prevailing winds is ideal. There are hardly any trees near enough to the edge to bother the worst of pilots, and between the aerodrome and the river there are fields where a machine can be put down easily enough in case of an engine cutting out immediately after getting off.

There is a fine wide new road from the aerodrome down to the Humber, only three-quarters of a mile away, where a seaplane base will in due course be bullt. So any workshop jobs needed for the seaplanes can be done at the Hedon Aerodrome itself, pending such time as the seaplane station is being developed.

There is no city in England where the prospects of an aerodrome becoming a paying proposition within a short time are so promising as they are at Hull. A very big trade with Scandinavia and Holland, and through those countries to Germany and the Baltic States, is done from Hull. Also, a vast amount of the trade of Liverpool and Manchester and Leeds and Bradford, and all that vast area of North Country industrial cities and towns, comes through Hull.

Naturally, therefore, mails from all that area, especially including parcels and samples, and actual deliveries of the more valuable goods, should provide enough load to keep quite a good flying-boat service going from Hull across the North Sea.

"FOR PRINCES ARE THE GLASS, THE SCHOOL, THE BOOK, WHERE SUBJECTS' EYES DO LEARN, DO READ, DO LOOK."

—(SHAKSPEARE—*Lucrece*.)

A ROYAL EXAMPLE.—H.R.H. Prince George opening the Hull Municipal Aerodrome, after arriving and before departing by air. On the left of the picture are the Lord Mayor of Kingston-upon-Hull (Councillor Benno Pearlman) and the Chief Constable of the West Riding. On the right is the Lady Mayoress (Mrs. Pearlman). Let us hope that all Yorkshire will learn from Prince George to use the aerodrome to full advantage.

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The prospects of this trade were foreseen many years ago by Mr. Robert Blackburn and his associates, who formed the North Sea & General Aerial Transport Co., Ltd. And the claims of Hull to consideration as a North Sea air-port have often been pressed in the House of Commons by Lieutenant-Commander the Honourable J. M. Kenworthy, M.P.

Unfortunately, developments have been so slow that the North Sea & General Aerial Transport Co. did its first practical work astride the Equator from Khartum to Uganda, showing the firm to be more General than North Sea. These delays are no fault of either the Blackburn group or of Lieutenant-Commander Kenworthy. They were simply due to the natural caution of the North Country business people. And the driving energy of Mr. Pearlman was the one thing necessary to bring the air-port to life.

Quite a long time ago one said in this paper that we should never be able to look on aviation as a commercial proposition until the Jews came into it. Mr. Pearlman is a Jew of that type which has done so much to keep the British Empire in the lead of the World's commerce in spite of the caution, so often amounting to stupidity and cowardice, of the ordinary English business man.

He is a Jew of the same kind which has given to this country the Rothschilds and Disraeli. Mr. Pearlman would be the last person to put himself on a level with those distinguished men, but he has in him the same kind of foresight, political and financial, which made them what they became. He is still quite a young man, and one can only hope that in wealth and distinction he may attain to something approaching their levels. He deserves it if only for the service which he has done to British aviation by providing the first Municipal Aerodrome in the British Empire.

One swallow does not make a summer, and one Jew does not make a national business. But one does hope most sincerely that Mr. Pearlman's advent into aviation is just a sign of the times, and that Commercial Aviation will soon be on such footing that it will be regarded as a business proposition by other Jewish business men of the right class.

The Opening Ceremonies.

Actually, the opening of the Aerodrome was skilfully arranged to coincide with the opening of Hull's Civic and Empire Week. And His Royal Highness Prince George was invited to come to Hull to open both the Civic and Empire Exhibition and the Aerodrome.

Before the aerodrome could be opened, naturally it had to have a licence from the Air Ministry. And, naturally, to fit the occasion, that licence had to be brought by air. So the licence was brought from London to Sherburn-in-Elmet, which is the Yorkshire Aeroplane Club's aerodrome.

There it was met by Mr. Pearlman and Mr. Howard Roberts. Mr. Roberts was flown back to Hull by Mr. E. D. Ayre, who will be the N.F.S. Manager of the aerodrome, and Mr. Pearlman was flown back by Mr. Neville Stack, the chief pilot of N.F.S.

According to Mr. Stack, while he was getting the Lord Mayor ready to get into the machine, he (Mr. Stack) apologised for not having proper flying kit for him, and especially regretted the lack of a helmet. The Lord Mayor replied that it really did not matter, because all Sherburn was in Elmet already. If this story is a libel, the sin is on Mr. Stack's head.

So the licence for Hedon duly arrived there by air, and with everybody in a good humour.

Prince George has done quite a good deal of flying, especially when he was serving with the Navy, but this was his first flight for an official purpose. Fortunately the weather was fine and did not interfere with his programme. He flew from Sunningdale to the Blackburn aerodrome at Brough in a Westland Wapiti piloted by Sq. Ldr. Don, Officer Commanding the Communication Squadron at Northolt, and was accompanied by his Comptroller, Major Ulick Alexander, also in a Wapiti, piloted by Flg. Off. Stemp, also of the Communication Squadron, and a third Wapiti accompanied them in case of a breakdown.

The machines arrived at Brough at 11.00 hours almost to the minute. Thence Prince George motored to Hull, where he was met at the city boundary by the Lord Mayor, whereafter he opened the Civic and Empire Exhibition and formally opened the new University College.

After lunch at the Guild Hall, Prince George motored out to Hedon, where an enormous crowd had already gathered. One has no official figures, but at a guess one would put the number of people inside the aerodrome at about 35,000. Half an hour or so before the Prince arrived the crowd was so great that the aerodrome authorities simply had to give up any idea of taking their money, and had to rush them through the gates as fast as they could move, to relieve the pressure on those jammed against the barriers.

Good Work.

This encouraging state of airmindedness was certainly largely due to the preliminary work done by the local Press, especially by *The Eastern Morning News* and *The Hull Evening News*, the Managing Editor of which papers is Mr. Mark Goulden, who takes the keenest interest in

A PRELIMINARY.—Left to right: Mr. E. D. Ayre (N.F.S. Manager at Hedon), Mr. Howard Roberts (Town Clerk of Hull), Councillor Pearlman (Lord Mayor of Hull) and Mr. Neville Stack (Chief Pilot of N.F.S.) ready to bring the Hedon licence from Sherburn-in-Elmet.

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British Triumphs
in the Air, on Land and Sea

1918 A Napier-engined D.H. aeroplane climbed to a height of 30,500 feet in 66 minutes. At this time no human being had ever soared so high.

1921 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 163·4 m.p.h.

1922 A Napier-engined Supermarine flying-boat regained the Schneider Trophy for Great Britain at a speed of 149 m.p.h.

1922 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 180 m.p.h.

1923 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 192.4 m.p.h.

1926 The first non-stop crossing of South Atlantic Ocean carried out by Commandante Franco flying a Dornier flying-boat with two Napier engines.

1927 Schneider Trophy won by a Napier-engined Supermarine-Napier seaplane flown by Flight-Lieut. S. N. Webster, A.F.C. Speed 281.669 m.p.h.

1928 Capt. H. S. Broad, flying D.H. Hound, fitted with Napier engine, secured three World's speed records whilst carrying loads of 500 and 1,000 kilogrammes.

1928 The greatest formation flight ever carried out was made with four Supermarine-Napier Southampton flying-boats, each fitted with two Napier engines. The machines flew from England to Australia, round Australia and back to Singapore, covering 180,800 engine miles without mechanical trouble.

1929 The first non-stop flight from England to India was carried out with a Fairey monoplane fitted with Napier engine. 4,130 miles in 50 hrs. 38 mins.

* * * *

1929 The highest speed ever attained on land was made by Major Sir Henry Segrave when he drove his Irving-Napier car over one mile at the amazing speed of 231.36 m.p.h.
Capt. Malcolm Campbell set up world's land speed records at Verneuk Pan with his Napier Arrol-Aster as follows :—over 5 miles, speed 211 m.p.h.; over 5 kilometres, speed 216.53 m.p.h. They both used Napier engines.

* * * *

1929 The world's motor-boat speed championship was won at Miami by Major Sir Henry Segrave, driving Sir Charles Wakefield's Napier-engined "Miss England."
Sir Henry Segrave at the Lido with the same boat made six runs over the measured mile, averaging a speed of 92.8 m.p.h.
At this meeting, competing against the best from Italy and America, Sir Henry Segrave won all trophies including the Duke of Piedmont's cup and Count Volpi's cup.

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aviation and, after acting as Honorary Secretary of the Air Pageant, intends to act, for the immediate future, at any rate, as the Secretary of the Hull Flying Club which is being formed in connection with the aerodrome.

As has already been said, the aerodrome belongs to the City of Hull, and all the expense of ploughing, levelling, draining, turfing, fencing, and so forth has been borne by the city. It has now been let on a twenty-one years' lease to National Flying Services, Ltd., who will see to the equipment of the aerodrome with adequate buildings suitable for the housing and refreshment of man and machine. A Flying Club will be formed which will be supplied with machines and instructors by N.F.S., Ltd., and the usual work of running a taxi service and joy-riding will be done. Housing and service will be provided for visiting aircraft. The aerodrome will be under the charge of Mr. E. D. Ayre.

Prospects.

Considered solely as an air-park, and leaving out its importance as an international air-port, the aerodrome at Hedon should have particularly bright prospects. In any reasonable weather on any reasonable aeroplane London can be reached from Hull Aerodrome in a very little over two hours, whereas the best trains take five hours—which, as Euclid used to say, is absurd. Consequently, with any reasonable boosting and anything like efficient service, N.F.S. ought to be able to work up a first-class taxi-service between Hull and London.

One does not suggest starting up a regular air-line, because, as has so often been said in this paper, the weather anywhere North of Birmingham is liable to such bad patches in winter, more particularly in November and February, that no air-line could hope to fly to schedule. And as soon as the thing is called an air-line, it has to run to schedule or be considered a failure. On the other hand, an air-taxi service can do all that an air-line does, and more, and need not keep to any time-table.

Also, now that so many thousands of men, and so many firms, keep aircraft for purely business purposes, there should be a great deal of business to be done at Hedon in housing the aeroplanes of business people. Therefore, one considers the future of the Hull Aerodrome and of the N.F.S. detachment there are particularly bright. And one hopes most sincerely that the management and the organisation will be such as to justify the faith which Mr. Pearlman has shown in staking his reputation on the success of a Municipal Air Port.

At Hedon.

The air pageant which marked the opening of the Hull Aerodrome actually began some time before the opening ceremony.

First of all Mr. Blake gave a display of aerobatics in the Blackburn Lincock (Armstrong Siddeley Lynx). Mr. John Clarke, of 29 Squadron, R.A.F., also flew the machine, and told one later that it was one of the nicest machines to handle that he had ever met.

Then there was a fly-past of visiting aircraft in which the vast Beardmore Inflexible, which had come up from Martlesham, took part. This aerial "tank" caused quite a sensation.

After that came the Kingston-upon-Hull Light Aeroplane Race. We all talk about Hull, but officially that city is Kingston-upon-Hull, with a county attached. The first charter was, in fact, granted by King Edward I in about the year 1600.

The entries for the light aeroplane race were Flt. Lt. Scroggs (D.H.53), Mr. Norman Blackburn (Bluebird), Mr. N. S. Percival (Avian), Mr. Kemp of Newcastle (Moth), Mr. Wheatley (Moth), Flt.-Lt. le Poer Trench (Avian-Hermes), and Mr. Cazalet (Widgeon-Hermes). Flt. Lt. Trench won.

The event is worthy of notice because it was actually the first race won by a Hermes engine, and it was won by the identical engine and identical machine which so very nearly won the King's Cup this year, when piloted by Mr. Stack. Mr. Kemp of Newcastle was second.

At 14.40 hours promptly H.R.H. Prince George officially opened the Hull Municipal Aerodrome and the Hull Aero Club. He said:—

Ladies and Gentlemen,—It was with great pleasure that I accepted the invitation to open this aerodrome, and though I had little experience of flying, I at once decided to increase my knowledge of modern methods of transport by undertaking the journey by air. It has been a most enjoyable experience, and one which I hope to repeat when visiting other parts of the country.

The opening of this aerodrome is, I venture to say, one of the greatest strides in modern development that a city could take, and your Corporation is to be congratulated upon their enterprise and preparedness for what future requirements will inevitably demand. The history of the evolution of transport is, indeed, amazing, and education to-day has made it apparent to all that in future no city or town will be able to hold its own without adequate facilities for aircraft.

Your Corporation has acquired a splendid site in very close proximity to the city and the River Humber, and one can readily visualise a great future for the Air Port of Hull.

In congratulating your Corporation, I would also pay a warm tribute to National Flying Services, Ltd.—your tenants—whose scheme, which aims at instituting a chain of aerodromes and landing grounds throughout the length and breadth of the land, is highly progressive and deserving of every success.

It is most fitting that the opening of your Aerodrome should be celebrated by the holding of the first Hull Air Pageant, and I con-

IN WINNING VEIN.—Flt. Lt. le Poer Trench, R.A.F., and Mr. Kemp, of the Newcastle Club, with their cups, and Flt. Lt. Rose, of the Anglo-American Co., with a plinth, at Hedon.—(*"Aeroplane" photograph.*)

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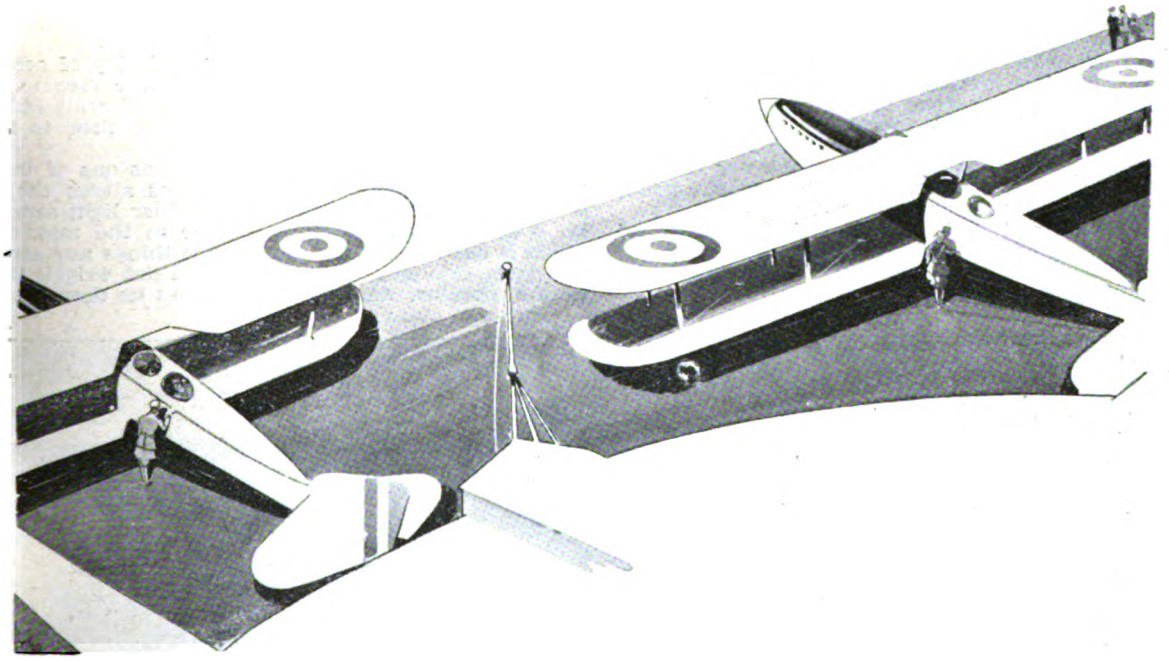

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gratulate the organisers and all who are taking part in to-day's important event.

I have much pleasure in declaring open the Hull Municipal Aerodrome, and trust that this will not be the last occasion upon which I may use your Air Station.

His speech was somewhat drowned by the tactless Inflexible which cruised round during his first few sentences. But that was because he began a few minutes too soon. A rocket was fired for the Inflexible to land at the moment originally fixed. The rocket went up and the Inflexible came down simultaneously. But the speech was then well away.

PRESENTATIONS.

After his speech, Prince George presented the prizes in the light aeroplane race to Flt. Lt. Trench and Mr. Kemp. And thereafter a number of the aldermen and other people of importance in Hull were presented to him.

After them, Mr. J. G. Peel, J.P. (Vice-Chairman of N.F.S., Ltd.), Lt.-Col. Ivo Edwards, C.M.G. (Managing Director), Mr. G. E. F. Boyes (Deputy Managing Director), and Capt. T. Neville Stack were presented to the Prince.

Following them, the organisers of the air pageant, Col. E. R. Thackwell, Mr. Mark Goulden, and Capt. G. Thompson were presented. And Prince George left soon afterwards.

Among the feminine visitors to the pageant were a number of the members of the Forum Club, who have been prominent in forming an aviation section of that female Club. Most of them came to Hull with Sir Alan Cobham in his Giant-Moth the *Youth of Britain*. But Lady Bailey, of course, came down in her own Moth.

By some extraordinary mistake no place was provided in the Giant-Moth for Lady Cobham, so she had to come down by train. However, personally one has no cause to grumble, for the mistake made what would have been a long and dull train journey for the present writer into an extremely pleasant one.

Among the aeronautical visitors were Lord Thomson (Secretary of State for Air), Miss Winifred Brown from Manchester, Mr. Runciman and Miss Leatheart from Cramlington, Flt. Lt. Rose, and Mr. Hanstock, of the Anglo-American Co., and Mr. Olley of Imperial Airways, who brought Lord Thomson and a party in a Handley-Page.

THE DISPLAY.

Before Prince George started for home in his official Wapiti, No. 29 Fighter Squadron, R.A.F., began one of their excellent displays. The programme was identical with that which they gave at Newcastle on the previous Saturday, and there is nothing to be added to or subtracted from what one said last week about their flying.

The wind was much as it was at Newcastle, and the visibility was no better and no worse. In spite of that, the formation flying was as nearly as no matter perfect. Halfway through the performance one engine cut out, and the pilot had to land. The trouble was said to be a breakage in the supercharger. The spare machine was rather slow in starting up and joining the formation, but when it did join up the pilot flew with the same precision as the rest.

The converging attack on an encampment was done bv three machines instead of four, and to that extent was a little less alarming. But it was splendidly done.

Mr. John Clarke and Serjt. Morton did their combined aerobatics as neatly as ever, though afterwards Mr. Clarke said that he was dissatisfied with the show and was not flying up to his proper form.

A ROYAL EXAMPLE.—Prince George embarking in his Westland Wapiti (Bristol Jupiter) to leave Hedon.

Much to his disappointment, Mr. John Tranum was not allowed to do his almost inevitable parachute drop. The wind was so strong that those in charge of the aerodrome thought that he would land too fast. And by the time the wind had dropped, darkness had set in.

Consequently, the next event was a display of aerobatics by Mr. Neville Stack in the Avian with the Hermes engine which was presented to him by A.D.C. Aircraft Ltd. as a mark of appreciation when he left that firm to become chief pilot to N.F.S. Ltd.

Mr. Stack has long been recognised as one of the best pilots in this country, but the Hermes allows the Avian to do things which are not done by other light aeroplanes. He does a quick roll with a wriggle in the middle of it which is quite one of the most comic things any aeroplane has done. One only hopes that it will not wriggle the tail off the machine. Also with the Hermes he does that trick

A FIRST APPEARANCE.—The first British-built Desoutter monoplane (Hermes engine) at Hedon.
—("*Aeroplane*" *photograph.*)

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TELEPHONE:—BRISTOL 3906.

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GROSVENOR CHALLENGE CUP
AIR LEAGUE CHALLENGE CUP
S. B. A. C. CHALLENGE CUP

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At the Newcastle Meeting on
important CHALLENGE CUPS me
conclusive triumph for Cirrus engi

CIRRUS ENGINE

GROSVENOR CHALLENGE CUP

AIR LEAGUE CHALLENGE CUP

S. B. A. C. CHALLENGE CUP

FASTEST TIME O

Capt. R. G. CAZALET ON

A FURTHER

At the opening of the HULL MUNICIPAL A
LIGHT AEROPLANE RACE was won by
CIRRUS-MOTH seco

CIRRUS AE
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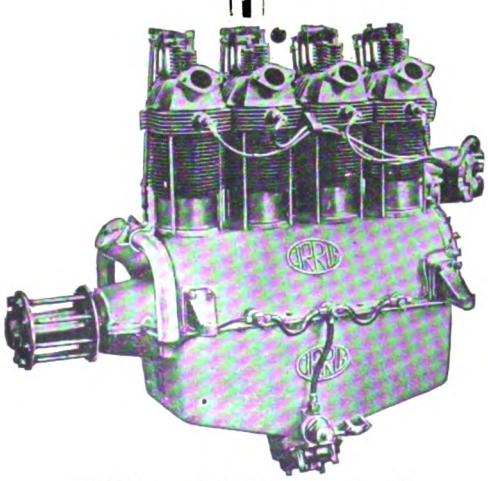
89, KINGSW



85/95 h.p. CIRRUS MARK III.

KINDLY MENTION "THE AEROPLANE

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N ON CIRRUS ENGINES!

5th October, the races for the bove took place and resulted in a aft as follows:—

1st.	G. S. KEMP.	CIRRUS - MOTH
2nd.	Dr. H. L. B. DIXON.	CIRRUS - MOTH
3rd.	A. GOODFELLOW.	CIRRUS - AVIAN
4th.	W. L. RUNCIMAN.	CIRRUS - SPARTAN
1st.	N. S. TODD.	CIRRUS - MOTH
3rd.	F/O. S. A. THORN.	CIRRUS - AVIAN
1st.	Dr. H. L. B. DIXON.	CIRRUS - MOTH
3rd.	D. WILSON.	CIRRUS - MOTH

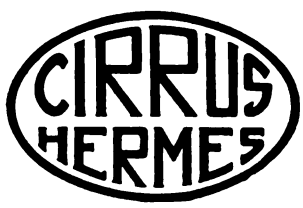
DAY WAS OBTAINED BY

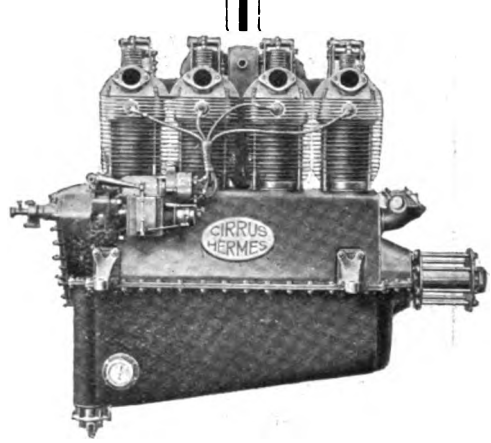
ERMES - WIDGEON.

RUS SUCCESS!

E on October 10th, the KINGSTON-UPON-HULL Poer Trench, on a HERMES-AVIAN, with a RRUS-MOTH third.

GINES, LTD.
se,
DON, W.C.2.





105/115 h.p. CIRRUS-HERMES.

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of flying on one ear along the front of the enclosure much better than it can be done with lower power.

The last event was an exhibition of formation flying and combined aerobatics by three of the N.F.S. pilots—Messrs. Schofield (leader), Wilson, and Mackenzie. Nothing neater in the way of combined flying has been seen anywhere than those three in their Moths.

Altogether the whole Air Pageant was as good a show as has been seen, but as these exhibitions have been described over and over again during the almost weekly flying meetings of the past Summer, there is no need to describe any of the flying in further detail.

During the afternoon the Blackburn Iris flying-boat paid a visit to the aerodrome and gave people a fair idea of what a modern flying-boat looks like compared with the funny old Americas and F.2as and things of that sort which operated from Immingham during the War,—apart from which all that is so long ago that probably 50 per cent. of the crowd which saw the Iris are too young to remember anything of the War-time boats.

The Ideal Hostess.

After the meeting was all over, and after a very cheery dinner in which 29 Squadron and a good many of the civil aviators combined at the Station Hotel, we all went on to a Ball given by the Lady Mayoress.

Making full allowances for Mr. Pearlman's outstanding ability, which enabled him to build up such a business that he can afford to be Lord Mayor of such an important place as Hull on an entirely inadequate municipal allowance for entertainment, and allowing for those intellectual qualities which inspired him to back aviation at precisely the right moment, one must express the belief—which he would certainly confirm—that his success in life is very largely due to the support given to him by his wife. Seldom has one come across a hostess who played her part so ably as did Mrs. Pearlman.

The party included a number of Naval Officers from a submarine which was visiting Hull in connection with the Civic Week—they had not sunk it by accident and been washed ashore, as one anti-naval aviator suggested. There were all the officers of No. 29 Squadron, R.A.F., and several other R.A.F. officers, Staff and otherwise. There were all the civil aviators. And there were all the people who had anything to do with the organising or running of the air display and the aerodrome.

Mrs. Pearlman had skilfully acquired an adequate number of partners, and she treated everybody as if he or she were a personal friend and not merely an official guest. They all enjoyed themselves thoroughly, and they were all quite sorry when the band played "God Save the King" at about 2 a.m.

If all Lord Mayors' parties were as cheery and as free from formality as was that at Hull, people would be much more pleased to attend such functions. On behalf of all her aeronautical guests, one tenders thanks for a charming party.

Taking it all round, the inauguration of Hull's Municipal Aerodrome was quite one of the most successful things in this year's extraordinary aeronautical activity. Considering that the date was fixed so late in the year, the odds were against having decent weather, but even the weather was kindly.

Everything else was thoroughly well done. The actual running of the meeting, and the laying out of the aerodrome by National Flying Services, Ltd., showed that this organisation can run an aerodrome thoroughly well. In fact, everything in connection with the Hull Aerodrome begins under the happiest auspices.

One can only hope that it may continue in the same way, and that Mr. and Mrs. Pearlman, who incidentally have thoroughly well earned a title by their activities this year, may continue to take an active interest in the Air Port which they have done so much to create.—C. G. G.

THE AWAKENING OF LEEDS.

On October 11 the Right Honourable the Lord Brotherton of Wakefield, as President of the Yorkshire Aeroplane Club, Ltd., gave a lunch at the Queen's Hotel, Leeds, to celebrate the amalgamation of the Yorkshire Aeroplane Club, Ltd., with National Flying Services, Ltd. This amalgamation, or absorption, is likely to have far-reaching effects on the development of aviation in the North Country, second only in importance to the starting of the Municipal Aerodrome at Hull.

The Yorkshire Aeroplane Club was one of the original subsidised clubs, and it has done a large amount of very good work. But, being handled by a voluntary—not to say amateur—Committee, and not by a board of commercial men, it, like so many other clubs, has been hard set at times to make both ends meet, and now and again it has been distinctly on the wrong side of its balance-sheet. More recently, by doing away with its paid secretary, and by cutting down its expenses in every possible way, and thanks partly to good luck in the matter of crashes, and skilful technical management by Flt. Lt. Worrall, its instructor,

A WINNER.—The Avro-Avian (Hermes engine), which Mr. Stack flew in the King's Cup Race. **At Hedon it won for the first time, piloted by Flt. Lt. le Poer Trench.**—(*"Aeroplane" photograph.*)

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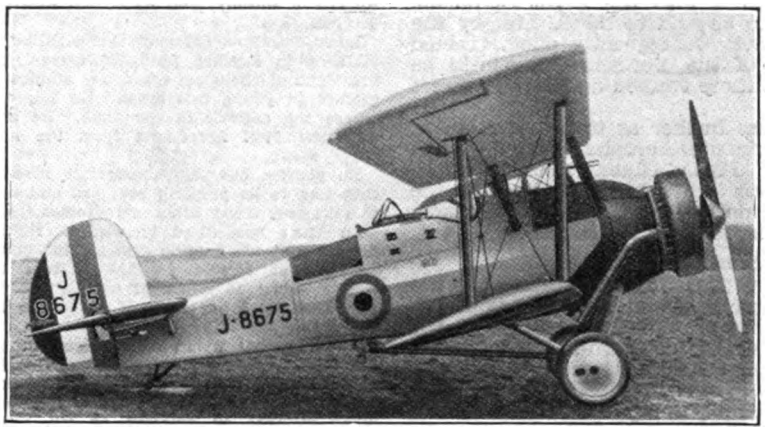
ARMSTRONG WHITWORTH
AIRCRAFT



THE ALL STEEL ATLAS

(ON WHEELS, FLOATS OR SKIS)

THE all-steel Atlas is the best aircraft for land or sea reconnaissance.

It is the standard Army Co-operation two-seater of the Royal Air Force.

Its steel construction accounts for its unrivalled durability and ease of maintenance. Fitted with the world-famous Armstrong Siddeley Jaguar engine (plain or geared type), its speed, climb and ceiling fulfil the severest Service requirements. It is produced on the grand scale by the best equipped aircraft works in Europe.

PERFORMANCE FIGURES

ATLAS WITH JAGUAR ENGINE AND TOWNEND RING

Fuel, 75 gallons (337 litres). Oil, 7 gallons (32 litres). Military Load, 880 lbs. (400 kgs.)

	Plain Engine.	Geared Engine
Approx. total weight	4000 lbs.	4115 lbs.
	1820 kgs.	1870 kgs.
Speed at ground level	143.5 m.p.h.	149 m.p.h.
	231 km.p.h.	240 km.p.h.
" " 5000 ft.	139.5 m.p.h	145 m.p.h.
" " 10000 ft	134 m.p.h	140 m.p.h.
" " 15000 ft.	125 m.p.h.	131 m.p.h.
" " 1000 metres	226 km.p.h.	236 km.p.h.
" " 3000 metres	216 km.p.h.	225 km.p.h.
" " 5000 metres	193 km.p.h.	204 km.p.h.

	Plain Engine.	Geared Engine.
Time to 5000 ft.	5.25 minutes	4.25 minutes
" " 10000 ft.	12.5 "	10.5 "
" " 15000 ft.	26 "	21.75 "
" " 1000 mtrs.	3.5 "	2.5 "
" " 3000 "	12.5 "	10.25 "
" " 5000 "	34 "	27.5 "
Absolute Ceiling	19000 ft.	19100 ft.
	5800 metres	5830 metres
Service Ceiling	17300 ft.	17700 ft.
	5280 metres	5400 metres

Maximum allowable R.P.M. 2200. Normal R.P.M. 2000

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LIMITED

Works and Aerodrome: Whitley, Coventry. London: 10 Old Bond Street, W.1

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it has managed to become solvent by the time of its absorption.

The amalgamation itself brings about an interesting and rather curious situation. The Yorkshire Aeroplane Club's agreement with the Air Ministry for a subsidy of £50 per head on every pilot trained by the Club was made between the Yorkshire Aeroplane Club, Ltd., and the Air Ministry. National Flying Services, Ltd., having bought the shares in the Yorkshire Aeroplane Club, acquire automatically this agreement with the Air Ministry. Consequently all pilots trained by N.F.S., Ltd., as proprietors of the Yorkshire Aeroplane Club, Ltd., draw from the Air Ministry the subsidy allocated to the Club until the subsidy agreement expires next year.

The subsidy per pilot agreed with the Light Aeroplane Clubs is £50. The subsidy to be paid to N.F.S., Ltd., by the Air Ministry is £10 per pilot. Consequently pilots trained by N.F.S., Ltd., as owners of the Yorkshire Club, will be much more profitable than those trained under their direct agreement.

An interesting point arises further as to the position of representatives of the Yorkshire Aeroplane Club in the Council of the Associated Flying Clubs. Presumably so long as these representatives are actually elected by the members in Yorkshire, and do represent Yorkshire opinion, their position in this matter remains unchanged.

A Strategic Point.

Actually the affairs of the Yorkshire Aeroplane Club are a comparatively minor factor in the situation as it affects aviation in the West Riding of Yorkshire. Hitherto the Yorkshire Club has operated at Sherburn-in-Elmet, a disused R.A.F. aerodrome which, considered purely as an aerodrome, is one of the finest in the World. Unfortunately it is fifteen miles from Leeds, and, though it can be reached in half an hour by a good driver in a fast car, the first few miles out of Leeds are through heavy traffic, and the last few miles are along narrow roads, so the time usually taken is about forty-five minutes.

National Flying Services, Ltd., propose to operate an aerodrome at Yeadon which is about seven miles from the middle of Leeds, seven miles from the middle of Bradford, and about eight miles from Harrogate, so that actually it is only about fifteen or twenty minutes' drive from two big cities and a health resort, which between them ought to provide an enormous amount of work for a well-run taxi service.

Leeds is between four and four-and-a-half hours by rail from London, Bradford is a little more, and Harrogate is a good deal more. Yeadon is only between two and two-and-a-half hours from London by Air. And as it will tap not only the business men of Bradford and Leeds communicating with London, but also the people from all over England going to and from Harrogate, it ought to be successful if any aerodrome ever is to be. Colonel Edwards and the Directors of National Flying Services are to be complimented on their business acumen in fixing on this site as soon as the opportunity was offered.

The Speakers.

Lord Brotherton, proposing the toast of the amalgamation, said that the Aeroplane Clubs were conceived in the brain of the Director of Civic Aviation. The Yorkshire Club got its first machine in 1923, and he considered that they were wonderful in being able to carry on so long. No club could wish for a more conscientious staff. Yorkshire might well be proud of the fact that the Club now had 168 flying members, 116 associates, and 48 lady members. He said that although the Club was solvent, it could not carry on after 1930 without a subsidy, and so it had amalgamated with National Flying Services, Ltd.

Lieut.-Col. Ivo Edwards, C.M.G., Chairman of National Flying Services, Ltd., thanked Lord Brotherton for promising to continue as President of the Club after the amalgamation, and for his generous gesture in giving this lunch. He hoped that N.F.S., Ltd., would increase the activity of the Club. He stated that N.F.S. had taken over the Hull Aerodrome from the municipality on a twenty-one years' lease.

He pointed out that aerodromes were no use as mere open spaces, they had to be properly equipped and administered. And they hoped to take over many other aerodromes from municipalities to run them with their specialised knowledge. N.F.S. hoped to have 25 aerodromes and 100 landing grounds in operation in Great Britain.

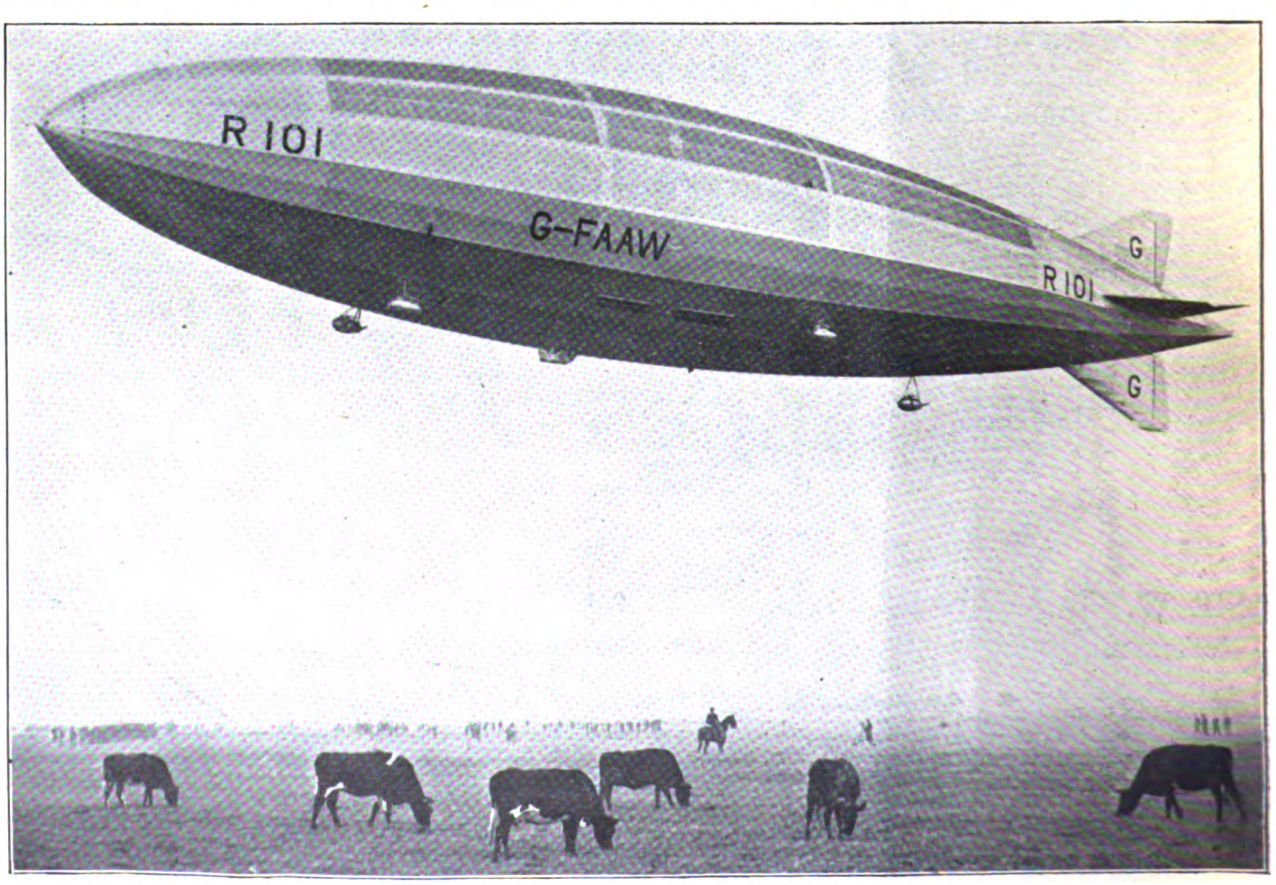
Col. Edwards told us that if there were aerodromes 1,000 yards square every 10 miles all over the country, they would even then only take up 5 per cent. of the space at present occupied by roads and railways.

He said that flying clubs were not merely places of amusement. We were always talking about pushing trade, but nothing was being done to stimulate and speed-up connections. Aviation would have to correct that. If Sir Sefton Brancker were allowed to spend as many millions on aviation as Mr. Thomas intended to spend on roads, trade would be helped much more. And the flying clubs would help public opinion to think aright

We had to sell Aviation to the Nation, Colonel Edwards said, and Flying Clubs were the best way of selling it. Fishermen and golfers told wonderful tales of their exploits, but aviators habitually made wonderful flights without telling exaggerated stories. [Col. Edwards is quite right about the average aviator—but has he never met the born line-shooter.—C. G. G.]

N.F.S. wanted to encourage members of the Clubs to fly far. So they wanted to lay out landing grounds. They wanted particularly to bring this country up to the level of the Continent.

On the subject of purely commercial prospects, Col. Edwards said that the Koninklijke Luchtvaart Maatschappij (K.L.M.) had told him that over 25 per cent. of the passengers which they brought to Croydon from Germany and Scandinavia and Holland wanted to fly on further in England, and most of them wanted to go to Leeds and Bradford. Consequently N.F.S. wanted landing grounds all over the North, which could be fed from Leeds.



"A PRAIRIE LIFE FOR ME" (Billy Merson).—R.101 at liberty. In spite of her official lettering she is no joke.

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A GREAT TEST FOR THE GEARED JAGUAR

54,000 miles in 21 weeks, 4,000 full throttle take-offs, 40,000 air passengers, and 562 hours without complete overhaul, by the GEARED JAGUAR fitted in Sir Alan Cobham's D.H. Giant Moth "Youth of Britain."

ARMSTRONG SIDDELEY ENGINES

ARMSTRONG SIDDELEY MOTORS LIMITED.

Head Office and Works: Coventry.
London: 10 Old Bond Street, W.1

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In conclusion, he thanked Lord Brotherton for his good work, and he hoped that other business men would follow his example. He added that he was glad that Captain Wayman, Chairman of the Yorkshire Club, had accepted a seat on the Board of the new Company.

Air Vice-Marshal Sir Sefton Brancker, Director of Civil Aviation, proposing the toast of "Air Ports," apologised for the absence of Lord Thomson.

He quoted from a copy of *The Times*, issued eighty or ninety years ago, which recorded the fact that Queen Victoria had travelled by train from London to Slough on her way to Windsor, and hoped that our Gracious Sovereign would not continue to take such risks. That, he said, was the attitude of many people towards flying to-day.

Sir Sefton said that so far this country was supreme on the sea because of its geographical position. Our new aerial transport occupied a place half-way between shipping and wireless. It would place inland cities on terms with seaports in that passengers, mails, goods and bullion could be carried without touching the sea.

In America his opposite number was spending a million a year on organising air routes. There the Government paid for the lighting and signalling arrangements along the routes, and the municipalities paid for the Air Ports themselves.

He recalled that two years ago the Air Ministry had sent out a circular drawing the attention of municipalities to the importance of organising landing grounds. He recalled that in the last five years he had visited Leeds a great many times, and he had only visited Hull once. But Hull had taken the lead in establishing an air-port. In the campaign for aerodromes the Ministry had sent out experts many times to advise municipalities.

Sir Alan Cobham had visited about sixty cities [actually the number is now one hundred.—C. G. G.] to find the best place for aerodromes. And N.F.S., Ltd., would undertake to organise any aerodrome.

He recalled that Lord Brotherton at the beginning of his speech had referred to him, Sir Sefton, as the Director of Civic Aviation. He himself wanted to see the Lord Mayors Directors of Civic Aviation in every city, while he himself attended to Civil Aviation. The Air Ministry was willing to help in every way, except financially.

National Flying Services, Ltd., intended to start economically, but he believed that in three or four years they would pay their way.

He reminded his hearers that there were plenty of other municipal enterprises which did not pay.

Turning to the present Lord Mayor, Sir Sefton congratulated him on having had a flight together with the Lady Mayoress. He reminded him that the preceding Lord Mayor of Leeds had said that he was keeping his experiences in the air for the next life, and he was glad to see that the present Lord Mayor was not so optimistic. [To appreciate this remark, one has to know that the present Lord Mayor of Leeds is one of the leaders of religious thought in that city.—C. G. G.]

Sir Sefton ended by hoping that Leeds would provide a really good Air Port.

Major J. Milner, M.C., T.D., LL.D., M.P., Chairman of the Leeds Corporation Improvements Committee, and Labour M.P. for the safest seat in Leeds, said that he had been charged by the Lord Mayors of Leeds and Bradford to express their appreciation of Lord Brotherton's work in this matter. He said that he was able to say, on the authority of Mr. Lunn [the Miners' M.P., Labour Member for the Rothwell Division of the West Riding of Yorkshire.—C. G. G.] that the subsidies for the Flying Clubs would not be taken off next year. He said that the most popular aviator in the United States to-day was our Prime Minister, so there was no need to fear for our aviation in this country.

He found that Sir Sefton Brancker was disappointed in not already having an air-port at Leeds. Some years ago Yeadon had been fixed on as the most suitable place for both Leeds and Bradford. The Corporation of Leeds had got options on the site, and they were told that they were not wise in their choice. They engaged Sir Alan Cobham to come and advise them, but he had not yet come, but they were hoping to see him the next week.

Meantime they had had meteorological observations taken with the help of Professor Gilligan of Leeds University, and these had been quite satisfactory. He ventured to prophesy that within a few months the aerodrome would be ready. He said that they had been much helped by the representatives of Bradford.

Speaking for himself, he said that he did not care how soon the railway vouchers which were given to M.P.s were made available by air. Then M.P.s could run up and down between their constituencies and London every day instead of once a week.

He said that he wished to make clear how much his Committee had been helped by Sir Sefton Brancker, and he quoted the saying: "Where there is no vision, the people perish."

Sir Benjamin Dawson, Bart., J.P., proposing the health of the Chairman, said that Lord Brotherton was well known for his philanthropy and business genius. He knew that air transport must come, and he wished to help. He himself recalled the days when he was caught in a motor trap for doing twelve miles an hour, and was not held up at the end of the trap, but was *overtaken* by a policeman on a bicycle.

Sir Benjamin said that business men were not interested in aviation because of fear, partly financial and partly physical. [This is a notable pronouncement, which deserves to be quoted over and over again. This state of affairs is, in fact, the root of what the successful business man prefers to call caution in business.—C. G. G.] Sir Benjamin said that very soon these same business men would be clamouring to be allowed to take an interest in aerodromes.

Some time ago he had begun to take lessons at Sherburn, but gave it up simply because his insurance firms refused to cover him against air accidents. Illustrating the other point of view, he told a story of a young friend of his, an enthusiast for aviation, whom he had taken by car to see Stonehenge. The only interest that the boy showed in the place was when he asked why the people who built it were such fools as to stick up these old stones so close to an aerodrome.

Lord Brotherton, replying, said that he wanted a description of an ideal aerodrome. He was not clear about its size or shape or its equipment. [The Aeroplane hopes to provide His Lordship with all this information in its Special Air-Park Issue.—C. G. G.] He said that he was glad to see so many ladies interested in flying. The Yorkshire Club had forty-three lady members. He himself had the greatest admiration for those who promoted flying. Sir Sefton Brancker, he said, travelled more by air than most people do by rail. He also referred to Lady Bailey, whose presence he was glad to welcome.

He said how glad he was that Leeds and Bradford had taken hold in earnest. Air transport was a problem for business men as a way of saving money, because time was money. And he believed that air transport was an effective way of increasing profits. He proposed a toast to "The Ladies."

The Hon. Lady Bailey, who is a Director of National Flying Services, Ltd., said that she hoped that this gathering would produce an air-port. She congratulated Leeds on taking action. She hoped that regular air services were not far off. And she wished to acknowledge the help and kindness which she had received from the lady members of the Yorkshire Club.

Finis.

So ended what was really a very pleasant affair. Undoubtedly the idea of an aeroplane equidistant from Bradford, York, and Leeds is excellent. One only hopes that the business men of Leeds and Bradford will perceive the benefit of air transport.

Ever since aviation began, some twenty years ago, one has attended meetings of business men, from Mansion House meetings downwards, at which prominent business men have confessed their faith in aviation. But so far none of them have testified to their faith by embarking their money or their carcasses on an aviation venture. As Sir Benjamin Dawson wisely said, they are afraid, both financially and physically.

Whether air transport becomes a success in Hull and Leeds will depend very largely on the business methods of National Flying Services, Ltd. Merely spending money on local advertising will not produce the business. Business will only be got by the methods used for years by the railway companies and shipping companies. Goods traffic must be got first, and passenger traffic will follow. So one suggests that the first thing to do is to put on really good freight canvassers in the North Country towns.

Naturally, there will be a certain amount of passenger traffic, which ought to be enough to make taxi services pay in a modest way. There will always be enterprising business men who will fly to London and back, and to other cities where they do business, some because they are really in a hurry, some because they want to swank about it personally, and some because they regard such journeys as a good advertisement.

Some few weeks ago this paper recorded the fact that three of the Horne Brothers, the big haberdashers who have stores all over the country, have two Moths which they fly about Great Britain inspecting their various shops and depots. So far as one can discover they do not make any song about it. And they certainly do not use their flying as an advertisement for their stores. But business men whose interests are in one particular locality certainly could get quite a fair amount of local advertising by using aircraft habitually on business trips.

Business men's promises are worth very little. One knows several cases in which firms embarked on aviation ventures, and other ventures also, because they were assured of the support of prominent business men or firms. And always they have found themselves let down. Unless you can show a business man a direct profit he will find some way of backing out of any promises which he may have made under the influence of a good lunch or a good dinner or of momentary enthusiasm.

Happily, both the Yeadon Aerodrome at Leeds and the Hedon Aerodrome at Hull can offer direct profits to the business men of those communities, always provided that the business management of the aerodrome is good enough. And at any rate, Yorkshire, both in the East Riding and the West Riding, can justifiably claim to have taken the lead over the rest of England.

Incidentally, names of aerodromes are apt to become a trifle confusing to the ear and the eye. Yeadon and Hedon are not far apart aurally. Hedon, Hendon, and Heston may easily be confused by readers of average modern handwriting, let alone by those afflicted with the uneducated people who manage to be employed as typists. But, after all, confusion over names of aerodromes is better than having no aerodromes at all. So let us hope for the best.—C. G. G.

HONOUR IS SATISFIED.

The Board of Admiralty has received a letter from the Air Council expressing the grateful appreciation of the Air Council for the assistance given by the Royal Navy in connection with the contest for the Schneider Trophy.

In the letter the Air Council requested their Lordships to convey to the Commander-in-Chief at Portsmouth and to all the officers and men of the Portsmouth Command who assisted in the arrangements, an expression of their appreciation and thanks.

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AIR HISTORY IN THE MAKING.

On November 5 there will be held in London a Conference, under the auspices of the Royal Aeronautical Society, the Royal Aero Club, and the Air League, which is likely to affect vitally the whole course of British Civil Aviation.

As is well known, Sir Alan Cobham has, during the past Summer, devoted his whole time and his amazing energy to a great crusade for the organisation of aerodromes all over Great Britain. He has been touring the whole country in his De Havilland Giant-Moth (Armstrong Siddeley Jaguar engine), named *The Youth of Britain*, and has visited just on a hundred cities and towns.

At each town he has taken up the Lord Mayor, or Mayor, and various members of the Corporation. He has also taken up permanent officials, such as Town Clerks, Borough Surveyors, City Engineers, and so forth, so that they could see their own cities from above and judge for themselves where aerodromes and landing grounds are possible and which is the best direction in which to place them.

In the course of this tour, by the munificence of Sir Charles Wakefield, Sir Alan has also taken up thousands of school-children, so that the rising generation may, in the years to come when air transport is as common as motor-car transport to-day, be able to say that they themselves saw their home towns from the air before such a thing as a municipal aerodrome existed. This will in fact be very much as if people existed to-day who could remember our chief towns before there were any railway stations.

By way of bringing to a head the movement to which he has given such an immense psychological momentum Sir Alan Cobham is arranging for November 5 a Conference in London of Lord Mayors, or Mayors, and other officials of each of the cities or towns which he has visited. The idea is to invite three officials from each of the hundred municipalities concerned.

Certain authorities in Civil Aviation will address them briefly on their own special subjects, and the municipal authorities will be invited to ask all the questions they can. And one gathers that after the conference they will all be entertained to dinner by Sir Charles Wakefield,—who, as usual, is acting as the Patron Saint of British Aviation.

Before anything was known of this Conference, we who are responsible for THE AEROPLANE had decided to produce a Special Air-Park Issue at the end of October. When Sir Alan Cobham was asked to write an article for this issue he disclosed the fact that he was already arranging to have this Conference in London on October 16. Therefore, to make the Air-Park Issue of THE AEROPLANE as useful as possible to Sir Alan's aerodrome crusade, arrangements were made to produce the Air-Park Issue on October 23 so as to include a full report of the Conference.

Further consideration showed that October 16 was a bad date for the Conference, because it would clash with the Motor Show at Olympia. Consequently Sir Alan very wisely put the date forward to November 5, when there is not likely to be very much happening, and, consequently, the daily newspapers will be able to give something like adequate attention to a subject which is of such vital importance to British Aviation.

Yet more consideration of the circumstances, in consultation with Sir Alan Cobham, has caused us to fix the date for our Air-Park Issue as October 30. The idea is that by producing in the last days of October an issue which will deal fully with all the requirements of aerodromes, and answers from every possible angle the question put at Leeds by Lord Brotherton, "What is the Ideal Aerodrome?" and seeing that it will be in the hands of all the municipal officials who will be attending the Conference on November 5, THE AEROPLANE will be doing more good to the Conference than by keeping the Special Issue back to include a report of the Conference.

This Special Issue, be it remembered, will not only go to the 300 or so officials invited to the Conference. It will go to many hundreds of other officials in the British Isles who must, sooner or later, be just as much interested in having their local aerodromes or landing-grounds as their predecessors were in having their local railway-stations. And the Air-Park Issue, with all this valuable information in it, will also be sent to officials holding similar positions in the chief cities and towns of all British Overseas Dominions where air transport is likely to be of use.

The report of the Conference will then be the leading feature of the issue which will follow the Conference itself on November 5.

Judging by the way all the recent Special Issues of THE AEROPLANE have been sold out, in spite of an increase in the number printed which has put our paper bill perilously high, readers of this paper who are not already regular subscribers will be wise to order their copies of the Special Issue (which will be dated October 30) well in advance, as newsagents have an unfortunate habit of ordering only the precise number which have been ordered from them,—thus maintaining fully the habit of enterprise which is so characteristic of the British shopkeeper.—C. G. G.

THE LESSON.

Two recent fatal accidents in the Royal Air Force should be taken to heart as a lesson for all young pilots, whether in the Air Force or out of it. Flg. Off. C. H. Jones of No. 23 Squadron was killed on Aug. 14 at Sutton Bridge, and Flg. Off. John Clarke of No. 29 Squadron was killed on Oct. 11 at Brough. These two had been proved in competition to be the most skilful pilots in the Royal Air Force, which is to say in the World, and yet they were both killed by over-confidence amounting almost to carelessness.

Their deaths are positive proof of the axiom that the cleverest aviator is not the one who is so clever in getting out of tight corners but the one who is too clever ever to get into a tight corner. One has heard the aphorism that if there were no reckless pilots there would be no fighting squadrons. But there is a clear line between daring and recklessness, and between carelessness and over-confidence.

Naturally our fighting-pilots must be daring. But there is a cold and calculating bravery which prolongs life and, besides, makes a man more deadly in battle than the fighter who merely sees red and trusts to his skill to save his own life.

Mr. Jones was one of the pair of pilots chosen in the competition at Northolt to do the representative display of combined aerobatics at the R.A.F. Display at Hendon. Mr. Clarke was one of the pair who were the runners up in that competition, and with his partner also performed at Hendon. What they did not know about flying has not yet been learned by anybody.

The fact should also be noted that in the very competition at Northolt in which they defeated the other Fighter Squadrons, another pilot of almost equal skill was killed also through over-confidence in his ability to control his machine near the ground.

Mr. Jones was killed while starting out for a practice shoot at Sutton Bridge. He and his partner Mr. Purvis were taking off together. The engine of Mr. Jones' machine choked slightly, so instead of taking off he turned on the ground, taxied back to the end of the aerodrome and took off again.

Evidently with the idea of overtaking his partner as quickly as possible, as soon as he was off the ground he pulled his machine round in a sharp turn on an almost vertical bank, only a few feet off the ground, pulled round too tightly, stalled on the turn, slipped down on one wing-tip, touched the ground and went straight in on the nose of the machine, which at once caught fire. If he had let the machine go straight up to about 300 feet, and had then done the same thing, he would not have lost thirty seconds, and he would have had room to recover.

Mr. Clarke, who, as is recorded in a note in the Personal Column this week, had been lent to 29 Squadron for the Displays at Newcastle and Hull, took off in formation with his flight, but with instructions to break away and go direct to Cranwell. As soon as the flight had taken off he turned and circled round the factory at Brough, waving to his friends on the ground as he passed. Instead of allowing himself 50 feet or so over the roof, he cut it fine as is the habit of so many very clever pilots. Unhappily just as he came to the edge of the roof he met a downward bump caused by the curl-over of the wind, and instead of scraping over the roof with ten feet to spare he hit it, carried away part of the roof, and fell with his machine in a heap on the concrete the other side of the shed, where the machine caught fire.

As may be seen from the personal note to which one has referred, John Clarke was the most brilliant officer of his seniority in the Air Force. Not only was he an extraordinarily fine pilot, but he had won high academic distinction and had shown remarkable intellectual qualities. Personally he was one of the most charming young men one could meet. He had the gift not only of attracting people to him by his charm but he was also a born leader of men. If anybody had wanted to prophesy the futures of the young officers of the Air Force he would have picked on John Clarke as a future Chief of the Air Staff.

Nobody could have known better than he did the curious effects of currents over buildings. Many young pilots, accustomed only to high-powered machines which barge their way through anything, might have been excused for disregarding such possibilities. But John Clarke had flown under-powered light aeroplanes as well as high-powered machines and must have known perfectly well the effects of upward and downward currents. Yet, in sheer joy of starting off on a bright morning in a machine with plenty of power he must needs go cutting things fine. And he paid with his life for that momentary carelessness.

Yet the lives of John Clarke and Charles Jones will not have been wasted if only young pilots will learn from them that cleverness in keeping out of tight corners is much more valuable than cleverness in getting out of tight corners.

—C. G. G.

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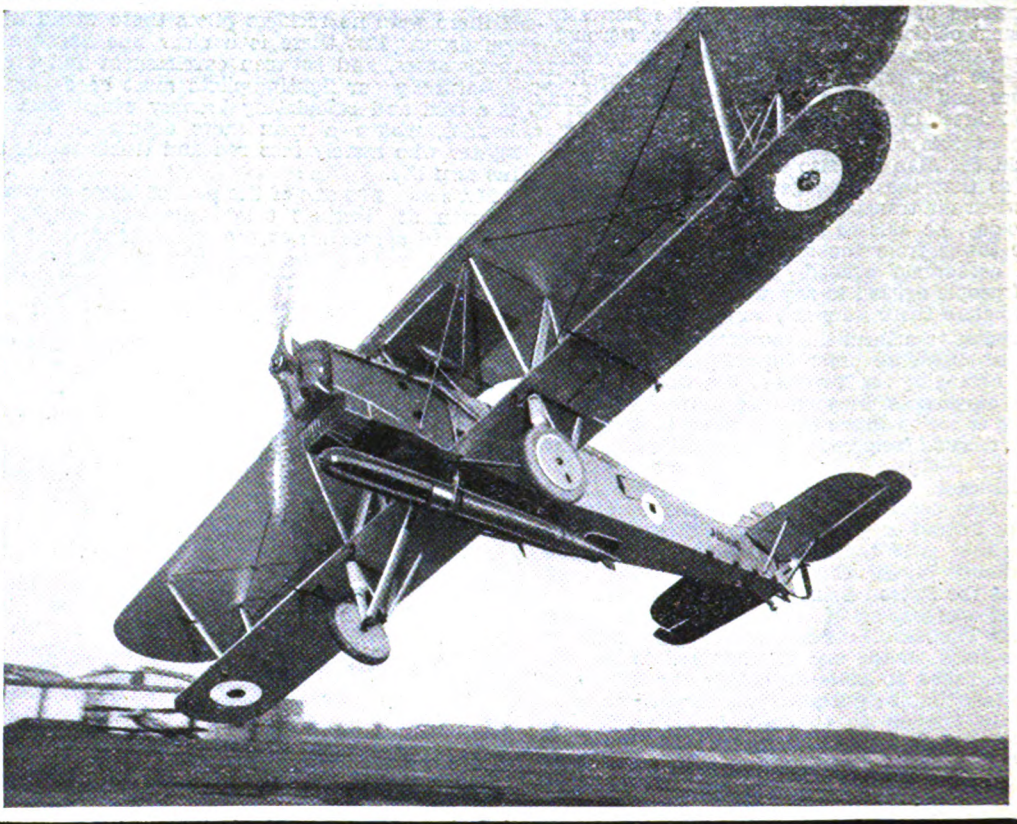

A "Flight" photograph of a Hawker "Horsley" —Rolls "Condor."

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THE ROYAL AIR FORCE.

The London Gazette.

October 11.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—The following are granted perm. comns. as Plt. Offs. with effect from Sept. 28, 1929, and with seniority of Sept. 28, 1928:—H. B. Collins, G. C. Holland.

The following are granted S.S. comns. as Plt. Offs. on probation with effect from and with seniority of Sept. 23:—J. A. Nicholson, G. W. Stranraer-Mull, J. S. Tanner. The following Plt. Offs. on probation are confirmed in rank (Sept. 17):—G. D. Hoyland, S. S. Mackay.

The following Plt. Offs. are promoted to the rank of Flg. Off.:—L. E. A. Wright (June 30); J. Beaumont, V. H. Nicolay, R. Chadwick, F. P. Donovan, R. S. Darbyshire (Act. Sub-Lt., R.N.R.), N. X. Sheldrick, R. A. F. W. Williams, F. B. Taylor, M. I. Barnett (Sept. 16).

Air Vice-Marshal Hugh C. T. Dowding, C.B., C.B.G., relinquishes his appointment as Director of Training, Air Ministry (Sept. 7).

Flg. Off. F. M. Denny is seconded for service as Aide-de-Camp to the Governor of Victoria (Sept. 26).

The following are placed on the retired list at their own request:—Flt. Lt. H. A. Anson (Oct. 1); Flg. Off. J. F. Mehigan (Oct. 7). The following Flg. Offs. are transferred to the Reserve, Class A:—M. G. Bircham (Oct. 3); M. Fountain-Barber (Oct. 8). Lt.-Cdr. E. J. S. Knocker, R.N., Flt. Lt., R.A.F., relinquishes his temp. comn. on return to Naval duty (Aug. 9). The S.S. comn. of Plt. Off. on probation D. A. Gowing is terminated on cessation of duty (Oct. 8).

The following Lt.-Cdrs., R.N., Flt. Lts., R.A.F., cease to be attached to the R.A.F. on return to Naval duty (Oct 3):—E. W. Anstice, S. Richardson.

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—Plt. Off. J. M. Longley is promoted to the rank of Flg. Off. (Oct. 2); Plt. Off. G. C. Holland relinquishes his comn. on appointment to a perm. comn. in the R.A.F. (Sept. 28).

MEDICAL BRANCH.—Flt. Lt. W. Parsons resigns his comn. on appointment to a comn. in the Royal Army Medical Corps (Sept. 11).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 603 CITY OF EDINBURGH (BOMBER) SQUADRON.—The following to be Plt. Off.:—T. M. McNeil (July 30).

Fatal Accidents.

The Air Ministry regrets to announce that as the result of a collision in the air at Netheravon between two Atlas machines of No. 1 Flying Training School, Netheravon, on Oct. 10, 351620 L-AC. Thomas White Kelly, the pilot and sole occupant of one of the machines, was killed. Plt. Off. Hugh Dunsmuir Primrose, the pilot and sole occupant of the other machine was dangerously injured.

The Air Ministry regrets to announce that as the result of an accident at Brough, Yorkshire, to a Siskin machine of No. 29 (Fighter) Squadron, North Weald, Essex, on Oct. 11, Flg. Off. John Clarke, the pilot and sole occupant of the aircraft, was killed.

The R.A.F. Display.

The eleventh annual Royal Air Force Display will be held at the R.A.F. Station, Hendon, on Saturday, June 28, 1930.

The Yorkshire Auxiliary Squadron.

A new aerodrome for the accommodation of a Squadron of the Auxiliary Air Force is being constructed at Thornaby in Yorkshire. New sheds, barracks, and technical buildings are being built but the officers' mess will be converted from an old house on the edge of the aerodrome, known as Thornaby Hall. The area of the landing ground will be about 190 acres.

At a meeting of the North Riding Territorial Association at Northallerton on Oct. 10, the General Purposes Committee of the Association stated that they had received a letter from Lord Thomson, Secretary of State for Air, with regard to the raising of a Bomber Squadron of the R.A.F. on a Territorial basis (an Auxiliary Squadron) for Middlesbrough and Thornaby. The Committee felt that it would be desirable to have such a Squadron and recommended its formation to the Association.

Sir Hugh Bell, President of the Association, added that the submission of names of officers had been left to himself and Colonel Wharton, and that a suitable reply would be sent to the Secretary of State for Air.

No. 504 (County of Nottingham) Squadron.

The correct postal address for all correspondence for No. 504 (County of Nottingham) (Bomber) Squadron is Hucknall, Nottingham.

No. 205 (Flying Boat) Squadron.

The Times correspondent in Rangoon in a message dated Oct. 14 states:—

During the monsoon which is now closing the Royal Air Force flying-boats stationed at Singapore have been engaged in trial flights along the route Singapore—Rangoon—Calcutta, to collect meteorological data. The final flight is now being made, and Commander Cave expresses the opinion that there would be no great difficulty in maintaining the flights between Calcutta and Singapore, even during the monsoon. This should encourage the Government of India to forge ahead with the long-delayed equipment of the Calcutta—Rangoon section of the route, which eventually, it is hoped, will extend to Australia.

University Courses.

The following officer of the R.A.F. who was selected for the University Course beginning in October, 1927, has successfully passed the course and obtained the degree of B.A. (Ordinary):—Flt. Lt. H. A. L. Pattison. This officer is now entitled to the classification S*.

The following officer who was selected to attend the course in meteorology beginning in October, 1928, has completed the course satisfactorily, and has been awarded the Certificate for Post-Graduate Work in Meteorology of the Imperial College of Science and Technology:—Flt. Lt. H. F. Bradley. This officer is entitled to the classification "Met."

The R.A.F. Memorial Fund.

A meeting was held on Oct. 9 of the Executive Committee of the R.A.F. Memorial Fund. Sir Charles McLeod, Bart., Chairman and Hon. Treasurer, was in the chair.

Air Marshal Sir Edward Ellington, K.C.B., Air Officer Commanding-in-Chief Air Defence of Great Britain, was elected a Member of the Committee in the place of Air Vice-Marshal F. R. Scarlett, who is going to Egypt to command the Middle East Area.

The Secretary informed the Commitee that the Vanbrugh Castle School maintained by the Fund, opened for the Winter term on Sept. 10 with a full complement of thirty-six boys.

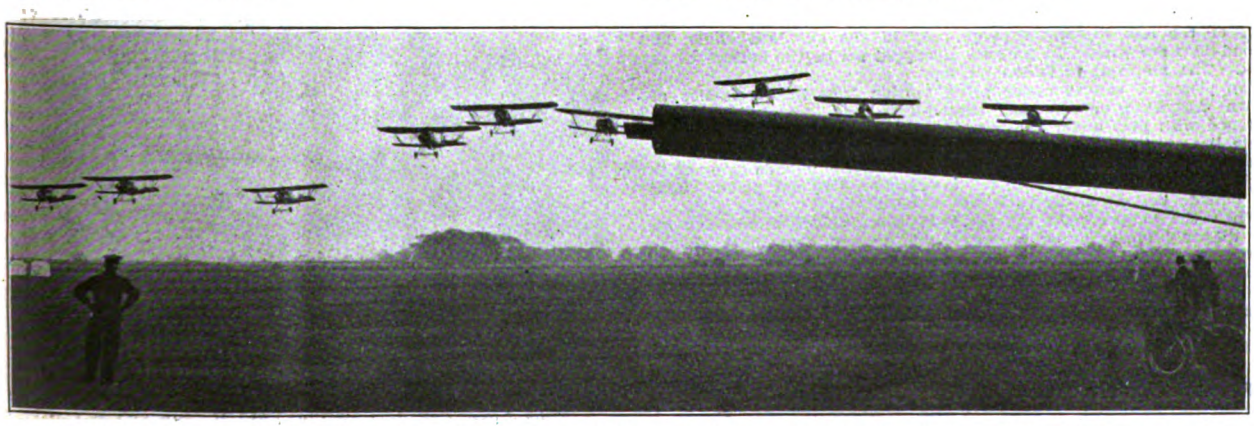
The report of the Grants Sub-Committee who deal with all applications for assistance from past and present members of the Force shows that during the fifteen weeks since the last Meeting the Sub-Committee had dealt with 104 cases and during the same period the Secretary had dealt with 178 cases of a less serious description, in practically all of which cases grants were made by either the Sub-Committee or Secretary.

Regarding the recent anonymous donation to the Fund of £15,000, the Committee were informed of the particulars concerning five officers and ex-officers of the R.A.F. whose children were helped by grants towards education.

The attention of the Committee was drawn to the fact that in accordance with a resolution passed at the beginning of the year, the commemoration of the signing of Peace on Nov. 11, 1918, in respect to the R.A.F. War Memorial on the Victoria Embankment, London, will take place on the morning of Sunday, Nov. 10. Details of the ceremony cannot yet be published.

The Committee authorised the provision of a wreath as usual to be laid at the foot of the Memorial, by, they hoped, Marshal of the R.A.F. Sir Hugh Trenchard, Chief of the Air Staff, and they further sanctioned a grant of money for the provision of a wreath to be laid at the Scottish National War Memorial (R.A.F. Bay) on Edinburgh Rock in celebration of the Armistice.

Dame Helen Gwynne-Vaughan, G.B.E., was unanimously appointed Deputy Chairman of the Executive Committee.



SERVICE SUPPORT.—No. 29 (Fighter) Squadron taking off during the R.A.F. Display at the Hull Municipal Aerodrome. In the foreground is a wing-tip of the Beardmore Inflexible. —(*"Aeroplane" photograph.*)

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Fencing.

The R.A.F. Fencing Union defeated the Birmingham Fencing Club at Uxbridge on Oct. 5 in a four-weapon match by 10 defeats to 26. The results were:—

Foil.—R.A.F.F.U.: Sjt. Hancock, no defeat; S-M. Bradbury, 1; Sjt. Digby, 2. Total, 3. Birmingham F.C.: Maj. R. E. Cole, 1 defeat; G. F. Haycraft, 2; T. F. Flint, 3. Total, 6.

Epée.—R.A.F.F.U.: Flt. Lt. G. C. O'Donnell, F-S. Bishop, and Sjt. Stubberfield, 1 defeat each. Total, 3. Birmingham F.C.: V. Clayton Morris, 1 defeat; C. R. Bird, 2; A. P. Fletcher, 3. Total, 6.

Sabre.—R.A.F.F.U.: Hancock, no defeat; Stubberfield and Bradbury, 1 each. Total 2. Birmingham F.C.: Cole, 1 defeat; Haycraft and Bird, 3 each. Total, 7.

Bayonet.—R.A.F.F.U.: S-M. Barber, no defeat; Digby and Cpl. Kinward, 1 each. Total, 2. Birmingham F.C.: Cole, 1 defeat; Morris and Fletcher, 3 each. Total, 7.

The Royal Australian Air Force.

Three Westland Wapitis (Bristol Jupiter engine) of No. 3 Squadron, Royal Australian Air Force, flew from Sydney to Brisbane to take part in the New South Wales Aero Club Pageant, on Aug. 31, a distance of 510 miles, in three hours, twenty minutes.

The formation was led by Flt. Lt. C. T. Anderson, an officer of the R.A.F. who is seconded to the R.A.A.F., with Sjt. Pilot W. Brown as observer. The other pilots and observers were Flt. Lt. Waters and AC. Lamb; Flg. Off. Simms and Cpl. Eddison.

The Wapitis in the R.A.A.F. are fitted with wireless transmitters with a range of 3,000 miles and desert equipment consisting of stores and an eight-gallon tank of water in case of forced-landings in barren country.

PARACHUTE DEVELOPMENTS.

Experimental work is now in progress at the U.S. Army Air Corps Material Division, Wright Field, Dayton, Ohio, on the Irving parachute, which is the standard type in use in the Air Corps. Various improvements and refinements are now being subjected to extensive test and if successful may cause certain changes in the standard type.

Whether eventually adopted or not these changes are interesting, and as this chute is also standard in the R.A.F. these changes are given below for general information.

Materials, area and the principle of operation of the standard chute will remain unchanged.

Instead of the circular mainsail a triangular one has been substituted. This triangle is rounded at two corners, and the third is sheared straight across. The shroud-lines extend down, spaced regularly as in the standard chute, except across the sheared-off corner, which has no shroud-lines whatsoever. When the chute is open, this portion, upon which there are no shroud-lines to pull, forms a tail-like vent through which the air escapes.

Approximately a dozen jumps and a hundred dummy drops have been made with the new chute. These indicate a decreased oscillation and shock load to the jumper upon opening, and greater manual steerability in descent. This improved operation is accomplished mainly by the different shaping of the mainsail.

The air, escaping through the tail-like vent, propels the chute horizontally at a speed of from three to four miles an hour. Because the parachute inherently possesses this horizontal motion, steering can be accomplished by the manipulation of the shroud-lines and the parachute be so turned that the vent is with or against the wind, controlling direction.

The decreased shock to the jumper results from a second round vent at the apex of the mainsail, somewhat different from that of the standard chute. During low shock loads this vent remains closed and at high shock loads automatically opens. The chute has very little oscillation. It may turn in its direction, but there is virtually no swing.

A feature adding to the safety of operation upon opening is a new springless, nonfoulable pilot-parachute. This is 30 inches long and 36 inches in diameter. The lobes have partitions which extend to a long central elongation fastened directly to the apex of the mainsail and making shroud-lines unnecessary. The actuation of the pilot-parachute in the standard chute is supplied by springs. In the new parachute this actuation is achieved by a different method of packing.

The new pack has rounded corners for better wear and to prevent folds of the silk slipping through. As in the standard chute, the shroud-lines are packed in pockets, zigzagged across the bottom of the pack. The mainsail is folded on top.

Two pieces of canvas under great tension from heavy elastics are drawn diagonally across the shroud-lines and mainsail, and are fastened with pins under the outside corners of the pack. The pilot-chute lies above these diagonal pieces and is partially rolled in a fold of canvas attached to the canvas which forms the outside cover of the pack. This cover is drawn, along with the diagonal pieces, under the outside bottom of the pack and secured with the same pins.

When the jumper pulls the rip cord, these pins are snatched out, the diagonal pieces under strong elastic tension draw back sharply, throwing open the top cover and flinging the pilot-chute out into the wind. The edges of the mainsail skirt are snapped to the bottom of the pack with glove fasteners, so that the chute and shroud-lines are strung out before the skirt bottom is released. This prevents bunching of the folds and tangling of the shroud-lines, permitting the chute to fill with air in swift and orderly fashion.

THE CATERPILLAR CLUB.

The total membership of the Caterpillar Club is now approximately 340. During the month ending Sept. 11 thirteen pilots,—including three U.S. Army Air Corps, four R.A.F., one R.C.A.F., and three American civilian pilots,—made emergency parachute jumps. The biggest number ever recorded during one month is fifteen. This was for the month ending July 11, 1929.

One of the U.S. Army Air Corps pilots was Lieut. J. H. Doolittle. He was making a practice flight prior to giving an exhibition at the National Air Races at Cleveland, Ohio, on Sept. 1, when in a dive his wings came off.

When an emergency jump is made serving officers are required to submit an official report to the office of the Chief of the Air Corps. This report has to be made out in narrative form, in reply to eleven questions, and these questions with Lieut. Doolittle's answers are quoted below.

Place, date and time of jump:—Cleveland, Ohio, Sept. 1, 1929, 3.10 p.m.

Type and Air Corps number of aircraft:—P-1C, Prestone-cooled A.C. No. 29,227. P. 537.

Whether or not the aircraft was under control at the time of the jump:—No.

Type of parachute used:—Irvine seat type.

Estimate of engine speed at time of jump:—2,800 r.p.m.

Estimated speed of aircraft at time of jump and its position with relation to flight, i.e., climbing, diving, etc.:—200 m.p.h., 30 degrees past vertical—diving.

Description of method of leaving aircraft:—Thrown out.

A complete and accurate account of the causes for the emergency jump:—Wings broke.

An accurate account of the feelings and reactions of the jumper during and immediately after the jump:—(Space left blank.)

Velocity of surface wind at time of the jump and general weather conditions:—Gusty wind.

What ill-effects or injury was sustained from the jump, if any, state the cause:—None.

U.S. ARMY AIR CORPS ACCIDENTS.

An analysis of the accidents in the U.S. Army Air Corps for the year 1928 show that 85% of pilot fatalities occurred among officers with less than two years' experience.

During the year 46% of the fatalities were for pilots of less than 200 hrs.' flying experience, 17% had from 200 to 500 hrs.' flying, 25% from 500 to 1,000 hrs.' and 12% from 1,000 to 1,200 hrs.' experience.

Of fatal accidents 63% were due to pilots' errors, of which 24% were due to errors of judgment, 30% to poor technique, 3% to disobedience of orders and 6% to carelessness or negligence.

EN GRANDE TENUE.—An officer of the French "Armée de l'Air" in the new uniform.

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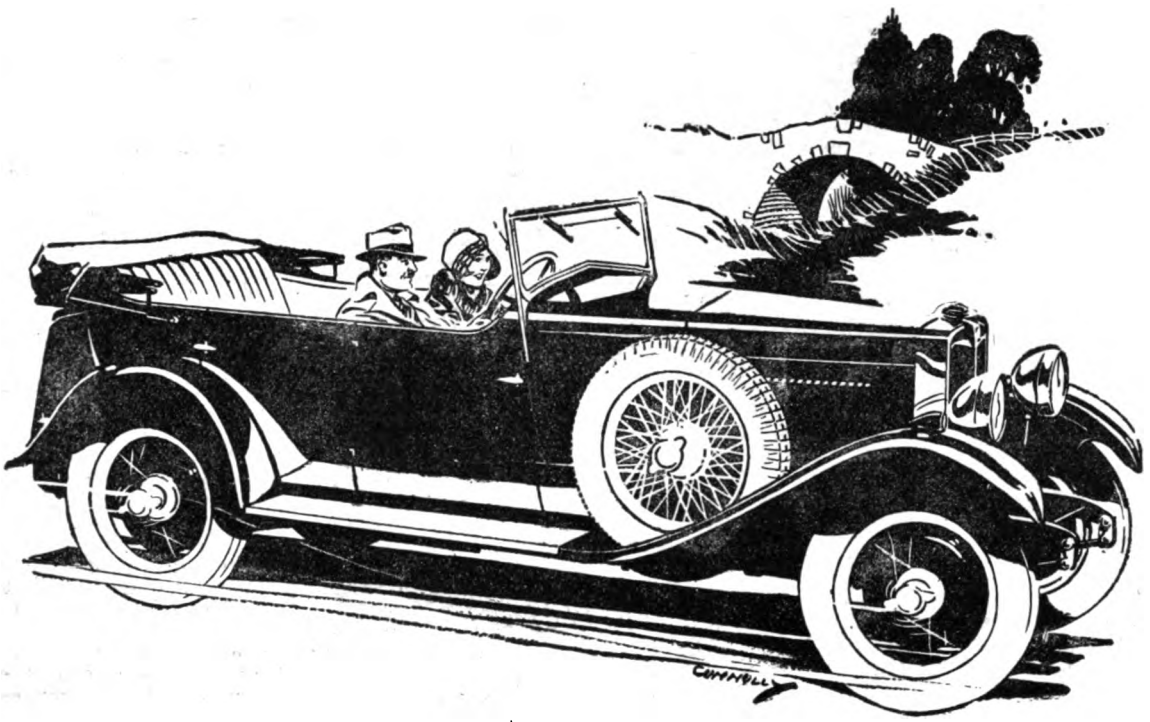

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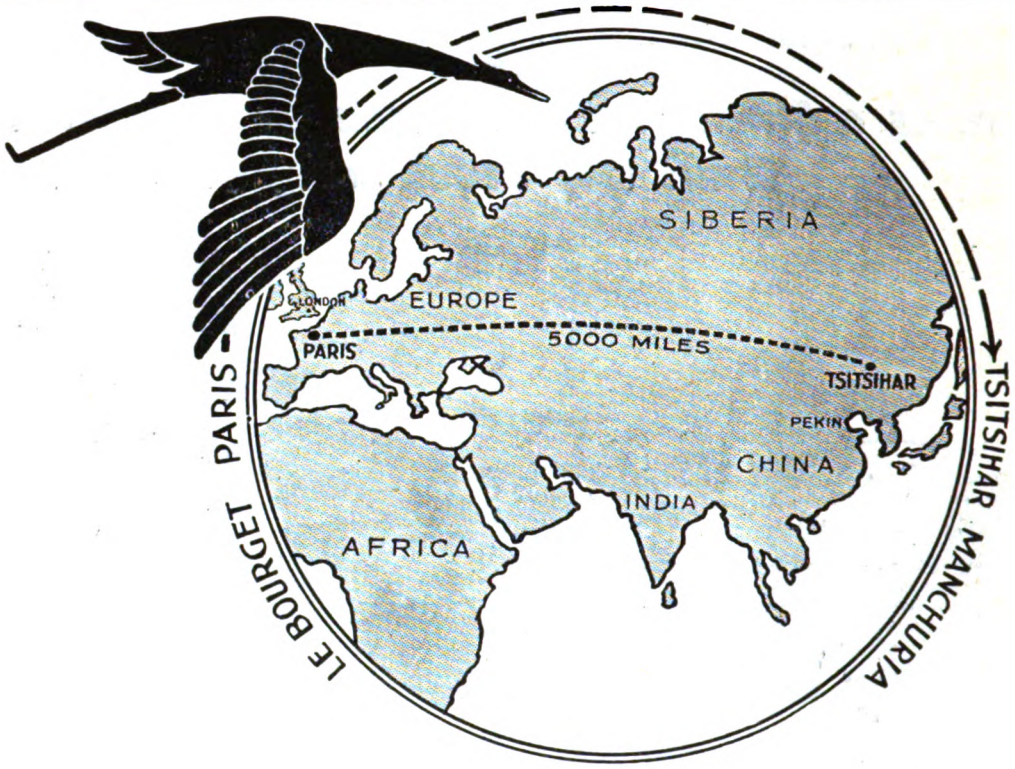

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THE RANGE OF AIRCRAFT.

The first lecture of the Winter Session of the Royal Aeronautical Society was held at the Royal Society of Arts, John Street, when Mr. C. R. Fairey read a paper on the Range of Aircraft. There was a very large attendance, and late arrivals had some difficulty in finding seats.

MR. FAIREY opened the lecture by pointing out that, although the useful load and speed of aircraft might for ever be increased, when once the range had been raised to 12,000 miles the designer need go no further, for this was the greatest distance between any two points on the earth's surface.

In the early days the duration of a flight simply depended on the engine and the time that this could be persuaded to keep going. The first official record of 220 metres was not recorded until 1906.

The lecturer then showed a number of slides illustrating the whole sequence of record-making machines, including the Bréguêt XIX, "Bidon," on which Costes and Bellonte have recently probably beaten the distance record.

At this point a graph of the speeds and distances was shown—and the way the two lines ran parallel was remarkable. Two other points were also very marked, one that the War years were a time of slow development, and the other that the rate of increase both for speed and range has been very much greater during the last six or seven years.

The lecturer said that the need for long-range aircraft is obvious, and, from a military point of view, with Service aircraft as they now are, a belt of ocean 600 miles wide is enough to protect a country from enemy action. As regards civil operations, the British Empire appears to demand a machine with reasonable paying load and range of 2,000 miles. Such a machine could fly to India in 60 hours, with only three stops—Malta, Baghdad, and Karachi.

The slides of the record-breaking aircraft included some interesting photographs of the Fairey Long-Range Monoplane, showing the tanks before they were placed in the machine and also in position in the wings.

Mr. Fairey thought that there were probably three reasons for the success of the recent long flight of the Bréguêt, which has probably beaten the World's Record. The first of these was that there was a following wind. The second, that there were nearly 2,000 yards of good take-off surface at Le Bourget with a downward gradient. Thirdly, the low consumption obtained with the new 600 Hispano-Suiza engine. Faireys had one of these engines to test for Vickers, and found that the six carburettors gave specially good distribution. There was no reason why Hispanos should not tune their carburettors as well as Napiers tuned theirs, and such tuning, with the remarkably good distribution, would result in a very low fuel consumption.

Every aeroplane, he said, has a certain speed in relation to its load at which the range is a maximum, and to reduce or increase that speed will affect the range adversely. The most economical speed is dependent upon relative parasitic and induced drag—that is, the drag due to structural excrescences and the drag produced solely as one of the component forces acting on the wing. This economical speed is also dependent upon the wing-loading, the efficiency of the airscrew, and the manner in which the fuel consumption varies with the power used for cruising.

Mr. Fairey showed a graph from which the learned (and the sharp-sighted, for the writer was not able to distinguish any figures) could perceive that, generally speaking, increasing the wing-loading increased this economical speed, though take-off requirements limited the permissible increase.

Mr. Fairey now began to talk about his Long-Range Monoplane, which recently flew non-stop to India from England, and in the very near future will again attempt to win the World's Duration Record.

In considering a design for this type, the first points to be decided are the actual load to be carried, the type of engine, and the load factors. Putting the last first, the necessity for low proportionate structure weight is so great that careful handling must be presumed, and a limit must be put on the maximum speed, all of which will allow fairly small factors to be used.

The engine chosen was a standard Napier Lion with a 7-to-1 compression ratio. Special carburettors were fitted to improve the fuel consumption within the required throttle range.

The load to be carried consisted of the crew, their instruments, emergency equipment for a forced landing, and food, all of which totalled about 800lb. The fuel carried had to be enough for 5,500 miles. Actually the fully loaded weight of the machine was 17,000lb.

The pilots were enclosed to save the resistance of open cockpits and to protect them from the fatigue of facing the wind-pressure and draughts for so long a period. The small lamp-lit cabin gave the pilots a most unexpected sense of security and isolation from external conditions when flying by night over Eastern Europe, close to high mountains and in bad weather.

Questions of power-loading and also that of wing-loading affected the choice of the all-up weight—for runways a mile long are difficult to find in England, and the rate of climb required in the first few hours keeps down the loading.

At this stage in the process of considering designs, the monoplane and the biplane were equal favourites. The monoplane was finally chosen because of the scope for obtaining high lift-to-drag ratios. The cantilever wing was selected because of the facilities it offered for the stowage of fuel, and this wing was placed above the fuselage so as to obtain a gravity feed. The single-engine type was used because of its low drag.

Talking of drag, calculations showed the amazing fact that if it were possible to discard the under-carriage the range would be increased by 1,000 miles, so large a quantity of energy is required to force the undercarriage through the air.

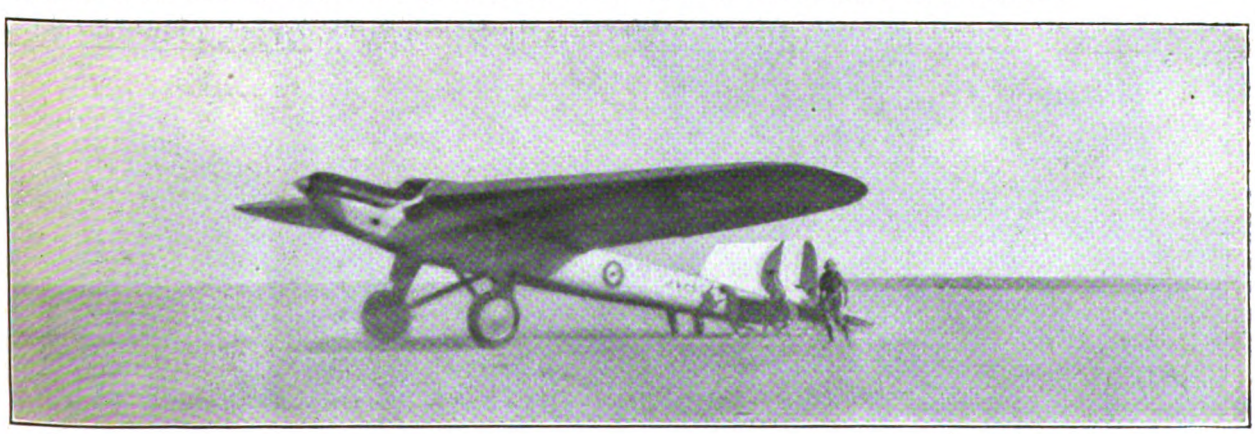
Mr. Fairey then gave a rough outline of the construction of his machine. The wing is of tapered and twisted form. Its span is 82ft., and the aspect-ratio 7 to 1. It has wooden spars and a pyramid form of internal bracing of steel tubes. The fuselage is a conventional Fairey welded-tube structure. The cantilever tail is built similarly to the main plane. The only external bracing on the machine is that of the tie-rods which anchor the fin to the tailplane.

The wheels are fitted with special roller-bearings to help the take-off.

A single set of controls is provided, and the cabin is arranged to make changing-over easy. The member of the crew not acting as pilot can move about in an upright position, and can also lie down. Special windows were put in for navigating purposes. And care was taken to ensure adequate ventilation, so that the crew should suffer no ill-effects from exhaust-fumes.

The fuel, nearly half of which can be jettisoned in emergency, is carried in the wings, as is also the oil and water. The total fuel capacity is 1,157 gallons. The oil system, external to the engine, is duplicated so that filters may be cleaned in the air.

Most of the instruments are in duplicate. Ordinary magnetic compasses are used. The special instruments fitted are the latest Farnborough-type flow-meter, turn-indicator, and statoscope, with a special apparatus to give audible warning of any rapid change of flight.



ARRIVED.—The Fairey Long-range Monoplane (Napier Lion) arriving at Karachi, after having flown non-stop from Cranwell.

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By specially tuning the carburettors, the engine-makers succeeded in reducing the fuel consumption by an average of 13 per cent. This figure is half-way between that obtained with the standard service engine and the best theoretical result.

Everybody's hopes were raised by the fine results obtained from take-off tests with steadily increasing loads, until the frozen ground was found to be responsible for the very good results.

During these tests, and after the discovery of the uphill gradient, some effort was made to determine the friction co-efficent with varying types of ground. These tests consisted of running a loaded motor-car at a fixed speed, shutting off the power, and seeing how long the car travelled before it stopped. An ordinary level tarmac road was taken as 1. Good dry aerodrome surface was 78 per cent., rough ground with tufted grass surface reached as low a value as 23 per cent., and the effect of rain or any softening of the surface made matters very much worse. After this, attempts were made by burning grass and rolling to improve the surface.

When the Long-Range Monoplane finally took off on her attempt with Sq.-Ldr. A. G. Jones-Williams, M.C., and Flt.-Lt. N. H. Jenkins, O.B.E., D.F.C., D.S.M., on April 24, 1929, she was carrying 1,043 gallons of fuel (or 7,620lb.). This amount was sufficient for 4,800 miles which was 340 miles further than the existing record. The machine took off with a run of 1,235 yards, and in the first 15 minutes had climbed to well over 2,000ft. The Long-Range Monoplane landed at Karachi 50 hours 37 minutes after leaving Cranwell, having covered a distance of about 4,290 miles. The Great Circle distance was 3,950 miles. Eighty-two gallons of fuel were left.

The engine, which gave full-horse-power at the take-off, was throttled back to 420 b.h.p., and thence by stages to a minimum of 210 h.p. The average fuel consumption was 0.46lb. per h.p. hour, equivalent to 4.4 miles per gallon on the distance flown.

The Society applauded loudly when Mr. Fairey commented on the fact that, in spite of all their difficulties, the crew kept a continuous log hour by hour.

Mr. Fairey said that if the Long-Range Monoplane could be made to fulfil the conditions of Professor Jones's ideal streamline aeroplane, that is, that the total resistance consisted only of the induced drag and that due to skin friction, then, if the same engine were used, the machine would have a range of 8,500 miles.

The discrepancy between the achieved results and the ideal, he said, was mostly due to the turbulence produced by the chassis and radiator, which account respectively for one-half and one-quarter of the total parasitic drag of the whole machine. If the radiator resistance could be eliminated, the range would be increased to 6,000 miles, while the discarding of the chassis, or making it entirely retractable, would increase the range to 7,200 miles.

If an engine of 1,800 h.p. of the same weight-to-power ratio and of equal efficiency to the Lion were available, without any higher aerodynamical efficiency, a flight of 8,700 miles should be possible.

Mr. Fairey pointed out that the most obvious line of improvement lies in the development of the power plant, and in the production of a carburettor and induction system to give a lower fuel consumption, or even to extend the present minimum over a larger part of the throttle range. Modern carburettors give their lowest fuel consumption usually from three-quarters to full throttle. For the purpose of a long flight, full throttle is only used at the take-off, the throttle being progressively closed to about one-third full power.

The Napier Company by specially tuning the standard engine were able to lower the consumption to 0.43lb./h.p. hour, and this was obtainable from full throttle to about two-thirds full power. If this minimum figure could be extended down to one-quarter full power, the range of the Fairey Long-Range Monoplane would be increased to 6,000 miles.

The possibility of using higher compression-ratios and non-detonating fuels, coupled with the possible improvement in carburation, makes a range of 8,600 miles feasible without any improvement in the aircraft.

Such a machine used for a range of 2,000 miles (which is the ideal distance for the British Empire) could carry 5,000lb. If, under these conditions, the engine of 1,800 h.p. mentioned above were used, a total range of 10,000 miles would be available. More importantly such a machine would carry a useful load of 20,000lb. for a range of 2,000 miles.

The oil-burning compression-ignition engine appears to have possibilities in spite of its increased structure weight, which, however, is of no significance, if balanced by fuel consumption of 0.32lb. per b.h.p. An engine of this type, with this consumption, and weighing not more than 3lb. per h.p., and with an output of at least 1,800 h.p., would increase the range of a machine far above any distances mentioned in the lecture.

After the paper had been concluded, the short official R.A.F. film of the attempt was shown. This included a very good picture of the take-off.

The Discussion.

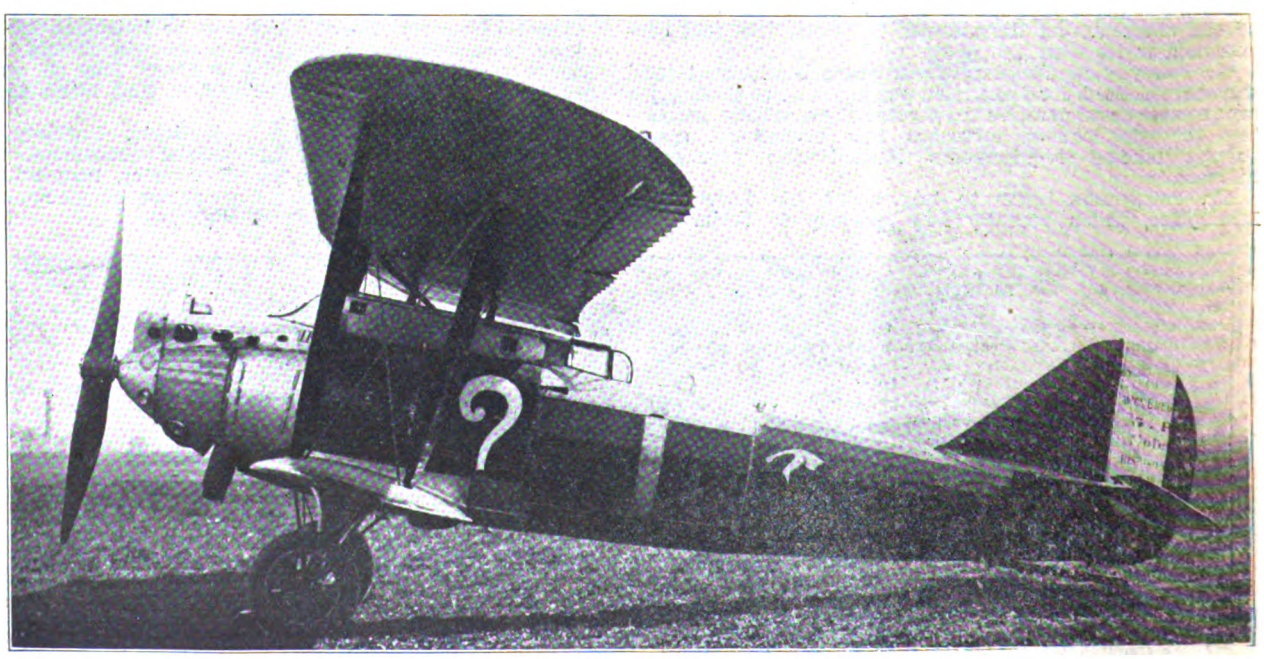
Colonel Sempill, the Chairman, made some appreciative remarks about Mr. Fairey, and then called on Mr. Farren as the champion of the biplane to launch the discussion on the monoplane.

Mr. Farren congratulated Mr. Fairey on his entertaining lecture and on transporting his audience (by means of the film) to India and back in ten minutes. He refused to be drawn into the controversy of how much better the monoplane would have been as a biplane. He did mention, however, that the Bréguêt biplane had probably broken the Record.

He wondered whether we were entitled to ask people to make these dangerous attempts. As this was the first occasion since the events, he congratulated the crew of the monoplane, and those responsible for the success at Cowes, on behalf of the Society. He thought that the attendant advertisement was the best result of these attempts.

Long-range machines were of no value commercially, as the characteristic of such machines was their low average speed. The Fairey machine averaged 80 m.p.h. to India. Speed was the great commercial requirement, and 500 miles was the limit of the passenger's endurance. [Surely only if a speed of 100 m.p.h. be assumed.—Ed.]

The Chairman then called upon Mr. Handley Page, and said it



THE BIDON.—The Bréguêt biplane (Hispano-Suiza) in which MM. Costes and Bellonte are alleged to have flown non-stop from Paris to within 200 miles of the Pacific Coast of Manchuria.

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was the first time the Society had had a chance of congratulating him in his new rôle of Chairman of the S.B.A.C.

Mr. Handley Page, after a humorous reference to the poverty of the S.B.A.C., which prevented him from appearing in a chain, or robe of office, said that he agreed with Mr. Farren as to the value of the advertisement gained from such attempts, but disagreed that such machines had no commercial application. Such attempts resulted in improvements to both aircraft and engines.

He had frequently found discrepancies between the consumption figures obtained by the makers on the test-bed and those obtained from the same engine in the air. Perhaps the engine became contaminated by its surroundings. Mr. Fairey had shown what a big increase in range could be obtained by a decrease in consumption which was theoretically obtainable. He thought these long ranges of 5,000 miles were more suitable for the transport of mail than passengers. He wondered whether Mr. Fairey would give more detailed figures for weights and loadings.

Mr. Chorlton thought that the heavy-oil compression-ignition engine with the low consumption mentioned would soon be available. He referred to the simpler cooling-circuits of the evaporation type available with this class of engine. He said that one of the difficulties in the way of good consumption figures was getting the correct results from injection at high average M.E.P.

Captain Barnwell agreed that long-range machines were worth while. He commented on the choice of a monoplane with a water-cooled engine when a biplane with an air-cooled engine was available. He thought that the drag required to cool an air-cooled engine could be reduced to a considerably lower figure than that required to cool a water-cooled type. Like Mr. Handley Page, he would be glad to have more figures. With regard to the 800lb. useful load, if the weight of the pilots were deducted, about 440lb. was left for instruments and equipment, surely this was a rather big figure.

Captain Bell said that the lecturer had indicated possible improvements open to engine designers. He referred to the advantages of evaporative-cooling and the possibility of using a super-charger at take-off. In making the comparison between the water- and air-cooled types, did Mr. Fairey assume the same fuel consumption for each type? In view of the enormous consumption of power by dynamos in the slipstream, why could these not be engine-driven?

Mr. MacKinnon Wood said he would like to have weights, and especially structure-weights. He also asked why wing-surface radiators had not been used. While engaged on work in connection with increases of span, he had been surprised to find that if the aspect-ratio were increased to an unconventional degree, the ceiling was considerably increased.

Mr. Jennings said the range of a biplane with an all-up weight of, say, 9,000lb., could be considerably increased by stepping-up the aspect ratio from 7.5 to 12.5, even making allowance for an increase of weight and parasitic drag. He also stressed the advantages of flying as high as possible.

Major F. M. Green wondered why Mr. Fairey had passed over the air-cooled engine. If one replaced the weight of the radiator and its water with an equivalent weight of fuel, and used the Townend Ring to reduce the drag of the air-cooled engine, he thought that the range with the two types should be about the same. He would like to ask whether the carburettors were fitted with a special altitude control.

The Chairman then called upon Sq. Ldr. Jones-Williams and Flt. Lt. Jenkins to speak.

Sq. Ldr. Jones-Williams, who was greeted with much applause, referred to the very few alterations which they had found to be necessary. The thing that they needed most was a little more comfort. They had found their arms a nuisance, and there was nowhere to park them. Next time they were going to sling them from the roof. [Presumably lethal weapons, not those used for embraces.—Ed.] There was also some difficulty in fitting both himself and Lieutenant Jenkins to the same seat. [There is a large difference in build between these two.—Ed.] They were going to change the type of turn indicator used. They took far too much food with them. He suggested that Lieutenant Jenkins should talk about the instruments.

Flt. Lt. Jenkins, who was also much applauded, confessed that he was unable to understand Sq. Ldr. Jones-Williams' reluctance to speak upon navigation instruments, as he had only just returned from a navigation course. For the forthcoming attempt they were going to use a new form of Drift Calculator, which should give them very much better results than the instrument they used on the first effort.

The Reply.

Mr. Fairey, in his reply, referred to Mr. Farren's very sporting refusal to join issue over the monoplane-versus-biplane controversy when the biplane had it all its own way with the victory of the Bréguet. He thought that the Atlantic crossing would become an absolute necessity, and this, therefore, made a range of 2,000 miles essential.

He had recently asked Mr. C. M. Keys what was the matter with European Aviation, and the great American Air Mail Operator said "Passports." This was why Mr. Fairey wanted to fly to India in three hops and have long-range machines

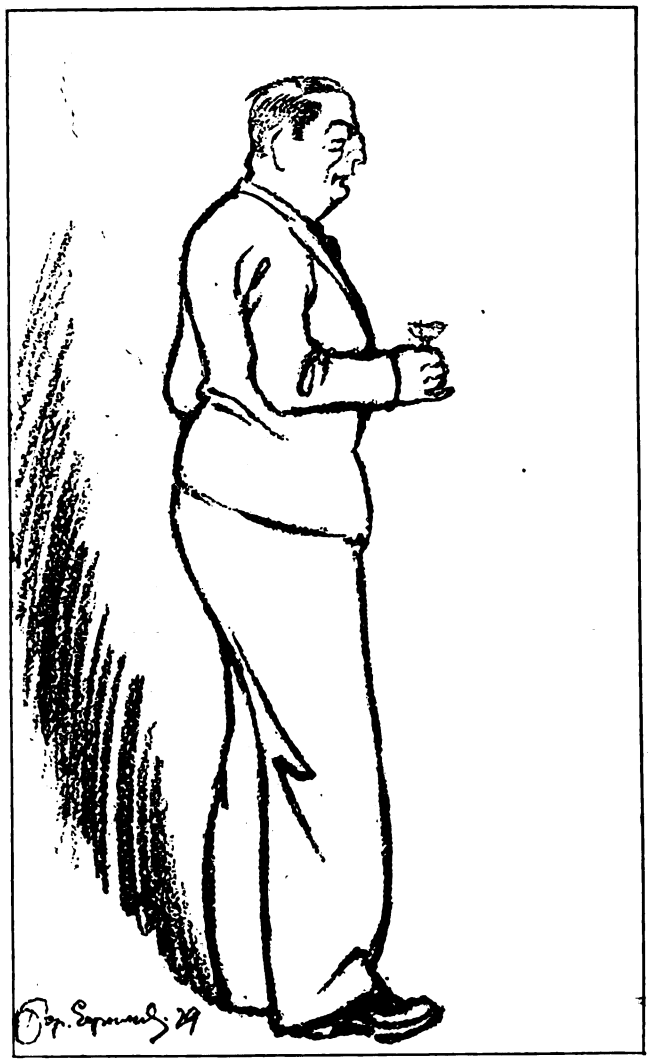
Replying to Mr. Handley Page, he was happy to say that he had the Air Ministry's permission to publish the figures relating to the Long-Range machine. He calculated that had he fitted H.P. Slots to the machine there would have been 88 infringements of the patent rights *en route*.

In choosing the water-cooled engine, he had only regarded the problem from the point of view of head resistance. As a retractable radiator was used, the drag of this was proportional to the power. He had not considered using the Townend Ring.

Although they found when considering monoplane versus biplane that the structure weight of the monoplane wing was six per cent. higher than that for the biplane, they had decided on the monoplane because the fuel could be stowed in the wings. The monoplane had been tried out in the wind-tunnel for high and low-wing positions, and although the low wing gave slightly better results, they had chosen the high position because they could then use gravity feed. The varying cooling surface required made the use of wing radiators impossible.

There was no difficulty in driving dynamos directly from the engine. As long ago as 1913, when he was with Shorts, they had driven their wireless dynamos off the engine.

Biplanes of very high aspect-ratio required exceptionally long tie-rods, and these were troublesome. It was good strategy to climb slowly, and the crew had instructions to this effect. The machine's ceiling at take-off was only 3,000 feet. In this connection there was the tragedy of the following wind down the Persian Gulf at considerably less altitude than that at which the machine was travelling. [In spite of this, nobody suggested the advantage of carrying wireless, even a light-weight receiving set.—Ed.] The carburettors were fitted with special altitude controls.



THE LECTURER.—A sketch of Mr. C. R. Fairey made by the Bolshevik artist, Efimoff, at a dinner given by Mr. Fairey to the crew of the "Wings of the Soviet," when in this country. The picture has not as yet interrupted diplomatic negotiations with the U.S.S.R.

ROUND EUROPE.

Between Sept. 13 and Sept. 22 Sous-Lieut. Sahuc and Commandant Labaurie in a Potez 25 (500 h.p. Salmson engine) flew round Europe over the circuit—Paris—Oslo—Moscow — Constantinople — Tunis — Lisbon — Paris. This makes a total distance of 11,000 kms. (approx. 7,000 miles), and was covered in six flying days.

On Sept. 13 they flew non-stop from Paris to Oslo in 7 hrs. 35 mins. at an average speed of 125 m.p.h. Here they were delayed for two days owing to fog.

On Sept. 16 they flew from Oslo to Moscow non-stop in 8 hrs. 20 mins., at an average speed of over 125 m.p.h.

On Sept. 17 they flew non-stop to Constantinople in 10 hours. While the machine was being man-handled on the ground for refuelling the airscrew was damaged, which necessitated a delay of three days.

On Sept. 20 they flew from Constantinople to Tunis in 10 hours without a stop.

On Sept. 21 they flew to Lisbon, stopping at Oran en route.

On Sept. 22 they left Lisbon to fly direct to Le Bourget, but a strong head wind forced them to land at Bordeaux to refuel. They arrived at Le Bourget at 16.40 hours.

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FACTS AN

OF THE "SEALE

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COST OF REPLACE

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will be seen that the total drop at
r.p.m., for example, is only 2·5 h.

THE DE HAVILLAND AIRCRAFT CO., LIMITED
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THE LAUNCH OF R.101.

The launching date of the R.101 was originally fixed for Monday, Oct. 7. In the darkness of Monday morning one took advantage of the absence of traffic on the Great North Road and reached Cardington in time to find a gentle breeze at sunrise and a notice postponing the launch to Wednesday.

Wednesday morning gave equally blank results, but a glimmer of hope was provided by a notice which announced that the launch was postponed until 10.00 hours. At 10.20 hours the notice was again changed to 05.15 hours for the following morning.

On Thursday, at the absurdly early hour of 03.15 hours one prepared to make another start. The weather appeared to be magnificent, but caution suggested a telephone inquiry. When the sleepy telephone operator put one through to Cardington the surprising news that no launch would be attempted that day was vouchsafed.

By this time the daily Press were beginning to get restive, and prominent articles by correspondents, who had obviously allowed their pens to come under the influence of three successive super-early morning rises, demanded to know the use of a ship that could not be launched into a 9 m.p.h. wind.

The launch of an airship from its shed may be regarded as analogous to the launch of a ship from a dockyard slipway. Once an airship has left its shed it need not go back until major repairs or a complete overhaul are necessary, in the same way that a ship, once it has left the dockyard, only goes into a dry dock at definite periods. But between the launch of an airship and of a sea ship there is a very big difference.

The slipways of a shipyard give approach to a sheltered river, where the only factor to be considered is the tide,—which is remarkably regular in its habits. The ship is only partly finished and is controlled by a battery of tugs which nurse it safely until it comes to rest under the cranes which will finish the construction.

An airship, on the contrary, has to be launched into the free ocean of the air, which is notoriously irregular in its behaviour. The airship must proceed directly from the shelter of the shed to the open element ready to brave any storm which may arise.

If steamships had to be launched at Land's End and proceed direct to moorings off the Scilly Isles past the Longships reef and the Bishop Rock there would be many delays until the Atlantic was sufficiently calm to allow such a procedure.

This may sound far-fetched, but it is not so absurd. To the airship the No. 2 hangar at Cardington is a dangerous reef, and even the mooring tower is a source of danger until the handling lines are made fast to the winches.

A nine-mile an hour wind broadside on to R.101 would produce a pressure of about 4 tons. This is a considerable load to handle when it is realised that the centre of pressure is some 80 ft. above the ground. And the operation becomes increasingly delicate when one considers that there are only a couple of feet to spare above and on each side of the ship when passing through the door.

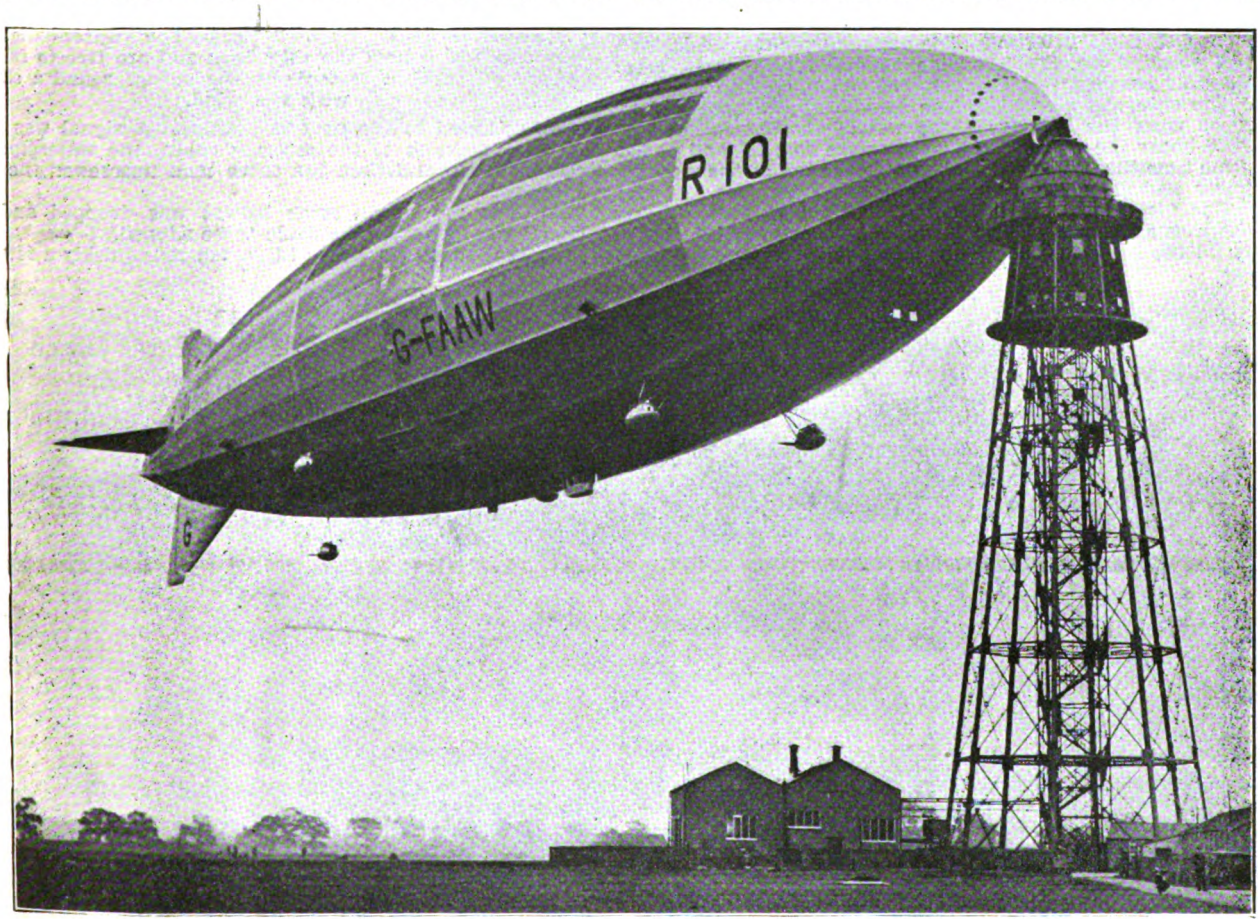
A careful examination of the difficulties associated with the launching of a large ship directly into the ocean, whether of air or water, will in some measure compensate the annoyance of those who have driven many miles in the night to see the launch at Cardington at dawn.

For the fourth time last week the alarm clock was set to 03.00 hours, and soon after that hour one was "cruising at forty" on the North Road. This time not only had the warning been given that the launch would take place, but the weather promised to be perfect. There was just enough breeze to dispel the patches of fog which lay in the valleys, and there was every evidence that it would be one of those perfectly calm sunrises that the aeroplane pioneers welcomed so gladly in the days of 1909-1911. Indeed, it seems that airships are as weather-shy in 1929 as aeroplanes were in 1909.

The shed doors were open by 05.15 hours, but a faint glow in the eastern sky showed that the perfect calm which seemed so certain a few hours earlier would not be available. The writer reached the Press enclosure to find that the enclosure was little more than a name and that one might wander freely over the aerodrome provided that one did not get in the way. This absence of red tape was very welcome.

At 05.48 hours on Oct. 12, 1929, the several-years-overdue 5,000,000 cu. ft. airship began to move. The wind was about 4 m.p.h. on the ground and 15 m.p.h. at 200 ft. in a direction slightly west of the axis of the shed.

Three white lines were painted on the grass, one each side of the track to be followed, for the handling parties, and one in the middle. Two white bags hung from the hull, one fore, and one aft, to act as pointers, and as the ship



AT THE MAST.—R.101 safely moored. Below are seen the sheds which house the winding-engine for the mooring-cable.

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was walked out these pointers were kept exactly on the centre line.

At 05.54 hours the ship was clear of the shed and was allowed to swing to the wind. She was then "walked" across the aerodrome with the hull lying head to wind all the time. This meant that her progress was entirely crabwise. Hence one may conclude that a rigid airship not only resembles a crab in having a rigid shell and a soft inside, but it also resembles the crab in the way it walks (at any rate under the conditions of wind at 90° to the path to the mooring tower). By the time the sun had risen she was in a position about one length to leeward of the tower, and the task of attaching the cables was begun.

The operation of mooring was described in THE AEROPLANE last week.

When the ropes were all in order and had been tested by tightening and slacking to see that they ran freely the ship was allowed to rise about 20 or 30 ft. above the ground.

Now came a long wait, everything was obviously ready, but nothing happened. At 07.00 hours the signal was given, ballast was dropped, and the ship rose on an even keel at possibly 50 ft. per minute. The three cables to the nose of the ship held her in position and were slacked off as water-ballast was dropped from a port forward of the front engines.

In a few minutes the ship was at a height of about 400 ft. exactly over the place she had been taken to about three-quarters of an hour before. Another signal was given and the ship was pulled slowly and steadily down to the tower, the cone entered the cup and she was riding at her moorings in a wind of about 20 miles per hour at 200 ft. The whole process was complete at 07.20 hours. The actual time taken was 1½ hours, but there were long waits, and it seemed obvious that everything was being done to a time-table that could have been shortened to half the time.

The ship was held horizontal by the elevator flaps which were at about 20° negative angle when the ship was finally moored. This appeared to be the angle required to counteract the buoyancy due to the 200 ft. that the ship had been hauled down by the nose. It appeared to be a rather large angle for a change in altitude of about 200 ft., though as the sun was now giving some heat there may have been some expansion to allow for.

On Oct. 13 tests were made at the mooring mast. The airship, which was moored by three cables, was allowed to rise to about 500 ft. and then tested for elevator controls, ballast, and trimming. The engines were run and preliminary tests made for the first flight.

On Oct. 14 at 10.30 hours the engines were started in turn and warmed up. Each engine started very quickly, after the gear was engaged, and ran without much smoke.

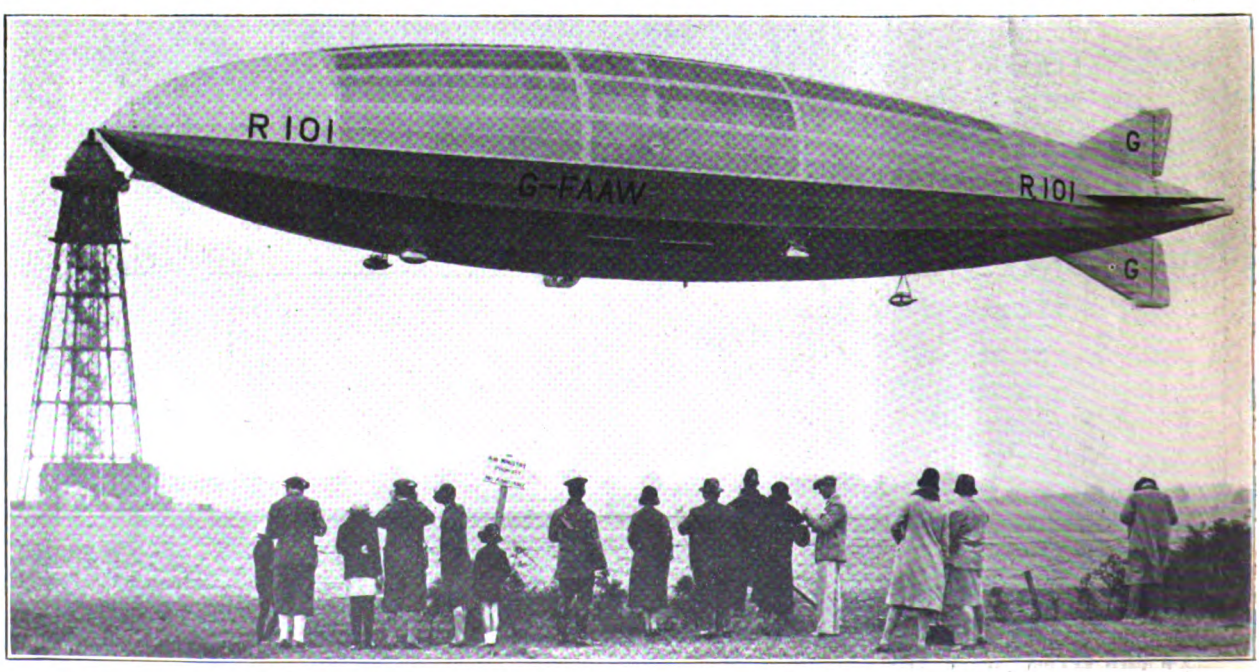
The ship was moored by the spindle at the nose and by ropes from the rear to three water-ballasted rollers. At 11.00 hours the ropes to the rollers were cast off and at the same time three men climbed outside the top of the mooring tower and stood-by to withdraw the locking pins.

The two engines amidships were then started. Then there came a wait while water was being pumped on board to fill the ballast tanks. This continued until the elevators were returned to the neutral position. A signal was given by the telegraph to the mooring cabin, the waterpipe was disconnected, and then the three men unscrewed the locking pins.

All was now clear, some ballast was dropped and the signal was given for the cable to be slipped.

At 11.20 hours the nose of the ship rose quickly a few feet,

KEEPING HER TAIL DOWN.—The water-ballasted rollers, which hold the ship down and are free to follow her horizontal movements as she swings round a circle with the wind.



OUT AT LAST.—R.101 early on the morning of her first appearance,—Oct. 12.

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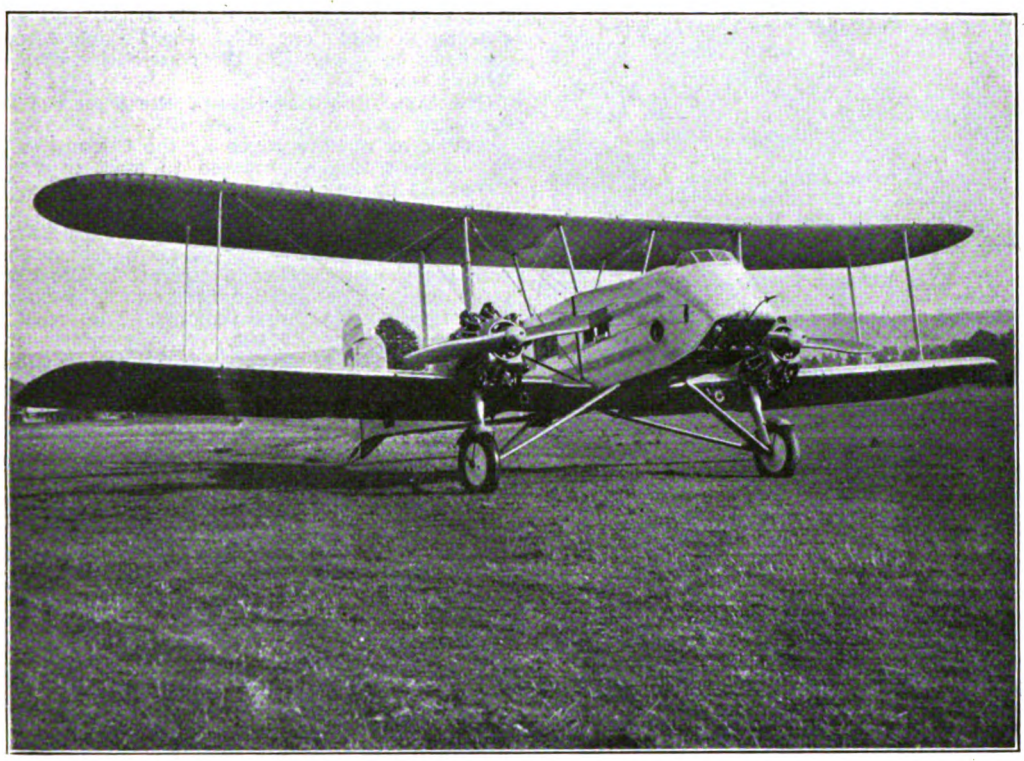
GLOSTER

The Pioneers of Steel Aircraft.



GLOSTER SURVEY MACHINE

All-Metal Construction.

"The Survey biplane is in complete skeleton form and is an absorbingly interesting example of Gloster metal construction."—"*The Aeroplane.*"

"The companion machine to this was built for the Aircraft Operating Co., Ltd., and is already flying. Altogether it is quite one of the most interesting aircraft in the Show, and is a credit to its constructors in every way."—"*The Aeroplane.*"

"Altogether this is a very fine exhibit, thoroughly expressive of the best type of British aircraft construction and progress."—"*The Aeroplane.*"

"Hitherto all the extensive work has been carried out with aircraft built for other purposes and modified to take cameras, but the Aircraft Operating Company, whose accumulated experience covers aerial reconnaissance of some 52,000 square miles in Northern Rhodesia, a survey of the Zambezi River for the Northern Rhodesian Government, and an air survey in Iraq, soon found that no existing aircraft met certain requirements. They therefore drew up a specification of the ideal survey machine and entrusted the construction to the Gloster Aircraft Company, of Cheltenham. . . . . the combination of the specialised knowledge of the one firm as air survey operators and of the other as constructors in all-metal aircraft, has had most successful results."—"*The Times.*"

GLOSTER AIRCRAFT CO., LTD.,

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THE STEEL WING Co., Ltd.

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showing the short end of the cable which had been the final link which held her down.

Then as she drifted back she rose on an even keel, the two engines were speeded up and the ship started on her first flight.

The wind was about 15 m.p.h. at ground level and 30 m.p.h. at 2,000 ft.

The ship sailed away at a fair speed directly against the wind, slowly rising to about 1,500 ft. She made a wide sweep of 15 or 20 miles radius, returning to pass over the aerodrome, and then left, flying in the direction of London.

Every event from the time the ship started to leave the shed on Saturday morning till she left to fly over London happened without incident and was exactly to plan.

The R.101 left Cardington at 11.20 hrs. and was moored again to her mast by 16.50 hrs. During this period she covered something like 200 miles with a crew of 38, and 14 passengers.

Only three out of the available four engines were used and these engines running at cruising speed (500 h.p. each) gave the ship an airspeed of about 58 m.p.h. For some reason the fourth engine was not started. The fifth engine (the forward port power-egg) can only be used for going astern and was so employed when mooring. [This strikes one as being about the silliest single point in airship design that has happened since airships first floated. Has nobody ever heard of a reversing gear?—C. G. G.]

The Air Member for Supply and Research, Air Marshal Sir John Higgins, was on board. The other passengers were:—

Squadron Leader R. B. B. Colmore, Deputy Director of Airship Development, Lieutenant-Colonel V. C. Richmond, the chief designer, Squadron Leader Rope, his principal assistant, Wing Commander Cave-Browne-Cave, in charge of machinery, Mr. Fitzgerald, Mr. Leech, Mr. Giblett, in charge Airship Meteorological Division, Lieutenant-Commander Watt, Flt. Lt. Durrant, wireless experimental officer, Mr. Wells, Mr. Collins, Squadron Leader Booth, captain of the R.100, and Air Commodore Fellowes, formerly Director of Airship Development and now Director of Personal Services, Air Ministry.

THE R.100.

The airship R.100 has been completed and filled with gas and tested. But she will not be ready to leave her shed for three or four weeks, as there is a good deal of detail work still to be done,—chiefly because of minor alterations which have been suggested at various times during the past year or so.

THE RIVAL FIRM.

The *Graf Zeppelin* returned to Friedrichshafen on Oct. 13 after a tour over Holland. During this cruise the Zeppelin flew over Amsterdam and Rotterdam.

THE "GRAF ZEPPELIN" AND THE NORTH POLE.

Much has been broadcast about the projected flights of the *Graf Zeppelin* to the North Pole on behalf of the German Arktis Society.

The Zeppelin management have asked the *Graf's* crew their opinion on the projected flight and have received a reply in writing which states that for financial and technical reasons, the entire crew would refuse to undertake the trip.

So the Zeppelin will not run the risk of undergoing the *Italia's* fate in the Frozen North.

Which reminds one of the historical question of Major Eustace Moyes to Commander Boothby, when he was entreated to take part in a projected trip to the Pole in a Parseval,—"But my dear Boothby, why *should* we go to the North Pole? It's frightfully cold,—and, besides, we don't know a *soul* there."

AIRSHIP DEVELOPMENT.

On Oct. 8 the Airship Development Company Ltd. showed, at a small private theatre in Denman Street, by the courtesy of the Gaumont Co., a film of the launch of the A.D.1.

The film was quite short and as the theatre was very small, the film was shown two or three times, so that every one might see it. The theatre would only hold a few at a time, and there was a considerable overflow.

The object of the demonstration was to afford foreign air attachés a chance of witnessing the airship's performance and to allow various representatives of advertising specialists a chance of seeing this new medium for publicity at work.

The party then adjourned to the Piccadilly Hotel for refreshment, and a general discussion of airship topics.

The A.D.1 is a non-rigid airship with a length of 137 ft. 9 in. and a maximum diameter of 29 ft. The capacity of the envelope is 60,000 cub. ft. The gross lift is 4,250 lbs. and the disposable load 1,500 lbs. The pay load for a range of 500 miles is 550 lbs. The ceiling under this condition is 5,000 ft. Maximum speed is 50 m.p.h. with a cruising speed of 35 m.p.h.

The nacelle, gondola, or fuselage is slung under the envelope by a system of ropes attached to patches on the envelope.

The crew of two sit in tandem cockpits behind the tractor airscrew which is driven by a 75 h.p. A.B.C. Hornet four-cylinder horizontally-opposed air-cooled engine.

THE FRENCH AIR ESTIMATES.

According to the Paris correspondent of *The Times*, the Finance Committee of the Chamber has been considering the credits asked for by M. Laurent Eynac, the French Air Minister, in the Air Estimates,—which allowed for a total expenditure of £16,000,000.

The Finance Committee has considerably curtailed these credits but has decided to recommend the expenditure of £40,000 for a Light Aeroplane Competition, and to encourage the purchase of private aircraft. A further recommendation is the expenditure of £40,000 on the establishment of a National Aircraft Factory, which would stand in the same relation to the Air Ministry as the National Arsenals to the Ministeries of War and Marine. [Considering that we spend £400,000 a year on our National Aircraft Factory (the R.A.E.) at Farnborough, and get practically nothing of value out of it, the French Aircraft Industry need not be alarmed at the competition of a mere £40,000 factory,—C. G. G.]

The Committee has reduced the amount for subsidies to operating companies by over £70,000. The total figure for subsidies as now approved by the Committee is £1,600,000. M. Laurent Eynac proposed to start a new air-line to Venezuela by way of the Antilles and Guiana, but the Committee thought that the air-lines from France to Indo-China and the Congo should be organised first.

Another of M. Laurent Eynac's schemes was to concentrate the production of aircraft in the hands of a few large firms. The smaller firms would supply components and suggest minor improvements. The credit for this purpose was cut by £80,000. The provision made for the mass-production of aircraft was reduced by the large amount of £288,000.

A TOUR OF INSPECTION.

M. Laurent-Eynac, the French Air Minister, has left Paris for Morocco, where he will inspect air units. He will visit Rabat, Casablanca, Marrakesh, Fez, Taza, and Meknes.

A GLIMPSE OF THE NOT-SO-OBVIOUS.

A correspondent writes as follows:—

In your article to-day 2/10/29, page 842, you quote American Commercial Aircraft cruising at 150 miles without cowling and 175 miles with cowling. On pages 858, 859 you quote various American Fighters' performance-figures' top speed (in order of pictures) 165 to 136 miles per hour. Therefore I suppose the position has arisen that these *wonderful* commercial craft with loads of mail are faster than service fighters, with, I suppose, mostly the same engines.

The explanation is quite simple. The American mail-carriers are built for speed. The fuselages are stream-lined off to the last rivet-head. Nothing is allowed to stick out anywhere. And they are not frightfully heavily loaded.

The war machines on the other hand have bomb-racks, and probably bomb-sights. If they have not brackets for machine-guns outside the fuselages, they have at any rate tunnels along the sides of the fuselages for the machine-guns, and generally they have bulges where the machine-gun is fitted into the fuselage. Also they carry wireless gear and all sorts of other gadgets, so that actually they are loaded more heavily than the mail-carriers and have far more things sticking out of them.

The difference is very largely analogous to the difference between a high-speed Atlantic liner and a battleship, or between a touring-car and an armoured vehicle. Anybody who looks at the photograph of even the best American fighter machines and that of a Lockheed, will see at once that the Lockheed must be miles an hour faster.

In this country a similar position has not yet happened, because we have quite a number of new fighters which are highly efficient and actually do well over 200 m.p.h., whereas we have practically no commercial machines at all which have any performance worth mentioning. That was why Mr. Barnard had to buy a Fokker to take the Duchess of Bedford to India and back, and the fact that he did it with a Bristol Jupiter engine merely shows that our engines are more advanced than our aircraft.—C. G. G.

THE SOVIET FLIGHT TO AMERICA.

On Aug. 8 of this year an A.N.T.-4 monoplane left Moscow in an attempt to fly to New York. The machine had a forced landing at Taiga, near Chita (Outer Mongolia), and was so damaged as to prevent the continuation of the attempt.

A second machine named *Land of the Soviets* started a few weeks later and by Oct. 3 had reached Sitka, Alaska, after successfully crossing the north end of the Pacific by way of the Aleutian Islands.

The *Land of the Soviets*, which is believed to be a twin-engined all-metal A.N.T.-4, took off on Oct. 3 for Seattle in the United States and arrived there on Oct. 14 after having been held up by a forced landing in Alaska. After flying across the United States, the crew intend to attempt to fly the Atlantic, to return to Moscow, and thus complete a flight round the World.

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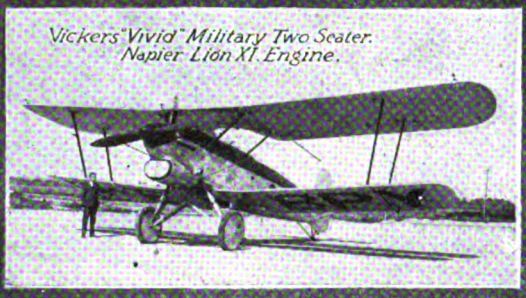
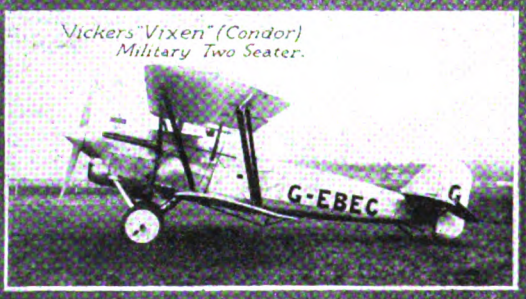
Vickers "Type 143" Single Seater Fighter.

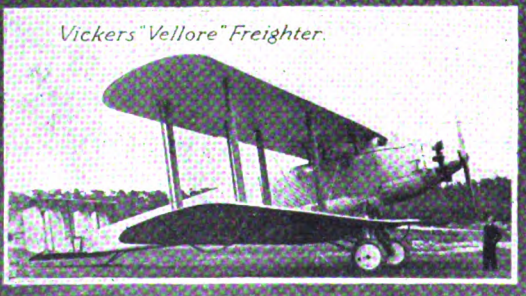
Vickers "Vespa" Two-Seater for Military Reconnaissance.


Vickers "Vivid" Military Two Seater. Napier Lion XI. Engine.

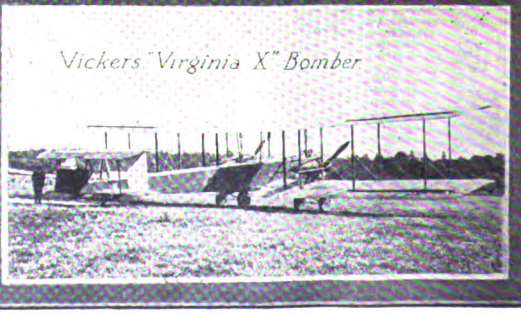
Vickers "Vivid" Seaplane.



Vickers "Vixen" (Condor) Military Two Seater.


Vickers "Vellore" Freighter.

Vickers "Victoria" Troop Carrier.


Vickers "Virginia X" Bomber.

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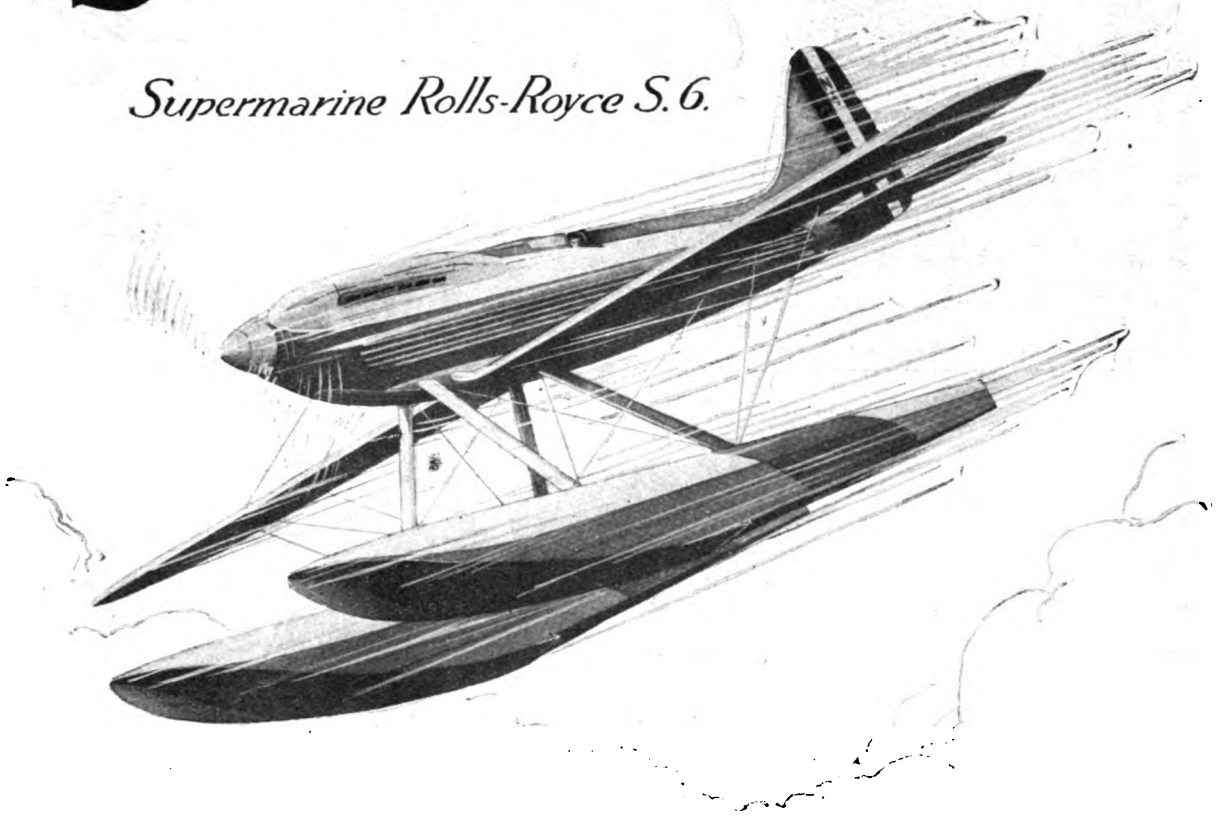

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328·63 M.P.H.

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WORLD'S SPEED RECORD

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Every flying man should know the advantages of the braking system introduced by the makers of PALMER LANDING WHEELS AND TYRES.

We offer them, and all interested in the construction of aeroplanes, a free copy of a handsome brochure. It contains full information about PALMER AIRCRAFT BRAKES, together with photographs and technical drawings that make the working of the various parts quite clear.

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(519)

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

A SATURDAY AFTERNOON AT HESTON.

Last Saturday, Oct. 12, was fine and quite warm. There was hardly any wind and bumps were unlikely. Why not take the rest of the family along to the Air-Park at Heston and make them airminded. This latter term is becoming somewhat of a cliché and also conveys to some people the idea of mental vacuity.

Anyway, *revenant à nos avions* the idea of tea at Heston was passed *nem. con.* and thither a crowd of four proceeded in the editorial Flint, which, for the benefit of the uninformed, may be described as a large and powerful American car of uncertain humour.

We did not take long to get to Heston, where the party disembarked, just in time to witness the *X*-to-the-power-of-10th descent of Mr. Tranum, who apparently only tolerates transport in any aircraft long enough to reach a height of say 1,200 feet,—which is his usual stepping-off height.

This particular descent was quite out of the rut, as Mr. Tranum stepped into space exactly overhead and could be seen falling an appreciable way right on top of us. When he opened his Russell parachute the slight wind carried him into the aerodrome a few hundred yards from the concrete apron where Society was, for the moment, focussed.

On this occasion, as on many others, Mr. Tranum was using his own parachute, which has quite a rapid rate of descent,—the standard Russell is considerably slower.

After this there was time to look around and see the imposing array of aircraft drawn up round the concrete. Mostly Moths, including the all-metal variety and the new coupé Moth of Mr. Norman. This array rapidly dispersed, as after the parachuting and a spot of tea, various people shot away into the everywhere, whence they had come.

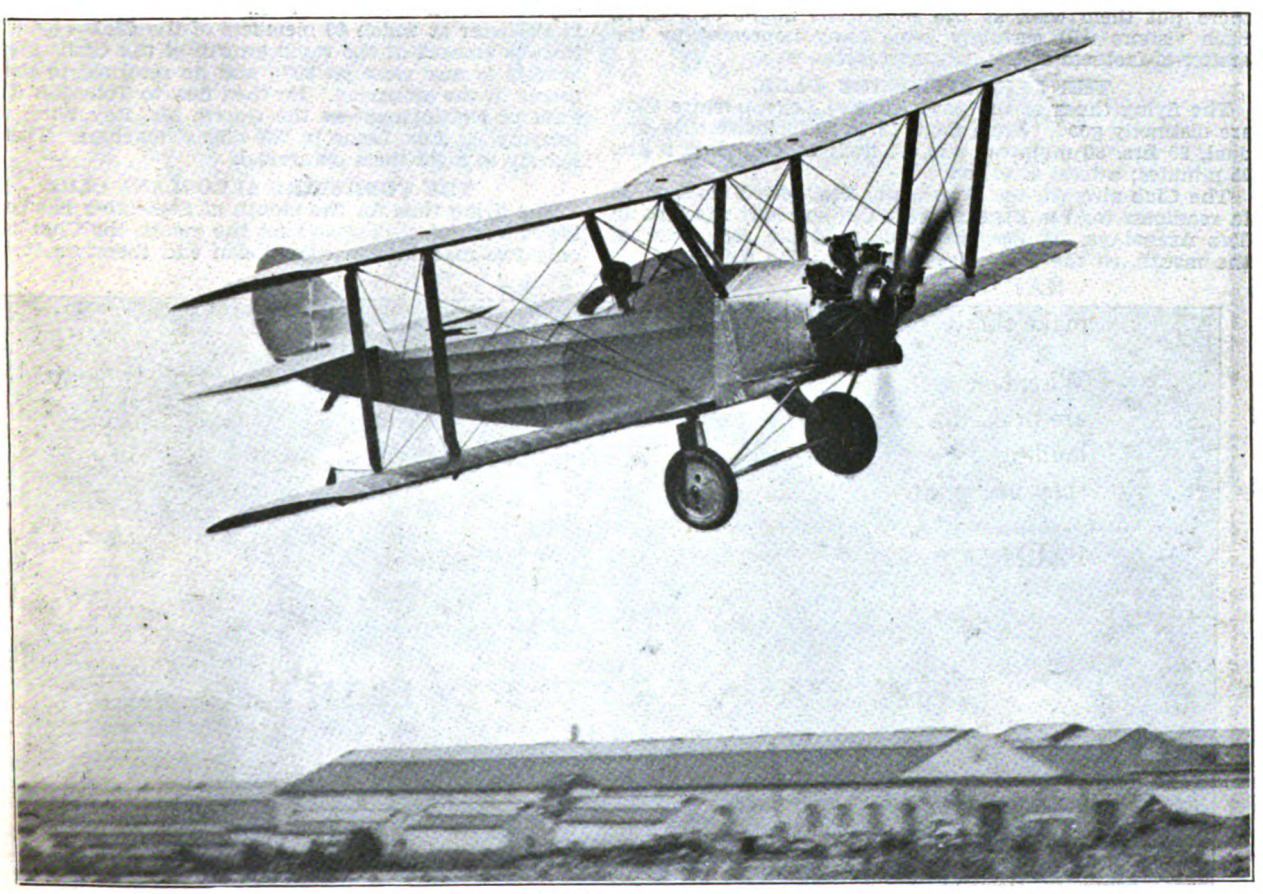
Inside the concrete hangar could be seen a lot more machines, and an international gathering at that. This structure, which may be regarded as the prototype of the new style of Air-Park architecture, uses bold arches for its expression and reinforced concrete for its medium. There were, beside the British machines, a Fiat AS-1, a two-seat Romeo Ro.5, the Avia B.H.11 belonging to the Czechoslovak air attaché, and a Klemm. There may have been more, but that simply records the result of a casual glance.

They are putting up a further edifice at Heston, but some controversy exists as to its future. Heston is likely to be used as a terminal by Imperial Airways Ltd. in foggy weather, in which case this building ought to be for Customs. On the other hand where is one to garage cars except under this new roof? The answer presumably is to invoke masses of fog down Croydon way and subsidise the local ecclesiastics to pray for fine weather at Heston.

During this time Miss Slade, who is Secretary of Airwork Ltd. and finds time to put in a lot of flying as well, had been doing some organising, with the result that Mr. Winsor was able to take our novice up in G-AACY. This is the white Moth belonging to Airwork Ltd. and is fitted with the new Graham wireless gadget. After this proselytising interlude had been completed, it was time for tea, and to the Social Focus we all adjourned.

During tea we heard the true story of the *fracas* at the Turks Head at Newcastle. The sub-title of this tale might be "Big Oaks from little Acorns grow." Who would have thought that the forgetfulness of a housemaid in omitting to turn off a tap at the top of the house, could have been enlarged into a deluge from a fire-hydrant which smirched the escutcheon of Civil Aviation. Talking of escutcheons, a new quartering is to be added to that of Civil Aviation, a hand *extendant* with a potted palm *pendant*.

In the early part of the afternoon Mr. Armour, who is responsible for a couple of cunning gadgets for the private owner, had been at Heston, and perhaps that was why we had started talking about apparatus for digging-in the wheels of machines which have to be moored out for the night. Unfortunately the future of these ingenious devices is by no means sure, for alternative means of achieving the same results have now been devised. Every private owner



A NEWCOMER.—The AL-1 two-seat side-by-side light aeroplane built by Surrey Flying Services of Croydon Aerodrome. It is fitted with a 60 h.p. Salmson engine. —(*"Aeroplane" photograph.*)

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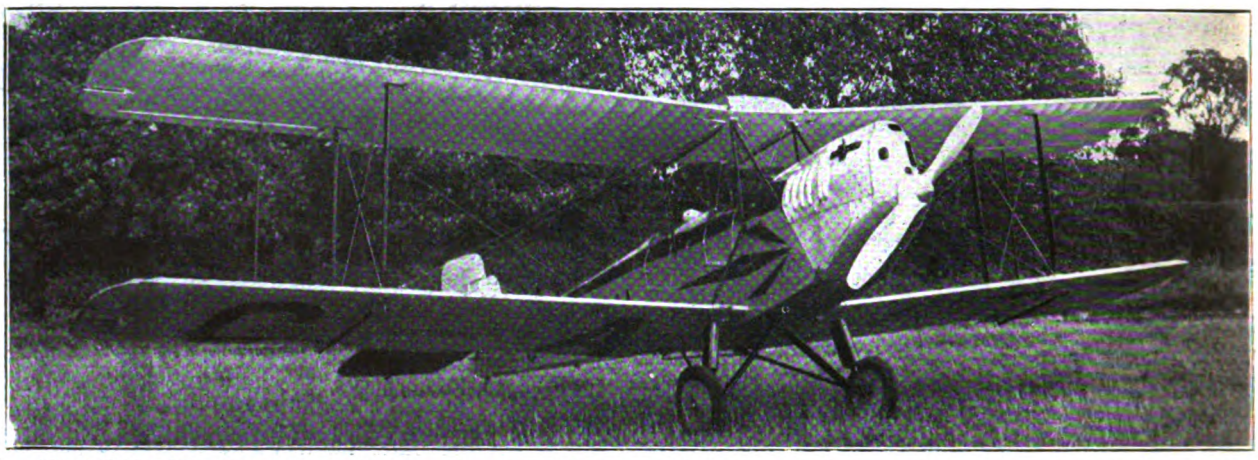


THE LATEST.—The new Simmonds Spartan (Cirrus) with increased span, which gives a much improved take-off and a slower landing, with a slight increase in speed.

will carry in a compartment at the bottom of the fuselage two terriers. On completing a landing the pilot pulls a release and a trap opens beneath the fuselage through which tumble the dogs. They immediately race for the undercarriage and begin a furious excavation behind each wheel. The winner races to the tailskid and repeats the performance. This dog receives a lump of sugar,—on the piecework principle. The proud owner then pushes his machine into the holes and, calling off the hounds, wanders away for a drink.

A suggestion was made which would considerably offset the gloomy modern tendency in flying suitings and the national leaning towards garments of black. The Canadian lumberjacks wear heavy flannel or wool jerkins which would be ideal for Winter flying. These coats have the additional advantage of being made in the most terrific colourings and checks. Every club might choose its own, with kaleidoscopic effects at the various meetings.

When tea was finished it had become too dark for any more flying and the visitors and people like Mr. Norman who emulate the ladybird and "fly away home," had already gone. So we went, too.

It was a perfect October afternoon and there could have been no better way of appreciating it. People who are interested in aviation ought to make a habit of taking out their friends who are not to some place like Heston and there put them wise, as the Americans might express it. Such visitors will certainly come away impressed by the matter-of-factness of the light aeroplane.—T. J.

THE LEICESTERSHIRE CLUB.

The flying times of the newly-formed Leicestershire Club are distinctly good. From Sept. 13 to 30 inclusive they are, dual, 20 hrs. 35 minutes; solo, 14 hrs.; other flying, 8 hrs. 25 minutes; a total of 43 hrs.

The Club aircraft, the *Quorn*, was first tested on Sept. 13 in readiness for the Pageant next day—already reported in The Aeroplane. It flew on 15 days of the remainder of the month, so the start gives hopes for the future.

Messrs. Hurst, Warren (the ground engineer), and Winn (the chairman), all previously known to the club's pilot, Mr. Bateman, as members of the Nottingham Club, and all three ex-R.F.C. pilots, were the first three members to be released for solo in the order shown, after the usual formality of a couple of landings. Mr. Cobb of the Midland Club was the next member to be launched.

Mr. Medcraft was the fifth pilot member to go solo. His return to flying after being lost to the game for over eleven years necessitated just one or two more landings than the traditional couple.

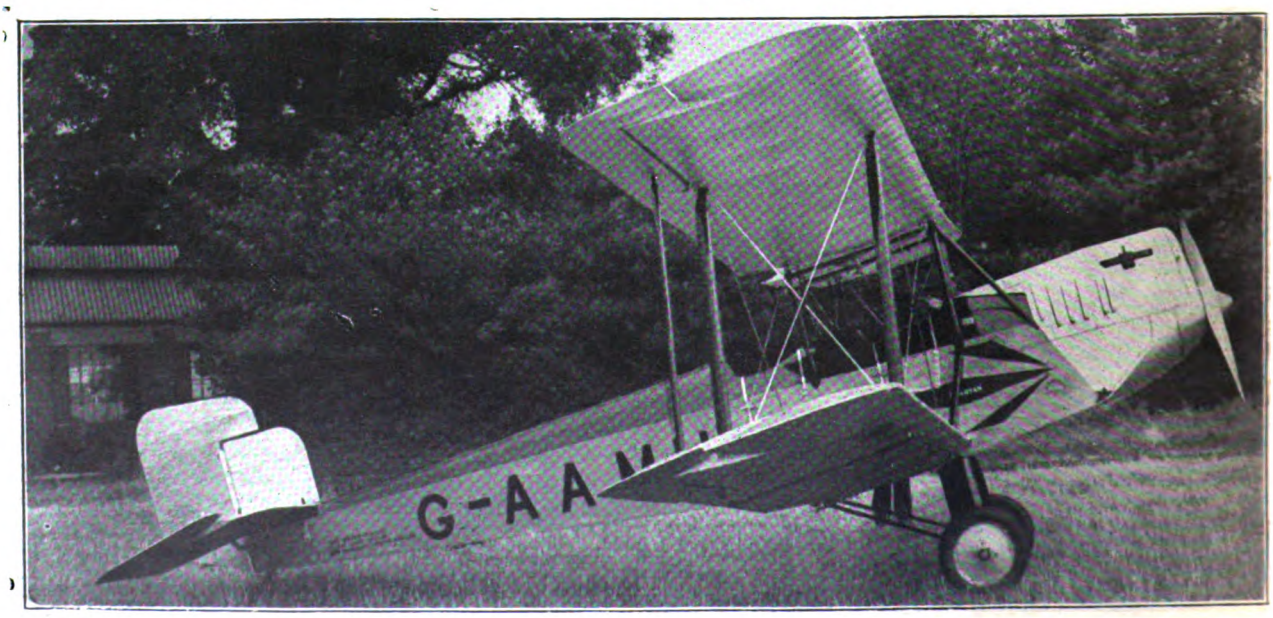
The following members have had dual instruction primary and secondary, in the *Quorn*,— Messrs. Baxter, Franklin, Wildbore, Coltman, John Squirrel, P. Palmer (the Leicester Regiment), Brown, How, Crowdy and Austin.

On Sept. 25 the uses of air transport were demonstrated by the Chairman, Mr. Roy Winn, who flew to Manchester with the pilot-instructor on business. The machine was then flown to Hooton Park to pick up Mr. Cyril Hurst who had been up in Liverpool on business also and wished to return that day urgently. The machine returned to instructional work in the afternoon.

The Director of Civil Aviation paid the Club a visit on Oct. 12. He was flown down from Leeds by Sq. Ldr. Leslie. He inspected the aerodrome, hangar and club house, and expressed satisfaction with all. He then attended a lunch in Leicester at which 80 members of the Club were present. He was amazed at the rapid growth of the Club (the membership is now close on 200), and he returned to the aerodrome in the afternoon. He then flew to Tollerton (the Air Park of Nottingham) in the *Quorn*, Mr. Roy Winn accompanying Sq. Ldr. Leslie in the official machine. There was nobody to meet them on arrival.

THE YORKSHIRE AEROPLANE CLUB.

The flying time for the month of September has been 127 hours 5 minutes. Throughout the month the Club has had only two machines in commission and therefore the flying



THE NEW SPARTAN.—Well-based rumour says that an announcement is soon to be made concerning the taking over of the Simmonds Spartan firm by big financial interests.

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AUSTRALIAN EAST-TO-WEST AIR RACE

SWEEPING SUCCESS OF DE HAVILLAND AIRCRAFT

The Australian trans-continental air race from Sydney to Perth, which started on September 30th and finished 6 days later, proved an outing for no less than five types of de Havilland aircraft and an overwhelming triumph for the Gipsy Moth.

FASTEST TIME = GIPSY MOTH

Pilot—Major H. de Havilland—averaging 107 m.p.h. for the 2,450 miles.

2nd = DH. 50. **3rd = DH. 9.**

On handicap the results were:

FIRST = DH. 9. = PILOT: Captain A. C. MILLER.

SECOND = GIPSY MOTH PILOT: Major de HAVILLAND.

THIRD—GIPSY MOTH FIFTH—GIPSY MOTH
FOURTH—GIPSY MOTH SIXTH—GIPSY MOTH

The race was one of the most severe ever held, wind, rain and dust-storms being encountered all the way.

10 GIPSY MOTHS STARTED = 9 FINISHED

(the remaining machine hitting a tree in dense fog). The nine finished in perfect condition after being flown at full throttle throughout the 2,450 mile race.

THE DE HAVILLAND AIRCRAFT CO., LIMITED
Stag Lane Aerodrome
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Telegrams: Havilland-Phone-Edgware
Telephone: Edgware 0171

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time compares very favourably with August, when they had three machines in commission and only did 106 hours.

Messrs. Lockey, Illingworth, Ellis, Garside and Winandy have made very creditable first solos and Lockey and Illingworth got their "A" Licence tests done before the end of the month.

Six new flying members and two associate members joined during the month and all the new flying members have started instruction.

THE NORTHAMPTONSHIRE AERO CLUB.

During September 5 flying members and 11 associate members joined the Northamptonshire Club. The total membership is now over 300.

The flying time for the month was 67 hrs. 5 mins., dual 36 hrs. 35 mins., solos 13 hrs. 5 mins., passenger flying 7 hrs. 50 mins., tests 9 hrs. 35 mins. Instructor E. F. Palmer. Ground Engineer J. Gallagher. Aircraft (two) G-AAIE and G-AAIC.

In response to popular demand the Committee have provisionally fixed their next Flying Meeting for Whit Monday, 1930. The Flying Committee intends to get going on novelty events for this meeting and Secretaries of Clubs are asked to kindly make a note of the date.

The Annual Meeting of the Club was held on Oct. 7. About 60 members were present. Mr. K. Whittome and Mr. G. W. Baldwin were elected new members of the Committee. The Club bar accounts and balance-sheet were read, and showed a profit on the 6 months' working.

The flying for the 5 months from April to Sept. 1 makes a total of 300 hours.

THE ASSOCIATED AUSTRALIAN AERO CLUBS.

The title of the Australian Aero Club has been changed to "The Associated Australian Aero Clubs."

The new Association consists of the following: The Australian Aero Club, Victorian Section; the Aero Club of New South Wales; the Australian Aero Club, South Australian Section, Ltd.; the Australian Aero Club, Queensland Section, and the Australian Aero Club, Tasmanian Section.

The Association will be the controlling body in the sport of flying in Australia under the regulations of the F.A.I.

Each year the Association will elect a chairman, and each constituent club will nominate one delegate to be its representative at all meetings during the year.

The Association may admit other clubs when formed, but only one club from each State is eligible to be a member.

The first chairman of the Association is Mr. H. A. Rigby, and the first secretary is Mr. G. N. Moore.

THE AERO CLUB OF NEW SOUTH WALES.

The report for the year ending Aug. 31, 1929, of the Aero Club of New South Wales shows an excess of expenditure over income of £314 5s. 4d. This is due to the impracticability of making the social and sporting activities of the Club self-supporting under the adverse conditions at Mascot Aerodrome.

At a Special General Meeting held on Aug. 6 approval was granted for the purchase of 210 acres of land near Warwick Farm for the Club's own aerodrome. This will be made into a first-class aerodrome with the additional amenities of a Country Club and Golf course, and the Committee hopes that when this is completed the social and sporting activities will become self-supporting.

During the year the total membership increased from 705 to 855. The pilot members increased from 112 to 179 and the pupil members from 60 to 75.

The total number of hours flown during the year was 4,975, which was an increase of 459 hours over the total flying time for the previous two years ending Aug. 1, 1928.

The Club's fleet has been increased to thirteen by buying a Westland III (Widgeon), a D.H.9 and by the loan of three Gipsy-Moths from the Commonwealth Government. During the year one Gipsy-Moth was written off owing to destruction by fire after an accident which did not involve any injury to the pilot.

The Chief Instructor, Mr. E. W. Leggatt, M.C., resigned during the year, after three years' service, and Mr. F. W. Follett, formerly Superintendent of Aircraft in the Civil Aviation Branch of the Defence Department joined the Club as Manager and Chief Instructor.

Mr. T. W. Shortridge, the assistant instructor, resigned in Jan., 1929, and his place was filled temporarily by Mr. A. A. N. Pentland, M.C., D.F.C., until the arrival of Mr. R. Beresford from England.

As the result of a conference of representatives of all the Australian Flying Clubs the Club entered into an agreement with them for the formation of an association named "The Associated Australian Aero Clubs" through which all the clubs will become affiliated to the Royal Aero Club and the F.A.I.

In pursuance of its policy to co-operate in the establishment of Flying Clubs in country districts, the Club assists in the formation of Clubs at Crookwell, Newcastle, Lismore, Ballina, Coff's Harbour and Parkes.

THE INDIAN FLYING CLUBS.

Between January and June 1929 the four active Flying Clubs in India, i.e., Karachi, Bengal (Calcutta), Bombay and Delhi, put up a total of 1,892 flying hours.

In *ab initio* training, both dual and solo, Karachi flew 400 hours, Bengal (Calcutta) 371 hrs. 55 mins., Bombay 428 hrs. 5 mins., and Delhi 177 hrs. 5 mins.

Up to Aug. 19 the Aero Club of India and Burma had granted 34 "A" certificates, of which 12 were for the Karachi Club, 5 for the Bengal Club, 11 for the Bombay Club and 6 for the Delhi Club.

The average time taken to train *ab initio* pupils was:—Europeans, 10 hrs. 5 mins.; Indians, 21 hrs. 13 mins. The first Club member to qualify for an "A" licence was Mr. J. R. D. Tata, who passed his tests on Feb. 10. He went solo after only 3¾ hours' dual instruction.

All Indian Clubs used Gipsy-Moth biplanes. Late last year Sir Charles Wakefield offered to assist the Flying Clubs in India in any way the Committee of the Aero Club of India and Burma thought most fitting. They decided to ask him to present a Gipsy-Moth to the Club that first turned out 10 pupils with an *ab initio* aviator's certificate, of whom not less than six should be Indians.

The Bombay Flying Club turned out the required number of pilots by the end of May and were presented with a Gipsy-Moth on behalf of Sir Charles Wakefield.

THE WINNIPEG FLYING CLUB.

This is from the Bulletin of Western Canada Airways Ltd.:—

Mr. Konrad (Connie) Johannesson has been appointed instructor in place of Mr. M. de Bliquy and has already taken in hand the duties relevant to that position. Mr. Johannesson, who is well known locally as a hockey player and a member of the old Vic Team, learned to fly back in 1917 at Ismalia, Egypt, using a Maurice Farman for his kite. Later at Suez on Avros and thence to Heliopolis where he was appointed instructor during 1918 and continued at those duties until he returned to Canada in 1919. Of late he has been assisting W. Straith of North West Airways and has over 600 hours to his credit. One feels sure that the fine flying record which has been set up by the Club since its inception will be maintained under Mr. Johannesson's supervision.

A TEST OF STAUNCHNESS.

The following cable from Major Hereward de Havilland has arrived at Stag Lane:—

Just returned from Perth having completed journey of 5,000 miles during which Gipsy engine ran splendidly averaging 2,350 r.p.m., and 17 miles to the gallon of petrol. One stage of 770 miles only used one quart of oil. Only work on engine throughout trip was adjustment of tappets and cleaning filters. Not necessary to touch plugs. Vacuum Oil Co.'s products used throughout.

LADY BAILEY'S TRIP.

On Oct. 12 Lady Bailey left Croydon at 11.00 hrs., on the start of a trip to Oslo. She reached the Schiphol aerodrome Amsterdam, at 14.30 hrs.

On Oct. 13 she left Schiphol at 07.00 hrs. and reached Copenhagen in the afternoon.

On Oct. 14 Lady Bailey flew from Copenhagen to Gothenburg, as bad weather prevented her from flying to Oslo, whither she is proceeding by train.

GOD'S FREE AIR.

If you would learn the difference between "Technical Air" and the type described in the heading you must go to the lecture on "The Art of Flying Land and Sea Machines," by Mr. Norman MacMillan, the chief test pilot of the Fairey Aviation Co. Ltd. In fact you must go anyway because it will be worth while.

The lecture will be held at the Royal Soceity of Arts, 18, John Street, Adelphi, W.C.2, on Oct. 24, at 6.30 p.m. Anybody can go to the lecture, the only procedure is to sign the visitors' book.

As is well known, Mr. MacMillan has written the standard text-book on the art of flying. This lecture should be very instructive and one hopes the manipulators of "technical air" will be there in force to debate this theory of free air.

MANDIBLE-RISKS.

The following is given by the Bulletin of Western Canada Airways Ltd. as an example of the difficulties encountered and overcome by their intrepid pilots in the course of their day's work:—

"Charter trip to Pagua Lake, E.N.E of Pickle via Badesdawaka and Kakagiwizida Lakes, Ozheska River and north to Ishanakie and Pagua—camped at Papaonga Lake."—Jarvis, on Forestry Patrol.

Apparently crash-risks and fire-risks in this area are quite equalled by jaw-break risks.

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COMMERCIAL AERONAUTICS.

CIVIL AVIATION PROGRESS.

A lecture on *The Progress of Civil Aviation* was given by Air Vice-Marshal Sir Sefton Brancker, K.C.B., A.F.C., at the Royal United Service Institution on Oct. 9.

In the absence of Lord Thomson, who was unable to be present, the Chair was taken by Sir Herbert Hambling, Bt., D.L., J.P., the Government nominee on the Board of Directors of Imperial Airways Ltd.

Introducing the Lecturer, Sir Herbert Hambling said that Sir Sefton Brancker had done more for Civil Aviation than any man living.

SIR SEFTON BRANCKER said that Civil Aviation was too wide a subject to be discussed in one lecture and he would therefore confine his remarks to Air Transport and ignore the many other branches of Civil Aviation such as Survey, Forest Patrol, Crop Dusting, etc. He would also restrict his remarks to the progress which had been made since he last lectured before the Royal United Service Institution in November, 1927.

Practically all the important countries in the World had National Air Transport Companies which were run with the help of State subsidies. The United States of America was the notable exception to this rule and in their case the air lines were supported by very generous postal contracts.

In France the policy from the beginning had been one of quick communications with their overseas possessions. France had a number of main air lines, including one via Constantinople to Syria and the Far East, and one via Spain and the Cape Verde Islands and to South America. She also had a number of local lines from Paris to London, Berlin, and other cities. France would be spending two million pounds next year on subsidies to Civil Aviation.

Germany, prevented since the War from building military aircraft, had been able to concentrate on civil aircraft. The Nine Rules of the Peace Convention had caused her to concentrate, until they were withdrawn in 1926, on internal air routes and had also promoted the development of German factories abroad. The result had been that German aircraft were firmly established in many countries, mainly Persia, Spain and South America.

In 1926 the Government had given a monopoly to the Luft Hansa, which firm had extended one route to Barcelona for South America and another to Moscow with the co-operation of Russia. This latter route, which would eventually go to Pekin, was now being flown by night on the section between Berlin and Koenigsburg. Germany intended to operate a night route from Berlin to London next year.

The withdrawal of some of the subsidies in 1928 had given the German air transport companies an opportunity for a general check up on their expenditure and economical overhaul. Germany tended towards very big machines, chiefly monoplanes of all-metal construction.

Describing a flight he had in the Do.*x*, the Lecturer said that the machine weighed 52 tons, got off in 32 seconds, cruised at 112 m.p.h., was light on the controls and manœuvred easily. The top deck contained the control cabin, the crew's quarters and the wireless cabin. This deck was noisy but not unduly so. The second deck contained the passenger accommodation, which was quiet and comfortable. And the lower deck carried the baggage and fuel. Two of these machines had already been sold to Italy.

The United States of America had made extraordinarily good progress in the past two years. They had a reliable climate, long distances, wealthy citizens and no international complications. There was only one subsidised air line, the one to Chile, the others existed and even made money on the generous mail contracts.

The U.S. Postal authorities were prepared to, and did, lose one million pounds every year on the postal services and they did not know or care whether the air mails paid or not. The scheduled mileage for 1928 had been 7,382,000 miles.

The percentage of safety on the organised air routes was very high, but it was not so good on the miscellaneous services, the machines of which were not under Government control. The United States had 16,000 miles of lighted air routes for night flying. America was not producing enough aeroplanes for her own use and was sending people over to Europe to buy the best aeroplanes.

In all these countries and in others which he had no time to mention the regularity and safety of the air lines was very good, but the financial position in every case was bad. At the present time subsidies were an absolute necessity.

With regard to air transport operations in the British Empire, the work that had been done in Australia was a credit to the Empire. No less than 421,000 miles had been flown on regular air routes in 1928. Only British machines were used on these routes at present and the difficulties were all the greater because the small population did not justify daily flights, which were a better commercial proposition than weekly ones. Australia was considering an extension from Northern Australia to Singapore to meet the Imperial Airways route.

Canada had only recently taken up air transport but already 3,500 miles had been organised. Previously civil aviation in Canada had consisted of air survey, forest patrol, crop-dusting, etc. To-day there were twenty-five recognised air transport companies in Canada. They had no subsidies but followed the American practice of postal contracts. Unfortunately American aircraft were used to a great extent.

South Africa had no great air transport of her own but was ready to help with the Imperial Airways scheme for a route from England to the Cape.

The Government objective in fostering Civil Aviation was the improvement of Empire Communications. The routes flown by Imperial Airways had shown a steady improvement in regularity and a steady advance in passenger and goods traffic.

The company's splendid record of safety had, unfortunately, been broken in 1929. Since 1927 Imperial Airways had added to their fleet the Short Calcutta, which the lecturer believed to be the best flying-boat in the world. The new 40-passenger Handley Page, which would be the next new type introduced for the India service, was, with the exception of the Dornier Do.*x*, the most ambitious passenger-carrying machine.

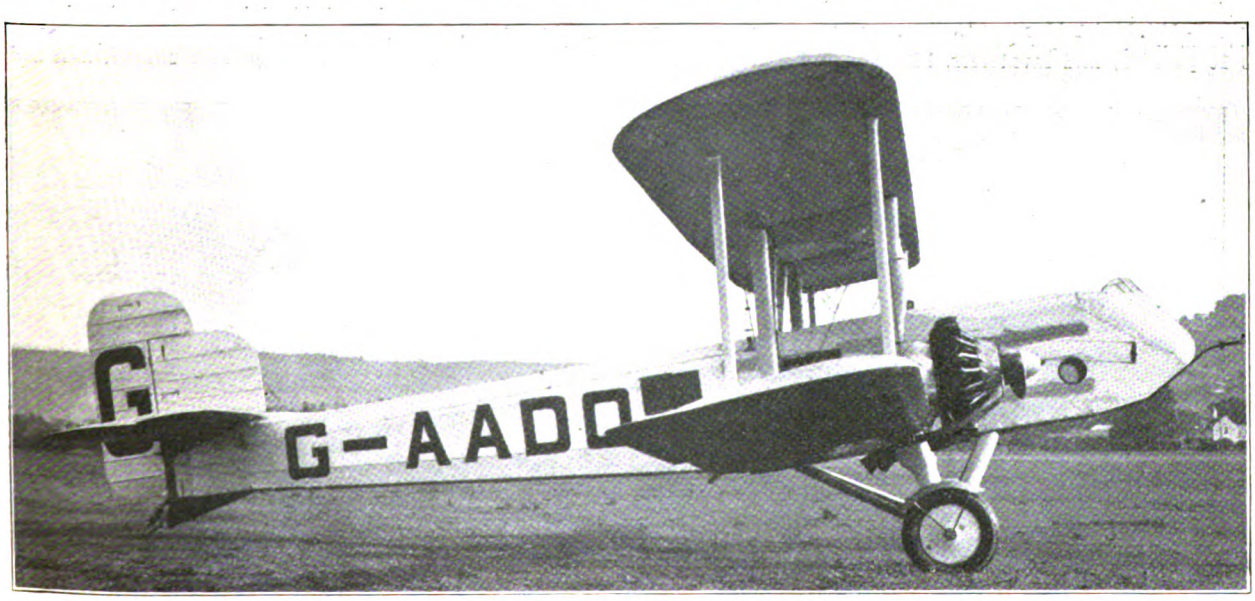
Discussing the future, Sir Sefton Brancker said that when he last lectured at the R.U.S.I., Imperial Airways had only just started the Cairo—Basrah section of the India route. There was now a weekly service to India. The ground organisation was not properly developed because they did not feel justified in spending the taxpayers' money on Persian soil and the Persians would not do anything about it.

There was also the question of changing the route entirely and taking it through Vienna, Belgrade, Athens, and Cyprus to Baghdad and then possibly right through Persia instead of down the Persian Gulf.

Also, when the line to the Cape was established, the India route would not go to Egypt at all.

With regard to the Cape route, this had been prospected by Captain Gladstone and Sir Alan Cobham. All the Colonies had agreed to come in on some general scheme and the Union of South Africa had committed themselves to subsidies amounting to £400,000 during the next few years. A final survey party was going to Africa in November next to arrange details.

Speaking of airships, Sir Sefton Brancker said that they were already a year behind his last prophecy, and that the R.101, being a further six weeks late, had missed the good weather and now might be many weeks before it could leave its shed. However they hoped that one airship would get to India this winter and one to Canada in the



THE TOPOGRAPHIST.—A side view of the Gloster Survey biplane (two Bristol Jupiter geared engines), built for The Aircraft Operating Co. Ltd. This machine was exhibited in skeleton form at the Aero Show last July.—(*"Aeroplane" photograph.*)

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spring. A great deal more capital and patience would be needed before they could be used as commercial transport.

Certain countries thought that when air routes crossed their territory the loads should be transferred to their machines and back again at the frontier. This would cause delay and confusion and would be most unpractical. A central control was wanted throughout long routes.

When competition grew keen, as it was bound to do, all the air routes would have to be adjusted to save time. In addition to taking the shortest route time would be saved by night-flying. About 700 miles could be flown a day by modern aircraft but with night flying this might easily grow to 1,800 miles in the 24 hours.

Cruising speed must be over 100 miles an hour. Speed not only saved time but it counteracted the effects of bad weather. But at the same time speed reduced paying load and put up cost.

Air mails would have to be carried in special machines and not with passengers. The big business was going to be with commercial aircraft in the future. Military aircraft would be the work of a few specialist firms.—C. M. McA.

NEWS FROM THE NORTH.

Northern Air Lines Ltd. expect to leave Wythenshawe in about six weeks as Chat Moss Aerodrome is nearing completion. This is probably the first aerodrome in Great Britain to have cinder runways, which are arranged like a carpenter's square with an arm at 45 degrees in the included angle. These runways are 200 ft. wide and up to 12 feet deep. The overall length in any of the three directions is about 700 yards.

The new N.A.L. hangar at Chat Moss is 200 ft. x 100 ft. with workshops 30 ft. wide running down the long side. The dope shop, the engine shop, and the stores will be heated. The N.A.L. offices will be in a separate building.

The aerodrome will boast a good residential hotel, as the near-by farm is being converted for this purpose.

N.A.L. are going to put joy-riding in a new category by using modern cabin three-seat cabin aircraft instead of open cockpit machines. The idea underlying this is not merely to modernise joy-riding but by means of joy-riding to introduce the general public to the comfort of travel by air-taxis.

NEWS FROM GERMANY.

The Berlin correspondent of *The Times* states that successful experiments were made by the Deutsche Luft Hansa at the Tempelhof aerodrome on Oct. 2 in the transmission of images by wireless to an aeroplane during flight. In three successive flights, a weather map, a sketch of a landing ground, and a plan of an advancing thunderstorm were received on a fultograph apparatus attached to the ordinary wireless set carried by large passenger aeroplanes.

The big 12-engined Dornier flying-boat known as the "Do. *x*" has completed its first trials without, it is claimed, any important modifications being found necessary. These trials lasted 10 weeks, and 30 flights were made. Starts were repeatedly made in little more than a minute with a load of 20,000 kilogrammes (nearly 20 tons).

On Oct. 1 a flight was made round Lake Constance with officials, journalists, and members of the Society for the Exploration of the Arctic by Air, on board. A flight with a full complement of passengers, possibly 100, is understood to be contemplated shortly, to be followed by a series of attempts to establish records.

After that, it is proposed to lead up with flights of increasing duration in the Lake Constance area to a flight across the Atlantic, but this is not to be expected before next year. For this purpose the interior arrangements are being worked out so as to provide a smoking room with a bar, forward, a "passenger deck," with private cabins for eight to 10 persons, and lavatories, kitchen, and store-rooms aft.

The experiments with crude oil aero-engines are, it is reported, being followed with keen interest at the Dornier works at Friedrichshafen in view of the prospect such engines would offer of increasing the radius of the "Do.*x*."

FRENCH AIR LINE REPRESENTATION IN LONDON.

M. P. E. Grosfils, who has for some years been the Manager for Great Britain of the French air transport company *Air Union*, has been appointed General Representative for Great Britain for the *Compagnie Générale Aéropostale*.

His new appointment will in no way interfere with his previous connection with *Air Union*, but will, on the contrary, unite the activities of the two companies whose offices are temporarily in the same building in Haymarket.

Aéropostale will shortly open new offices in the City with a view to a closer collaboration with the postal authorities, banks, transport and shipping companies. Although the *Aéropostale* has no direct lines from London its passenger and freight services—Paris—Bordeaux—Biarritz—Madrid, Marseilles—Algiers, and Marseilles—Barcelona—Casablanca, connect with four regular *Air Union* services from London.

Their most important service is that which operates between France, Africa and South America. And the opening of a branch office in London will, with the aid of the G.P.O., enable them to offer more direct service to users of the air mail from Morocco, French West Africa and South America.

THE DIRECT INDIAN AIR MAIL.

The following notice was issued by the General Post Office on Oct. 9:—

Now that the Direct Indian Air Service has been in operation for 6 months, it may be of interest to give some particulars of the results.

The service by Imperial Airways to India was inaugurated on Mar. 30, 1929, from Croydon, and the first return flight commenced from Karachi on April 7.

The route taken is by air from Croydon via Paris to Bâle, thence by train to Genoa; subsequently the air route followed is Genoa—Athens — Tobruk (Libya) — Alexandria—Gaza—Baghdad—Basrah—Jask (Persia)—Gwadar—Karachi. The eastbound aeroplanes leave Croydon every Saturday morning, and the westbound service starts from Karachi every Sunday morning; the actual time of transit over the whole route is 7½ days.

The service was thrown open at the start for the carriage of the air mails of every country on the actual route; and, after a few weeks' experimental period, it was made available (in June) to the mails of every country in the Postal Union.

Austria, Belgium, Canada, Ceylon, Czecho-Slovakia, Egypt, France, Germany, Greece, Holland, India, Iraq, Irish Free State, Latvia, Palestine, Persia, Sweden and the United States of America, are either using, or have expressed their intention of using the service. The list is not exhaustive.

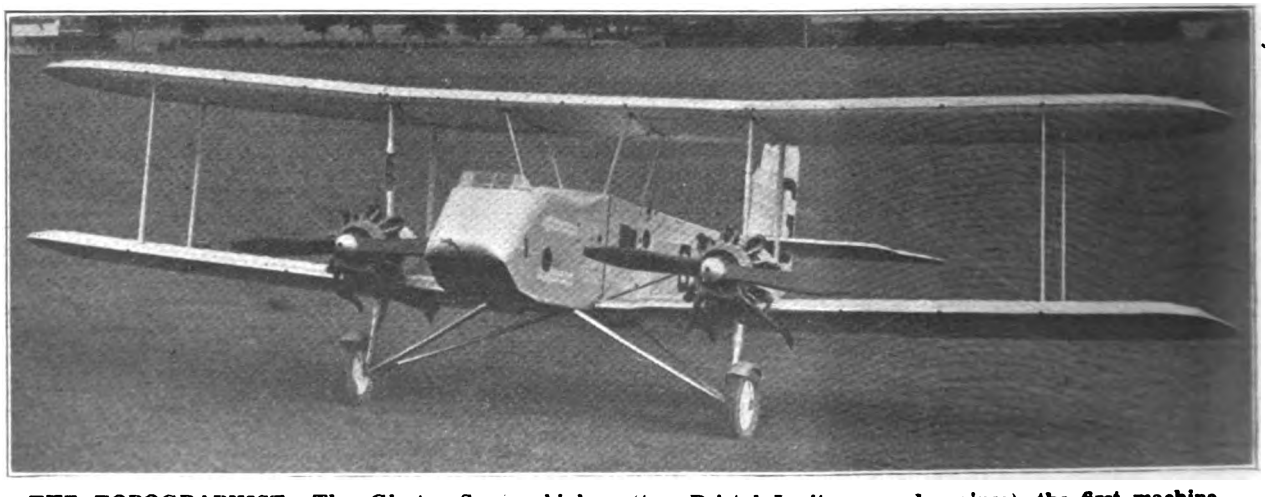
The traffic to and from India has been increasing steadily week by week. From an average of about 300 lbs. in either direction (India only) the average weekly weight is now over 550 lbs., representing nearly 5% of the total letter mail outward, and over 5% inward. (It should be mentioned that the weight of the ordinary mail outward is greater than the inward).

The average weekly weight of the whole mail despatched from London is nearly 750 lbs., and of the mail received about the same or 1,500 lbs. a week in all. This does not include mail loaded at intermediate places of which complete figures are not yet available.

During the first 6 months' working of the service 14,656 lbs. of mail have been carried from London to various destinations, and 17,529 lbs. of mail have reached London; or a total weight in both directions of 32,185 lbs. The corresponding figures for India alone are 11,893 lbs. outward and 11,436 inward.

According to existing information there is no regular long-distance service operated from Europe whose traffic figures can compare with these.

The service has been operated from the start with remarkable regularity. Outward, apart from the tragic Jask disaster, there have only



THE TOPOGRAPHIST.—The Gloster Survey biplane (two Bristol Jupiter geared engines), the first machine to be specially designed and built in this country for air-survey work, to the requirements of The Aircraft Operating Co. Ltd.—(*"Aeroplane" photograph.*)

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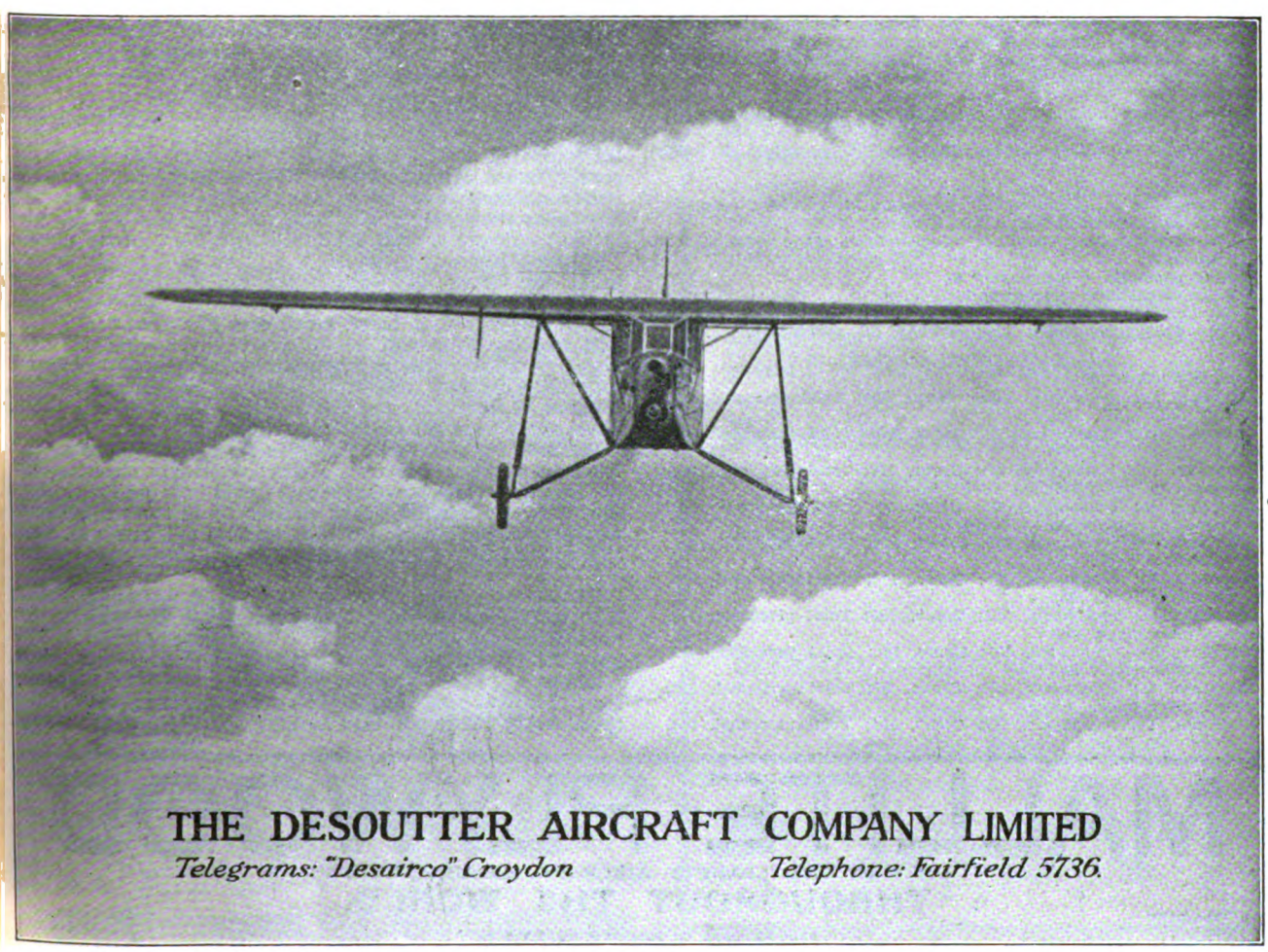

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been two late arrivals in India (owing to floods and to sand-storms respectively) in 26 flights; and homeward there have been three late arrivals (two owing to missing the train connection at Genoa, and one owing to sand-storms).

The normal closing time for the Air Mail to India during the summer flying period was 7 a.m. on Saturdays at the General Post Office, London; but arrangements were introduced in September for a late posting (with special charge) at Charles Street Branch Office, near Charing Cross, up to 9.25 a.m.

As from the 12th Oct. the hour of departure from Croydon will be put back to about 8.30 a.m., owing to the change to Winter time and the need for leaving a wider margin for the journey to Bâle, where the train connection to Genoa must be made. The latest time of posting will therefore be 6 a.m. on Saturdays at the General Post Office, and the late posting at Charles Street will be suspended until the Spring. The latest time of posting in the Provinces varies, but information on the subject can be obtained at local Post Offices.

The fees charged to the public, 6d. to India and Persia, 4½d. to 'Iraq, and 2½d. to Egypt and Palestine, *per half oz.* in each case, are very appreciably lower than the fees charged for comparable services conducted by other countries.

The only serious difficulty which has been experienced is with letters which are despatched by the public with insufficient postage to cover the air fee. The Post Office is not permitted by the International Air Mail Agreement (to which Great Britain is a party), to send by air letters which do not bear the minimum air fee and, even if this were possible, a large number of the letters would inevitably be refused owing to the amount of the surcharge, which averages at least 1s. per letter.

Where the name of the sender is known, effort is made whenever practicable, to inform him of the under-payment of his letter and to give him an opportunity of affixing stamps for the deficiency before the mail leaves. But in many cases the sender is not known or the error is considerable, and there is no course open but to send the letter by ordinary mail with consequent heavy delay.

Most of the errors appear to be due to an impression that a 6d. air fee will cover any weight, instead of being the fee for each ½ oz. The public are therefore asked once more to note, in using the Indian Air Mail, that letters to India must bear stamps to cover the ordinary postage plus the air fee at 6d. per ½ oz. or fraction thereof. The air fee to Egypt and Palestine is 2½d. per ½ oz. plus postage and to 'Iraq and Persia 4½d. per ½ oz. plus postage. Ordinary postage to Egypt, Palestine and India is 1½d. for the first oz. and 1d. for each succeeding oz. To 'Iraq the rate is 2½d. for one oz. and 1½d. for each further oz.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 11; Monday, 25; Tuesday, 26; Wednesday, 29; Thursday, 26; Friday, 23; Saturday, 24.

Imperial Airways Ltd.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 51, passengers 586, freight 22¾ tons. India Route: Inward, passengers 2, mail 697 lbs.; outward, passengers 3, mail 799 lbs.

Air Union:

Paris—London: Machines 48, passengers 264, freight 19½ tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 24, passengers 65, freight 6¾ tons.

Sabena:

Brussels—London: Machines 12, passengers 32, freight 2 tons.

Deutsche Luft Hansa A.G.:

Amsterdam—London: Machines 24, passengers 60, freight 7¾ tons.

Miscellaneous:

British machines 4, passengers 6.

Foreign machines 1, passengers 1.

Total number of trips by British machines, 55, carrying 592 passengers. Foreign machines 109, carrying 422 passengers.

COMPARATIVE FIGURES.

Week ending Oct. 12:

Machines, 164; Passengers, 1,014; Crews, 405; Total personnel, 1,419.

Corresponding week, 1928:

Machines, 123; Passengers, 751; Crews, 242; Total personnel, 993.

Corresponding week, 1927:

Machines, 108; Passengers, 621; Crews, 198; Total personnel, 819.

Corresponding week, 1926:

Machines, 65; Passengers, 262; Crews, 79; Total personnel, 341.

Corresponding week, 1925:

Machines, 96; Passengers, 346; Crews, 122; Total personnel, 468.

Corresponding week, 1924:

Machines, 86; Passengers, 370; Crews, 114; Total personnel, 484.

Corresponding week, 1923:

Machines, 84; Passengers, 232; Crews, 131; Total personnel, 363.

Corresponding week, 1922:

Machines, 89; Passengers, 261; Crews, 151; Total personnel, 412.

Corresponding week, 1921:

Machines, 66; Passengers, 226; Crews, 87; Total personnel, 313.

Corresponding week, 1920:

Machines, 90; Passengers, 160; Crews, 104; Total personnel, 264.

CROYDON NOTES.

The man who went to Cardington and said, "I understand there are a hundred and one reasons against your balloon ever flying," is not expected to recover.

Some departmental humorist, doubtless wishing to make British Air Lines Ltd. seem still more British, has officially christened Captain Corko Lino's new Fokker F.III—G-AARG.

Conversations on the following lines are often to be overheard:—

Corko (*briskly*): "Morning, Gaarge, morning. Pretty fit I hope, eh? Nasty spot of weather this morning, but flyable Gaarge—Oh yes, distinctly flyable."

Gaarge (*without enthusiasm*): "Oi be turrible bad with rheumatics in me centre section this marning, Muster Corko, Sur. Creaks something cruel it does if I attempts to move."

Corko: "Dear, dear, Gaarge, I'm sorry to hear that. There's a little job in Plymouth to-day—"

Gaarge (*bitterly*): "You surely ain't got the 'art to want me to go to a place like Plymouth, Muster Corko, with me rheumatics so bad an all. Leave alone the place is full of them 'orrid sailors wot I 'ates."

Corko (*persuasively*): "They make the gin there, Gaarge."

(Gaarge, unmoved even by gin, refuses to start up and Corko retires behind his gilded cage baffled.)

Passenger traffic has never been so good in October as this year. Imperial Airways have had all the traffic they could handle on the Paris line. Helped by the Motor Show, and Air Union, loads have been much above the average. The Royal Dutch Air Line (K.L.M.) too has maintained a steady passenger traffic which shows no sign of decreasing in spite of the time of the year.

Imperial Airways have had a number of machines standing by for the R.101 flight. Some special planes have been kept in readiness since Thursday last.

There has been a lot of criticism of R.101, by the way, but the critics fail to realise the subtlety of the whole scheme.

What is doubtless intended, is to wait for a steady head wind of about 80 miles an hour and then to gloriously circumnavigate the habitable globe *backwards* at about 30 m.p.h. That will teach America what freak flying records mean. [Really our friend Spry must not be jocose about our only (at the moment) airship. Even though the official humorist has called it G-FAAW it is not a joke.—C. G. G.]

In *The Evening Standard* of Oct. 7 an excellent person wrote an article pleading passionately for brighter flying. He compared commercial aviation unfavourably with water chutes, scenic railways and merry-go-rounds, so far as thrill was concerned, and lamented bitterly that air travellers now miss that feeling of adventure. He does not mention in his catalogue of "all the fun of the fair" those splendid "Haunted Houses" in which the floors sink suddenly from under the victim, the walls heave and shudder, and where hot and cold blasts of air blow from all quarters, whilst things invisible flap, bang, creak and groan.

If *Evening Stan* will let us choose his commercial aeroplane route and weather conditions, we guarantee all the sensations he ever felt at any Fun City, together with a number of new and excruciating ones. Moreover, he shall have paper bags galore *and* a cuspidor.

He talks for some unfathomable reason, of stepping forth from an airplane (*sic*) into a disappointingly cheerless void at Croydon. Now Croydon is *not* a void because it has about four bars and a buffet. But let *Stan* fly in the really bumpy weather we will choose for him, and he will know all about "disappointingly cheerless voids" in his own proper person.

News comes from America that the 32 passenger Fokker F.32 with four 525 h.p. Pratt and Whitney Hornets, has made successful test flights at Teterboro Airport. This machine is said to have a wing span of 99 feet 6 inches, a height of 16 feet 6 inches, and a wing area of 1,350 square feet. Its top speed is reported as nearly 160 m.p.h., cruising speed being 120 m.p.h. and landing speed 60 m.p.h., though

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A limited number of members are now being enrolled at the following rates:— Hanworth Club: Flying Members, 5 gns. entrance fee, and 5 gns. annual subscription; Non-flying members, 3 gns. in each case. Other Clubs: Flying Members, 3 gns. entrance fee, and 3 gns. annual subscription; Non-flying members, 1 gn. in each case. No entrance fee is payable by Serving Officers of H.M. Regular Forces, or Members of the Corps Diplomatique.

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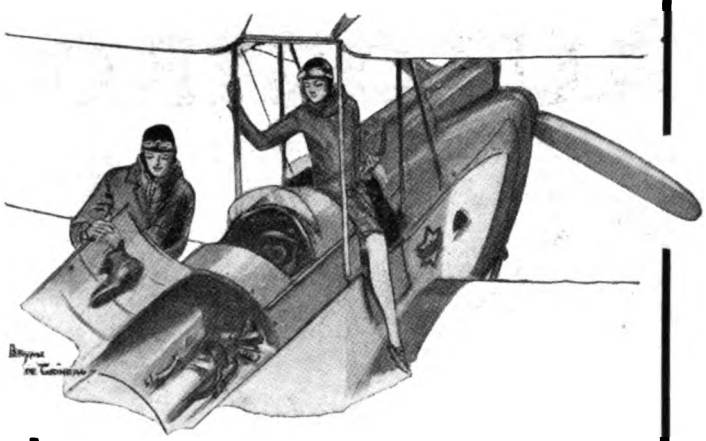

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BRITISH AIRCRAFT IN CANADA.

During July forty-five aircraft certificates of registration were issued in Canada. Of this number twenty-two were for British aircraft, of which thirteen were D.H. Moths and nine were Avro Avians.

THE STRENGTH OF SHAFTS IN VIBRATION.

[*The Strength of Shafts in Vibration.* By J. Morris, B.A., A.F.R.Ae.S. Price 30s. Published by Crosby, Lockwood and Son. Obtainable from The Aeroplane Book Dept., Cannon House, Pilgrim Street, E.C.4.]

This book is just ready and a review will appear in The Aeroplane shortly.

The problem of vibration in light shafts running at high speeds has been coming more and more to the fore. This book has been written with the object of illustrating how rigid dynamics can be usefully and readily applied to various vibration problems in shafts. The applied mathematics used have been reduced to relative simplicity by a judicious choice of notation and the methods of attack adopted.

The book is recommended to the attention of all aeronautical engineers who are looking ahead. This problem of vibration in shafts is bound to be of increasing importance in view of the forthcoming use of shaft-driven pusher airscrews.

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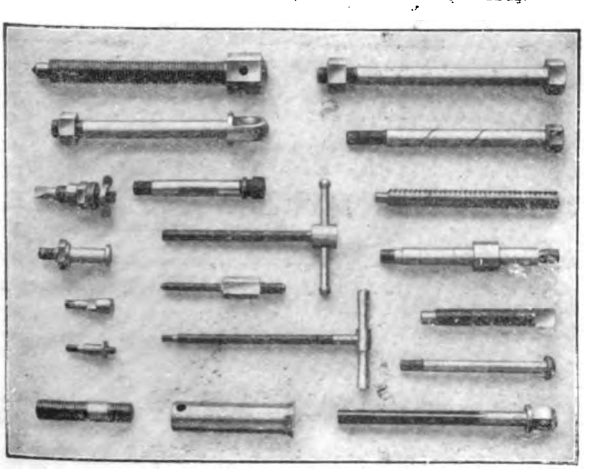

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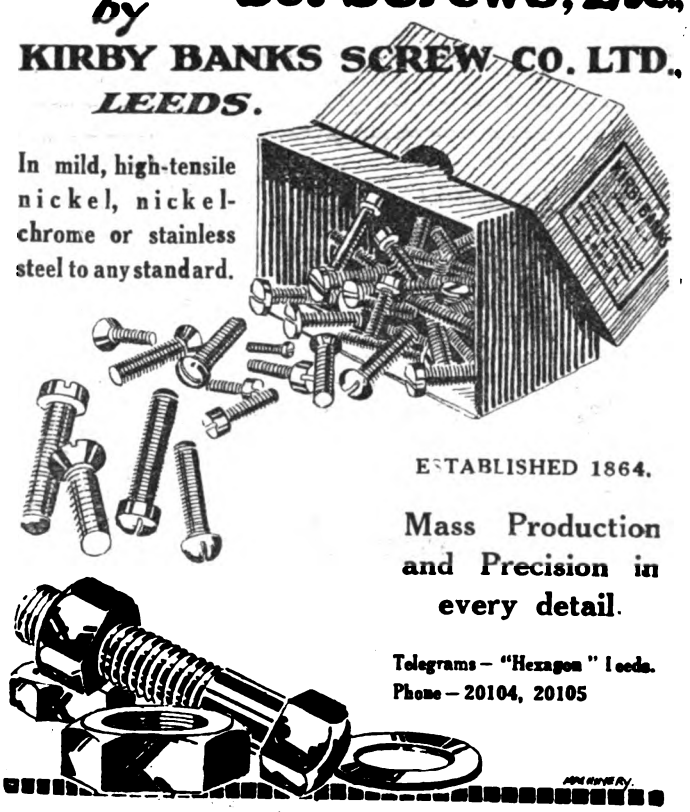

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PERSONAL NOTICES.

Deaths.

CLARKE.—On Oct. 11, at Brough, Yorkshire, as the result of a flying accident, John Clarke, Flying Officer, R.A.F.

John Clarke was born at Dalston, Carlisle, in 1905. He joined the Royal Air Force as an Aircraft Apprentice in 1923 and was trained at the School of Technical Training, Halton. He showed remarkable ability during his training and passed out of Halton with a Cadetship for Cranwell.

At Cranwell he was promoted Flight Cadet Under-Officer, and on passing out was awarded the Sword of Honour as the best all-round Flight Cadet, the R. M. Groves Memorial Prize, which is awarded to the best all round pilot in the Senior term, the Abdy Gerrard Memorial Prize for the Flight Cadet obtaining the highest total marks in Mathematics and Science, and the Air Ministry Prize for Aeronautical Engineering.

He was posted, in December, 1926, to No. 29 (Fighter) Squadron, then at Duxford, and remained with the Squadron when it moved to North Weald. He passed a course of Air Pilotage and Navigation at Calshot in the Spring of 1927 and in the following June was promoted to be Flying Officer.

In May, 1929, he represented his Squadron in the annual race and competition for the Sassoon Trophy and took second place. He started 4 mins. 3 secs. behind the winner and finished only 3 mins. 9 secs. behind him,—thus proving that he was flying a better course.

At the R.A.F. Display in July, 1929, he, with Sjt. Morton, gave a display of advanced aerobatics, these two representatives of the Squadron having been the runners-up in the Aerobatics Competition for Fighter Squadrons.

Only a month ago he was posted to the R.A.F. College, Cranwell, as lecturer on air pilotage, but he was temporarily detached for duty with No. 29 (Fighter) Squadron to take part in the R.A.F. Displays at Newcastle and Hull.

He was leaving the Brough aerodrome to return to Cranwell when the accident occurred in which he lost his life.

He played Rugby Football for the Cadet College at Cranwell and was in the Station team at Duxford which won the R.A.F. Cup in 1928. Last season he played for the R.A.F. in practically every match including those against the other Services.

John Clarke's death is a great loss to the Royal Air Force of which he was a most promising young officer and a brilliant pilot; to the sport of flying as the owner, designer and constructor of a light aeroplane of particularly clean lines and good performance; and to many of us who were his friends.—C. M. McA.

KELLY.—At Netheravon, Wiltshire, on Oct. 10, as the result of a flying accident, L-AC. Thomas White Kelly, R.A.F.

Births.

BILNEY.—At Quetta, on Sept. 23, to Nell, wife of Flt. Lt. C. N. H. Bilney, R.A.F.—a daughter.

BRIDGLAND.—On Sept. 30, at Rimac, Pelham Gardens, Folkestone, to Avril (*née* Courage), wife of Capt. C. A. Bridgland, D.F.C., late The Royal Corps of Signals—twin daughters.

SHERREN.—On Oct. 13, at "Montana," Bath Road, Felixstowe, to Joyce, wife of Sq. Ldr. P. C. Sherren, M.C., R.A.F.—a son.

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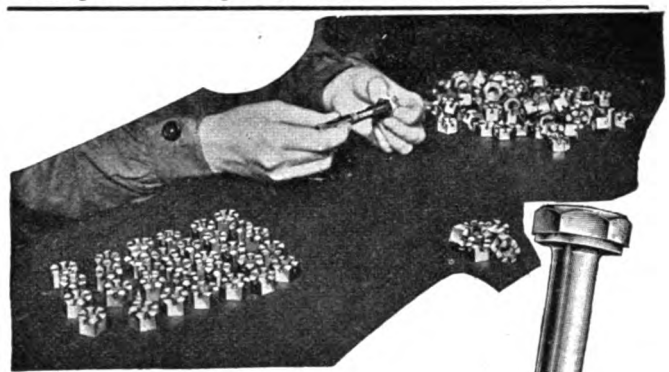

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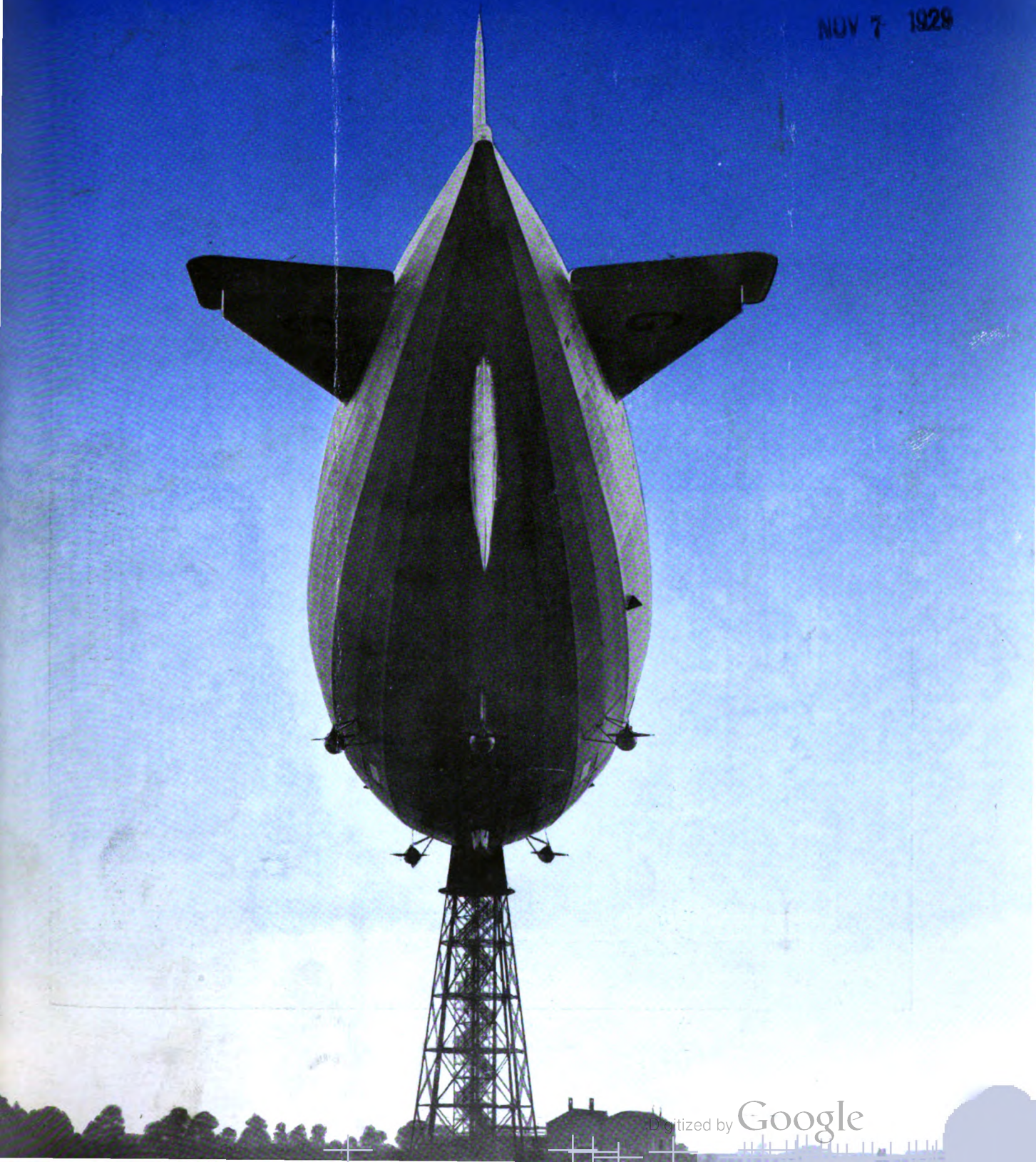

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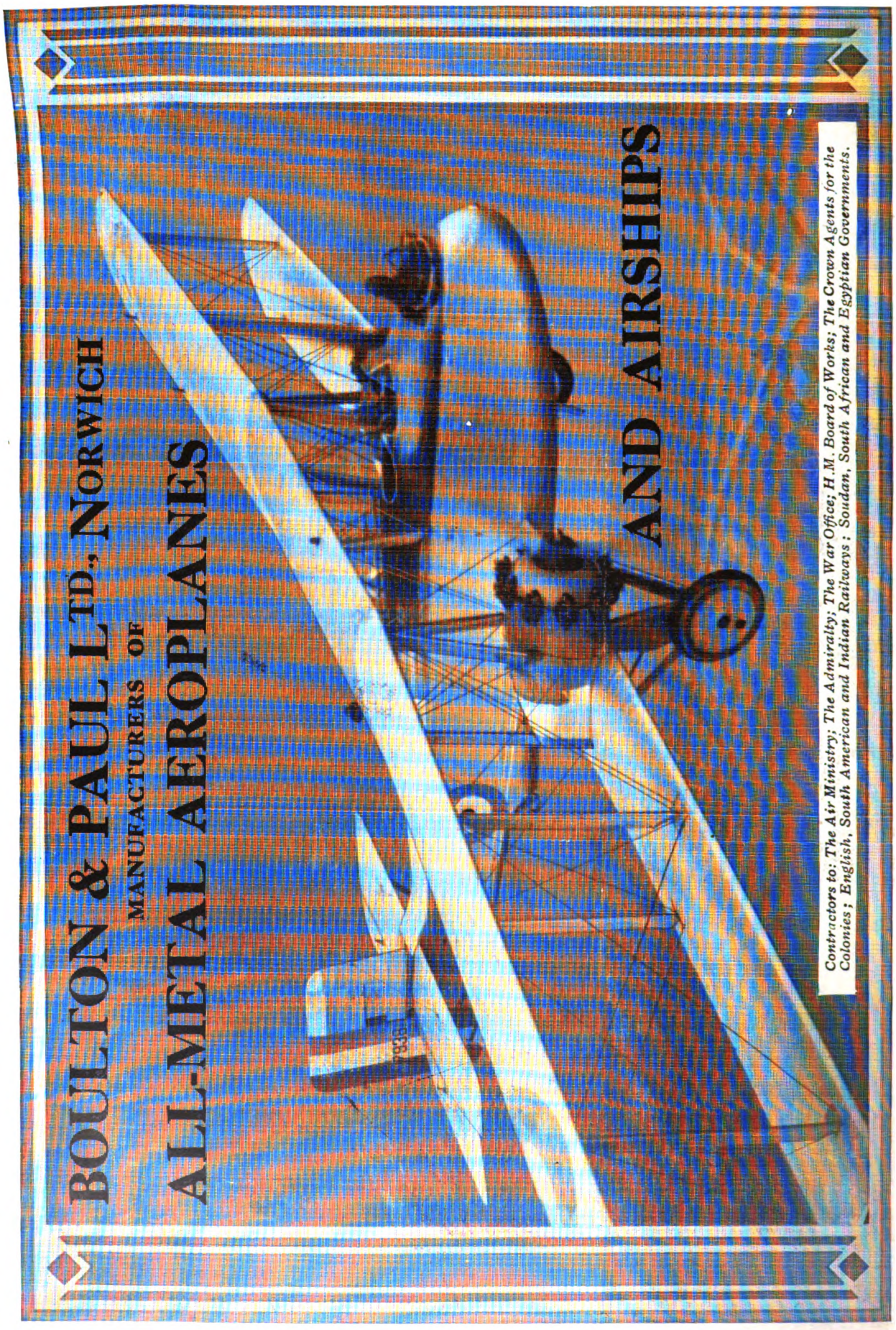

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OCT. 23, 1929.

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ON AIRSHIPS.

When the R.101 came over London recently, probably twenty-five per cent. of the people who saw her said "Ooh-er!" twenty-five per cent. asked "What is the good of the thing?" and the remaining fifty per cent. either accepted it as a natural phenomenon, or simply did not think about it at all. The newspapers thought it was good copy, as there were no popular murders at the moment, but the nonsense which appeared in the papers bore no relation to the feelings of the Great British Public.

When the Chinese Government, in the days when China had a central Government at Pekin, thought they would have an Air Service, they borrowed an officer of the R.A.F. as Aeronautical Adviser. When the first machines arrived, one of them flew over Pekin, and the British officer, who was with a very important Chinese Mandarin, pointed up at it and said "Isn't it wonderful?" and the Mandarin replied unemotionally: "But why? It is *meant* to do that, is it not?"

That is to be highly recommended as the proper mental attitude to adopt towards these airships, about which there has been so much controversy lately. If they perform well, that is what they were meant to do. If they perform badly, then somebody has been stupid, which is equally natural.

If they make long voyages without accident, so much the better—that may be because of good engineering, or it may be because of skilful navigation, or it may just be good luck. If they are wrecked, as seems quite likely, all we can do is to hope that nobody will be hurt.

The great thing to remember is that in discussing airships we must be absolutely fair and impartial. Nobody really knows anything about airships yet. For the matter of that, nobody knows anything about aeroplanes, although quite a lot of them are being used. And airships are necessarily at least fifteen years behind aeroplanes in their development.

The Extremists.

The people who argue that airships are perfectly useless and are a disgraceful waste of the Taxpayers' money are just as much wrong as are the people who say that airships are the only possible solution of the problems of long-distance air transport.

Railways and motor cars both transport passengers and freight, and they both find plenty of work to do. Quite a good argument might be put up for the abolition of railways and for turning the tracks into great motor roads. On the other hand, an equally good argument might be put up for abolishing motor-cars and turning all the roads into electrified light railways.

As between airships and aeroplanes there is practically no fair basis of argument. The first Zeppelin was built somewhere about 1902. The first aeroplane flew in December, 1903, and so they both began about the same time.

Curiously enough, the first balloons were produced very much about the same time when Sir George Cayley was conducting his first experiments with gliders. So, both vehicles have existed for about the same time. But there is one very marked difference between them.

As was remarked in The Aeroplane a great many years ago, comparing the production of airships with the production of aeroplanes is unfair, because airships breed like elephants and aeroplanes breed like rabbits. An absolutely new type of aeroplane can be produced, if the builders really give their mind to it, in anything between six weeks and three months. An airship at best takes a year to build, and if it is going to be altered over and over again while it is being built, as these two ships of ours have been, it will take four or five years.

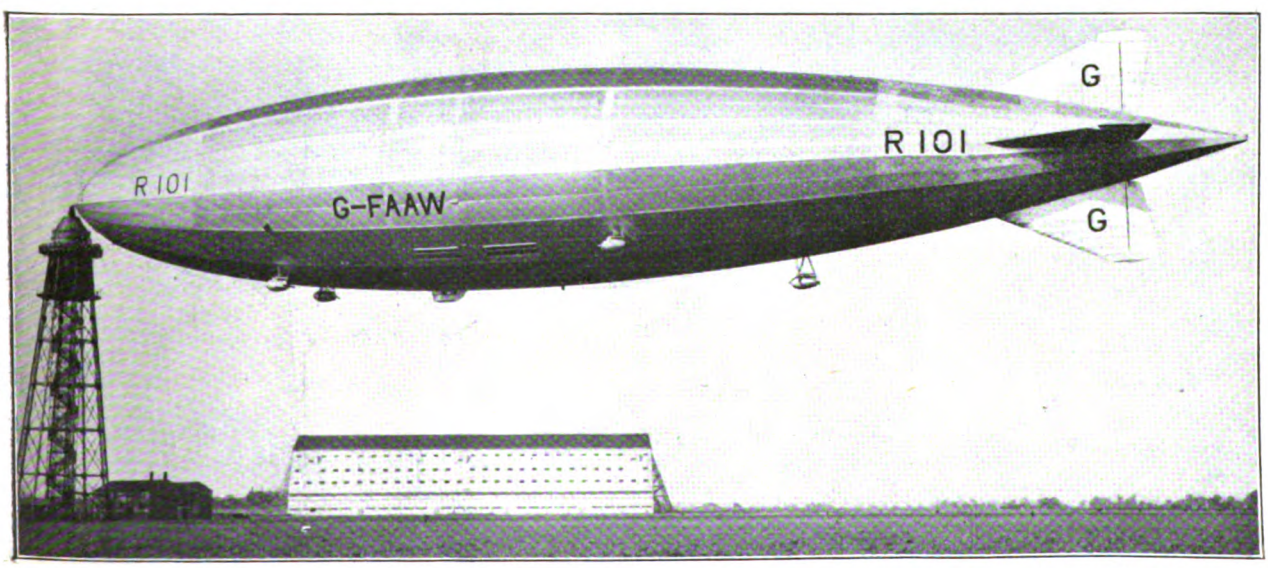
Developments.

Since people began to build aeroplanes which flew properly, which was about 1909, there have been, at quite a moderate estimate, eighty or a hundred generations of aeroplanes of perhaps twenty or thirty entirely different types. Since airships became practical vehicles, in the same year, there certainly have not been more than half-a-dozen distinct generations of airships, and there have only been three or four quite distinct types of them. In fact, one might say that there have only been three types—the non-rigid, the semi-rigid, and the rigid.

We may leave the non-rigid and semi-rigid types out of the argument, as they are not likely to develop much further, except for advertising purposes, or possibly for sport. Of the rigid ships, the Zeppelin of to-day is in its main structural features practically the same as the original

"AND SO I PENNED
"IT DOWN, UNTIL AT LAST IT CAME TO BE
"FOR LENGTH AND BREADTH, THE BIGNESS WHICH YOU SEE."

(*John Bunyan*, 1628-1688, born at Elstow, near Cardington.)



THE DESIGNERS' TRIUMPH.—R.101,—which, Lord Thomson states, has in every way fulfilled the intentions of her designers.

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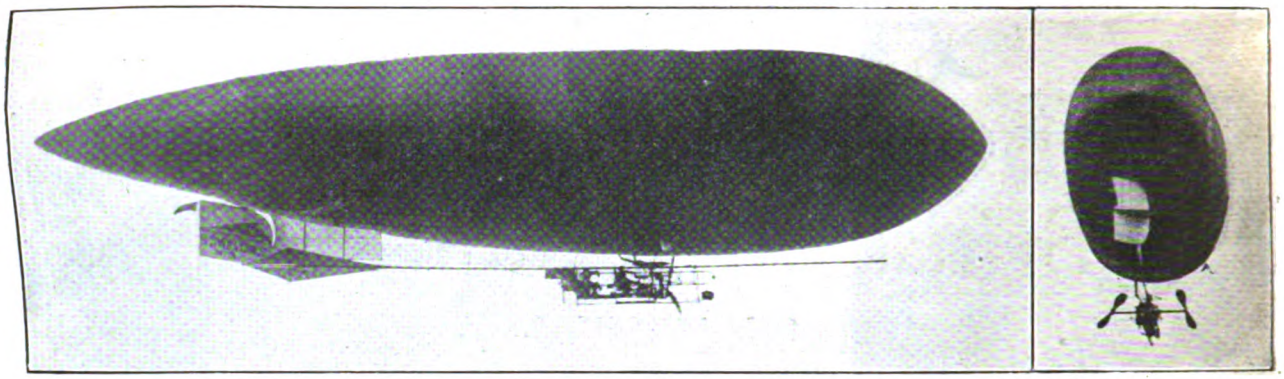


A PIONEER.—The Willows Airship, built by the late E. T. Willows at Cardiff in 1909.

Zeppelins. That is to say, it is built up of aluminium lattice-work, just as they were.

The war-time Zeppelins were all practically of the same type, and only developed in size and shape. Since the War, only two big Zeppelins have been built, the ZR3, which now belongs to the U.S. Navy and is called *The Los Angeles*, and the *Graf Zeppelin*, which has just made those remarkable voyages round the World. Our own war-time rigid airships were frankly copies of Zeppelins and, except in details of control mechanism and engine arrangements, were not original in any way.

The R.100 and the R.101 are definitely steps forward. R.100 is more like a Zeppelin than the R.101, but her main girders embody those ingenious helical tubes designed by Mr. Wallace, and there is a great deal of other original work in the ship. The design of R.101 is still more different from Zeppelin practice, because all the main girder-work which takes important stresses is made of steel, and the Zeppelin type of aluminium girder is only used to keep the outer envelope in shape, and for internal partitions.

Allowance for Experiment.

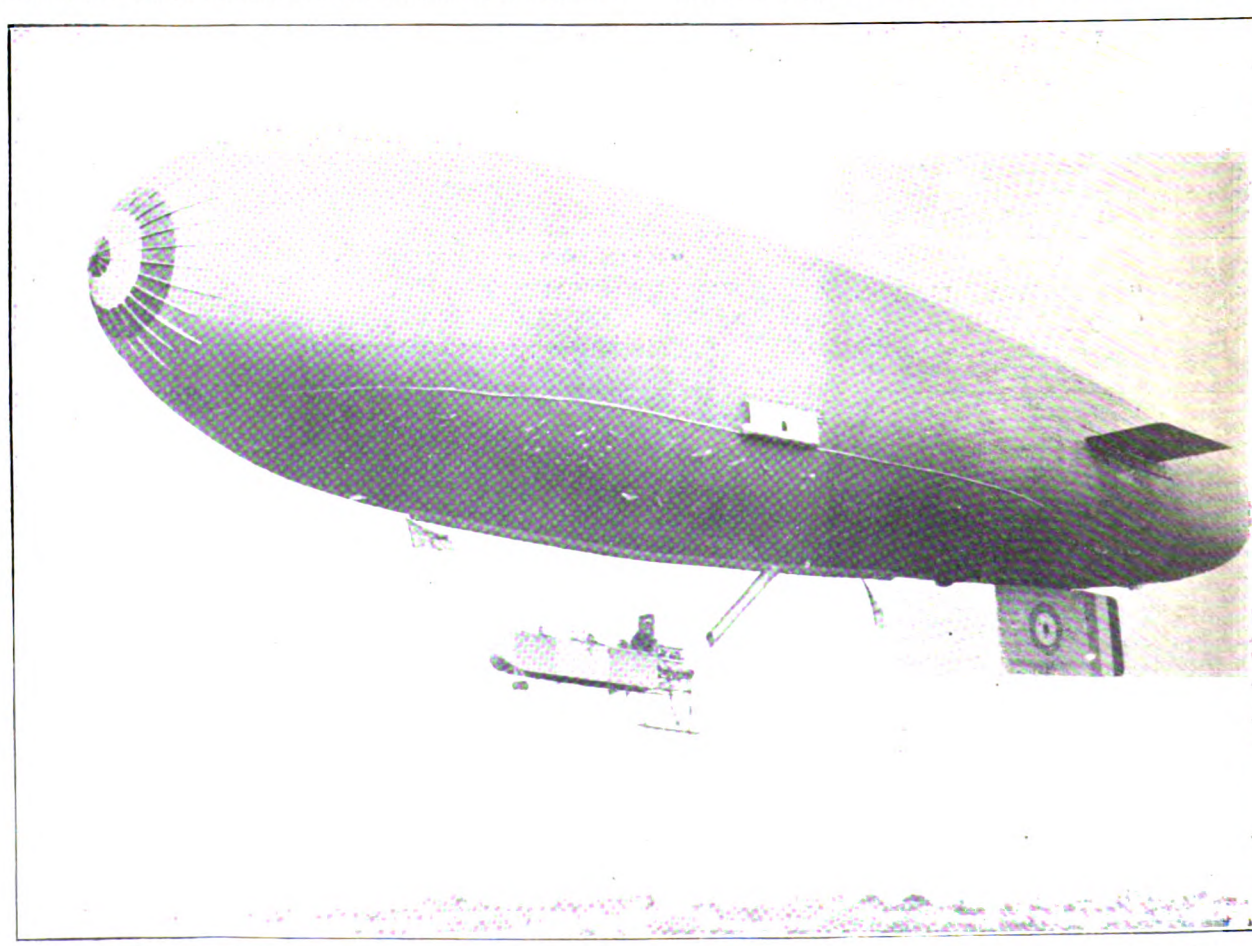
As these two ships both have so many original features, they must both be looked upon as entirely experimental. Consequently, to expect one of them to go to India and back and the other to go to Canada and back is trying them both rather high. If they do the journeys without accident, the designers and the constructors and the crew will deserve full credit for their success. If they are wrecked before they start nobody will have any cause to grumble, because pure experiments must be expected to wreck themselves.

To form some sort of just judgment about these airships we ought to look on them as being about the equivalent in development of the aeroplanes of 1911 which flew in the Circuit of Britain, or at best the equivalent of the aeroplanes of 1912, which flew in the Military Competition on Salisbury Plain and afterwards tried to perform usefully in the Army Manœuvres of the period.

Queer things used to happen to those aeroplanes. They used to get into unexpected spins, and they used to do queer uncontrollable dives, and tails used to break and wings used to come off, merely because we did not know enough about aerodynamics to be able to guard against these troubles. Even to-day, with nearly twenty years' more experience, we still make silly mistakes.

Our scientists publish learned articles on wing-flutter and tail-flutter, and while those articles are still the last word in scientific preaching, sometimes even while they are still in the printer's hands and have not been published, tails flutter off and wings do queer things which compel pilots to alight by parachute and join the Caterpillar Club. So all new types of aeroplanes, and a great many types which are "in production," are still really mere experiments.

For the matter of that, although we have had about



THE MOST SUCCESSFUL BRITISH AIRSHIP.—A War-time "Blimp,"—S.S.8 (Submarine Scout), of the type which did most of the anti-submarine patrols.

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British Air Triumphs

1918 A Napier-engined D.H. aeroplane climbed to a height of 30,500 feet in 66 minutes. At this time no human being had ever soared so high.

1919 A Napier-engined D.H. aeroplane won the Aerial Derby. Speed 129·3 m.p.h.

1921 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 163·4 m.p.h.

1922 A Napier-engined Supermarine flying-boat regained the Schneider Trophy for Great Britain at a speed of 149 m.p.h.

1922 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 180 m.p.h.

1923 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 192·4 m.p.h.

1926 The first non-stop crossing of South Atlantic ocean carried out by Commandante Franco, flying a Dornier flying-boat with two Napier engines.

1926 First formation flight from Cairo to Cape Town and back to England. Four Fairey aircraft, each fitted with Napier engine, covered 56,000 engine miles without trouble.

1927 Schneider Trophy won by a Napier-engined Supermarine-Napier seaplane flown by Flight-Lieut. S. N. Webster, A.F.C. Speed 281·669 m.p.h. Only two machines completed the course, both Supermarine-Napier seaplanes fitted with Napier engines.

1927 World's speed record over 100 kilometres set up by Flight-Lieut. S. N. Webster, A.F.C. Speed 283·313 m.p.h.

1928 Flight-Lieut. D. D'Arcy Greig, D.F.C., A.F.C., flying Supermarine-Napier seaplane, fitted with Napier engine, set up speed of 319·57 m.p.h.

1928 Capt. H. S. Broad, flying D.H. Hound, fitted with Napier engine, secured three World's speed records whilst carrying loads of 500 and 1,000 kilogrammes.

1928 The greatest formation flight ever carried out was made with four Supermarine-Napier Southampton flying-boats, each fitted with two Napier engines. The machines flew from England to Australia, round Australia and back to Singapore, covering 180,800 engine miles without mechanical trouble.

1929 The first non-stop flight from England to India was carried out with a Fairey monoplane fitted with Napier engine. 4,130 miles in 50 hrs. 38 mins.

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thirty years of motor cars, leading manufacturers of automobiles still produce cars with abominable steering, and employ scientists with the highest of brows to investigate mathematically the problems of wheel-wobble, tramping, gold-fishing, and other defects which do not exist in cars designed by men who do not calculate but merely know. That being so, how can we expect anybody to know anything about the aerodynamics of airships or aeroplanes?

Of course, we have quite a number of scientists, with as many academic letters after their names as are needed in describing the awards and decorations of a Field Marshall, who fondly imagine that they know all about the aerodynamic problems of airships. But, like specialists in every other walk of life, their claims to knowledge are very largely bluff. For you can always find two specialists or experts of equal standing, which means equally well advertised, who will contradict one another flatly on any subject under the sun.

Therefore, the only reasonable thing to do is to say that the people who have built these two airships have done their best. Some of them have had quite a good deal of experience of building airships. Some of them have quite a fair stock of common sense. And some of them may have that curious sixth sense, which is a kind of direct inspiration, which allows them to see things and know things without giving reason for the faith which is in them. And between the lot they may have produced ships which will turn out to be a remarkable advance on anything that has been built so far. Let us hope so.

Power-Plant Problems.

If we are going to look on these two ships as transport vehicles in which people are going to voyage round the World for pleasure as soon as they have done some trials in this country, we are merely being foolish. Regarded as completed jobs, each ship has in it a number of silly mistakes, which the designers themselves would freely admit if they saw fit to say exactly what they think.

Consider the engines alone. The R.100 has Rolls-Royce Condors of a type which are now practically obsolete. And, anyhow, the Condor was certainly not the best engine the Rolls-Royce Company have ever built. The new F type and H type Rolls-Royce engines are so far in advance of it that the makers themselves can freely admit the defects of the Condor. And, even admitting that the Condor was a good engine when it was first produced ten years ago, it is obviously out of date.

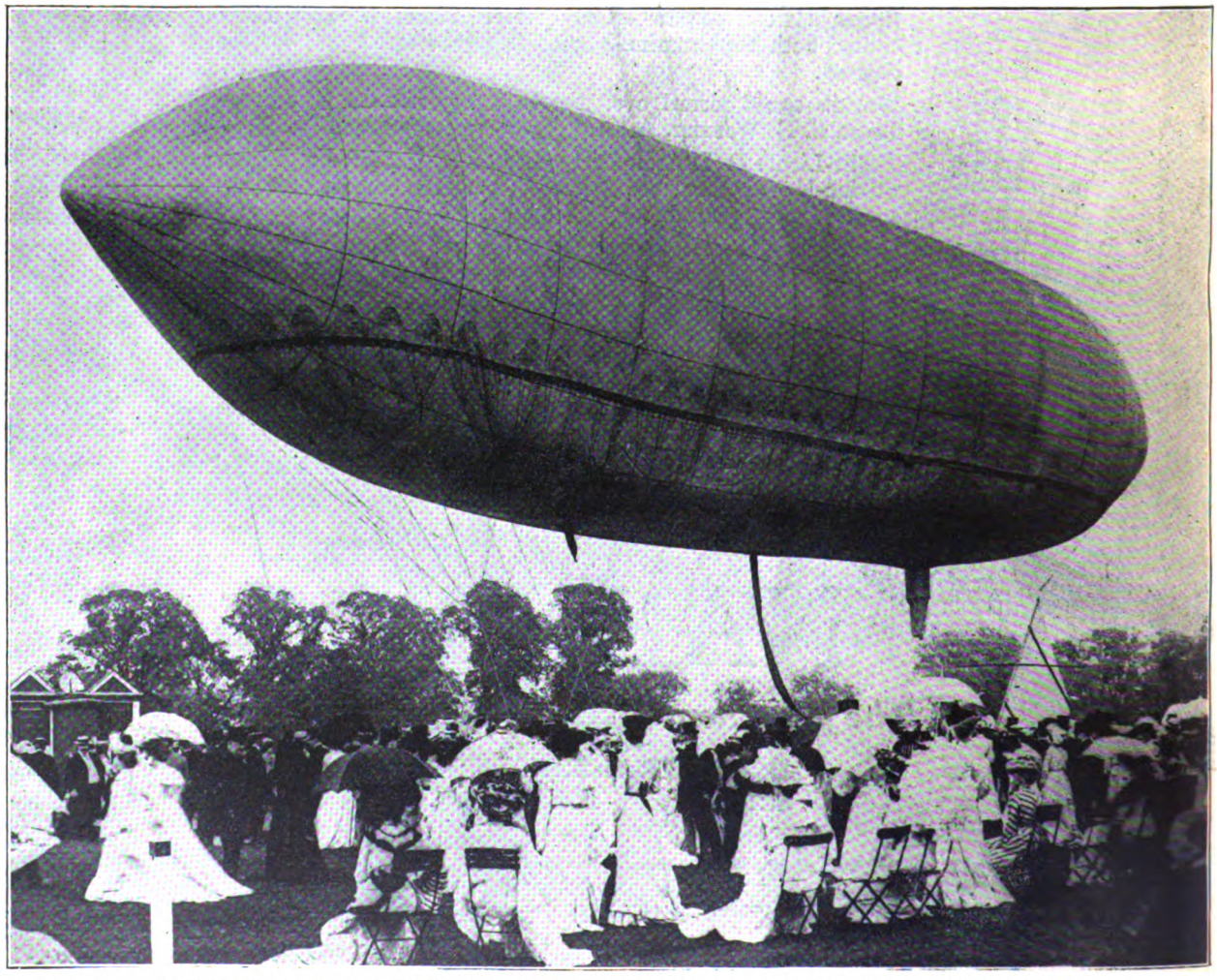
At the other extreme, the engines of the R.101 are purely experimental, and, as such, ought not to be trusted on a long voyage. They seem to have done good bench tests, and they seem to run all right in the ship. But they are still so far from coming up to the designers' expectations of the power which they would give for their weight that the ship is said to be between 20 and 25 tons over her designed weight simply because of the unexpected weight of the engines. And she is very much under her designed power.

That Idle Engine.

Added to this, there is that astonishing business of fitting one engine with an air-screw of reversed pitch—so that when the engine in that car goes ahead the air-screw pushes the ship astern. This means not only that the ship is short of the power of that engine when she is going ahead, but it means that the other engines have got all the work of pushing the whole of that idle power-egg (or gondola or car) through the air as so much useless drag, and the ship has to carry all that useless dead weight, just so that there may be a certain amount of power available to check the forward way of the ship when needed. Why on earth two of the engines were not fitted with ordinary reversing gears is difficult to understand.

To any normal intelligence, the whole idea of fitting entirely experimental engines into an entirely experimental ship was just about as silly a scheme as could be imagined. It is as bad as putting an untried engine of a new type into an aeroplane of an entirely novel type, and then expecting people to judge either the engine or the aeroplane on its merits, or to excuse the failure of either because of the novelty of both.

Considering that the whole ship is an experiment, the obviously sensible thing to have done would have been to fit her with engines whose power, weight, fuel-consumption and everything else were known to a nicety. Then the people who were running the ship could have got an exact



AN EARLY BRITISH EFFORT.—The Spencer Airship at Hurlingham in 1908 or 1909.

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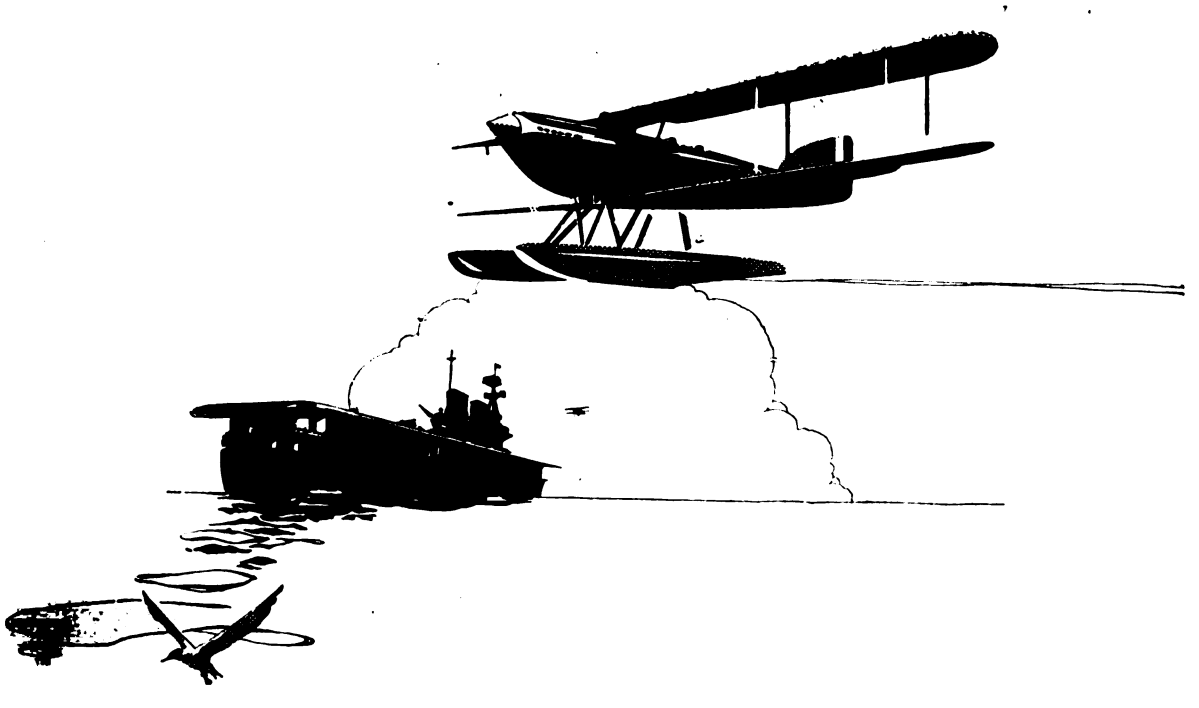

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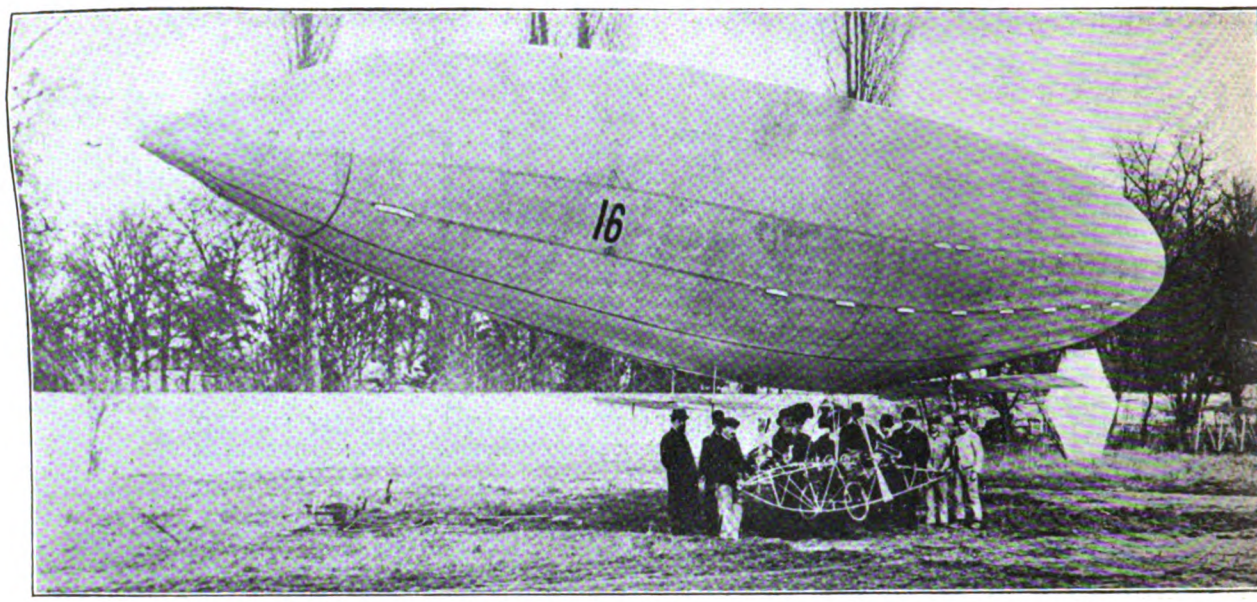

A FRENCH PIONEER.—The Santos Dumont Airship, the first which flew round the Eiffel Tower.

measure of the efficiency of the ship. Having discovered that much, they might then have fitted a couple of experimental Diesel engines just to find out what difference they made in the performance.

Naturally, the idea of using heavy-oil engines of the compression-ignition type is good. No stronger argument for the development of the compression-ignition engine have been published than those which have appeared in THE AEROPLANE. But to go and put into an experimental airship in which the interest of the whole world is centred engines which weigh 7lbs. per h.p. when the ship might have had engines which weighed less than 2lbs. per h.p. is merely silly.

THE TEST-BENCH IDEA.

If we are going to regard the whole ship purely as a sort of flying experimental-shop, well and good. But, if so, the Air Ministry ought to make quite clear to the Press the fact that no sort of a performance is expected from R.101, and that she will probably be wrecked in the course of the next few months either because her engines break down and she alights out of control, or because, owing to her being 25 tons over weight, she cannot carry enough ballast to save herself in a forced descent.

To let people think that she is going to take a hundred passengers to India in a month's time, or in three months, or six months, is simply humbugging the public—and ultimately the effect will be to make the Air Ministry look foolish.

In a letter to *The Times*, published on October 19, Mr. Alan Chorlton, who has been largely responsible for the Beardmore heavy-oil engine, says that the country ought to be proud of the achievments of R.101 already. One would like to ask Mr. Chorlton, why? He himself may well be proud of having produced a heavy-oil engine which runs—for one knows something of the difficulties he has had to overcome. But the country ought to be ashamed of putting such a contraption as R.101 into the air in this year of grace.

So far the ship has done nothing startling, and beyond the fact that the oil engines have run for a few hours without breaking down, and have managed to get the ship back to the mooring mast two or three times, they have done nothing beyond prove the fact that, as Mr. Wardrop said in the Kipling story, they turn round and they don't hit anything.

Until these engines have actually done something which could not have been done by any other engine, such, for example, as a long voyage on small fuel consumption, one

A FRENCH PIONEER.—The Lebaudy Airship (La République) of 1909, which burst and killed her crew.

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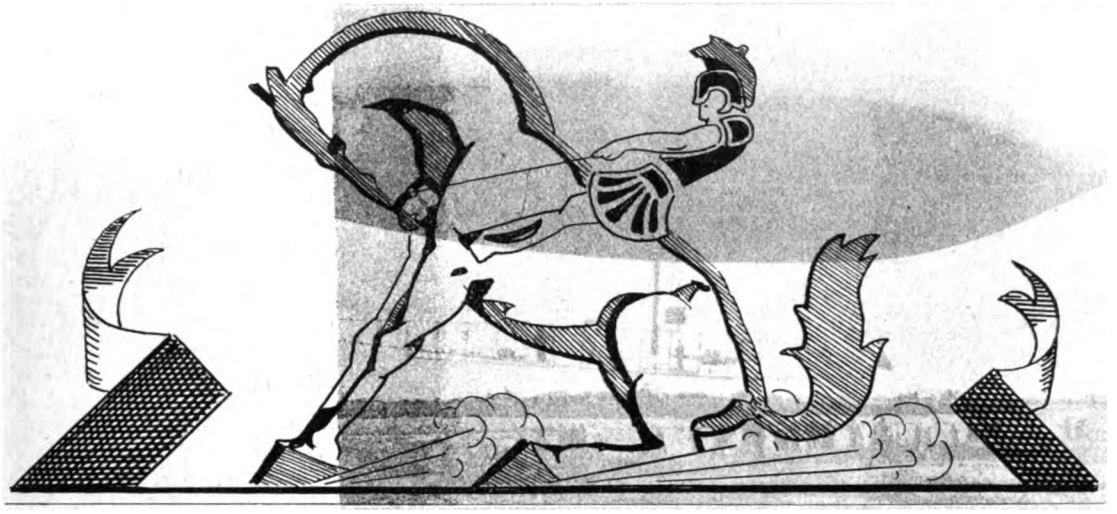

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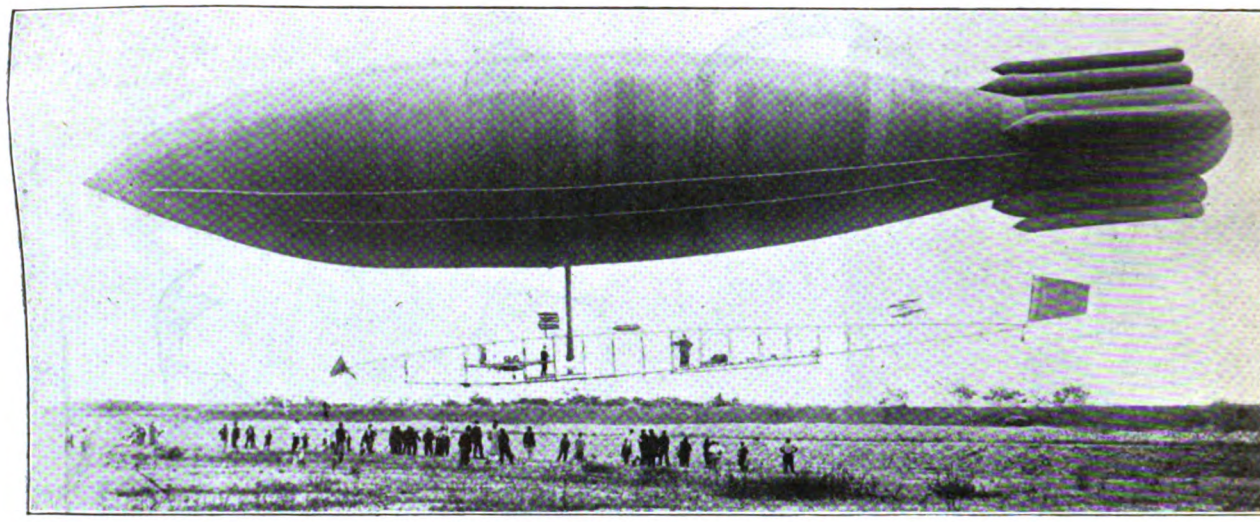


A FRENCH PIONEER.—The Clement-Bayard Airship of 1910.

cannot see why Mr. Chorlton should claim the congratulations of the nation.

Nobody is criticising his engines. Those of us who know anything about engines have a perfectly open mind about them. During the War Mr. Chorlton made some very good rotary engines to French designs, and quite possibly he may make some very good compression-ignition engines to British designs. But before hailing him as a national benefactor, we should all like to see those engines do something. And we should not be fair to the engines themselves if we expected them to put up a marvellous performance either in an experimental ship or while they are themselves experiments.

When Mr. Chorlton has produced his compression-ignition engines which, as he is fully confident, "will weigh only half the weight of those now in use," then his engines will deserve to be considered seriously. And if he can get them down to 2lbs. per h.p., he will certainly deserve public congratulations.

The Air-Shippers.

Meantime, those who are responsible for R.100 and R.101 deserve to be regarded as honest, straightforward experimenters to whom all of us should wish success. They may well achieve success ten or fifteen or twenty years hence, when they have had time to build a few more generations of airships. And we should all do our best to see that these experiments are kept going.

A lot of nonsense is being talked about the cost of these ships. Some papers have said that they cost a million pounds a-piece. Some papers have said that they cost two million pounds a-piece.

As a matter of fact, the Air Estimates show that the total amount spent on R.100 up to March 31, 1929, was £270,000, and that the total amount spent on R.101 (including all the overhead charges of the establishment at Cardington) amounted to £474,000.

To this latter sum, however, must be added £53,000 for the power plant. This last sum seems a good deal to pay for engines at 7lbs. per h.p.—though admittedly the Air Ministry is getting quite a lot of metal for its money.

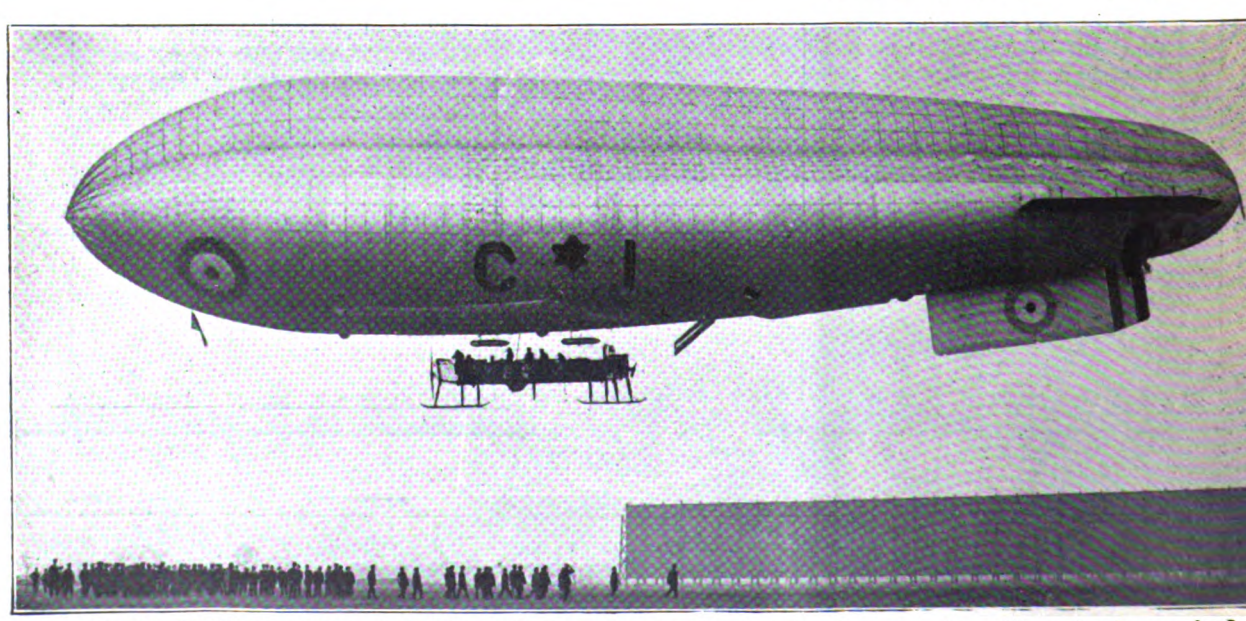
When you divide this up among the five years in which the ships have been abuilding, you see that the British Empire has not been over-straining its financial resources in its effort to gain what may be very valuable knowledge. When you consider that the Royal Aircraft Establishment at Farnborough has been costing us £400,000 a year for about ten years, and still has not discovered how to make a compression-ignition engine, or how to stop wings or tails from fluttering off, or how to judge what kind of fuselage best fits certain types of wings, and has not induced the Trade to fit such obvious things as tail-wheels and brakes to aeroplanes—all of which means that we are not really any wiser for the four million pounds spent at Farnborough—nobody has any right to grumble at three-quarters of a million or so spent on experimental work on airships which may be extremely useful as transport vehicles ten or twenty years hence.

That Unfortunate Contour.

The worst trouble about airships is that so many people find difficulty in taking them seriously. One has always sympathised so deeply with that inhabitant of Yarmouth during the War 1914-18 who was prosecuted for pointing at an airship, while he was in a public place, and remarking: "There goes the Pulham Pig!"

"SOME THINGS ARE OF THAT NATURE AS TO MAKE "ONE'S FANCY CHUCKLE, WHILE HIS HEART DOTH ACHE."

(John Bunyan,—of Cardington.)



A USEFUL BRITISH SHIP.—A C-Star, built under Astra-Torres (French) patents, with a tandem-engined nacelle built by Mr. Gordon England at Sage's of Peterborough and designed by A. V. Roe and Co. Ltd.

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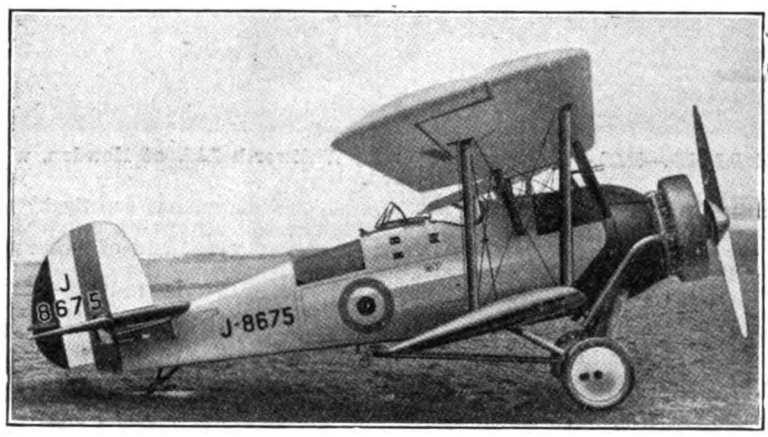

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" " 10000 ft	134 m.p.h	140 m.p.h.
" " 15000 ft.	125 m.p.h.	131 m.p.h.
" " 1000 metres	226 km.p.h.	236 km.p.h
" " 3000 metres	216 km.p.h.	225 km.p.h.
" " 5000 metres	193 km.p.h.	204 km.p.h.

	Plain Engine.	Geared Engine.
Time to 5000 ft.	5.25 minutes	4.25 minutes
" " 10000 ft.	12.5 "	10.5 "
" " 15000 ft.	26 "	21.75 "
" " 1000 mtrs.	3.5 "	2.5 "
" " 3000 "	12.5 "	10.25 "
" " 5000 "	34 "	27.5 "
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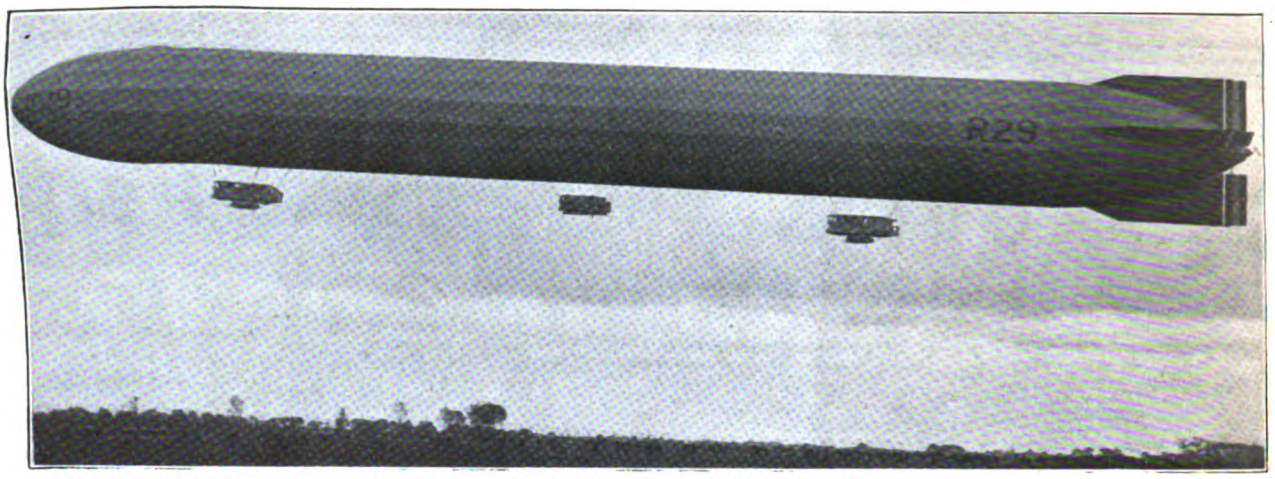


AN EARLY BRITISH RIGID.—R.29,—built by Armstrong Whitworth Ltd. at Howden, where R.100 is being finished.

He was prosecuted under the Defence of the Realm Act for "Indicating the Destination or Station of Origin of one of His Majesty's Airships." Or something equally felonious. But one cannot help feeling that he was really prosecuted for insulting a ship of His Majesty's Navy—as the airships were in those days.

And yet, with the exception of those who are awed by sheer size, nobody can help being reminded of a performing elephant or a performing pig when he sees an airship cavorting about the skies. And one has never yet met a War-pilot of aeroplanes who did not feel, when called upon to attack an airship, that it was rather a shame to go and blow up such a poor helpless silly thing.

The time may come when war pilots will regard airships with more respect. The Air Staff is thinking quite seriously of the possibilities of big airships as aircraft-carriers, from which aeroplanes will be dropped, as a kind of counter to the seagoing aircraft-carriers from which, with luck, aeroplanes are launched or catapulted.

Also, the time may quite well come when we shall habitually make the longer journeys from England to Australia, or from England to New York, by the Grand Circle Route in an airship, leaving the aeroplane lines to run local traffic along the normal routes by land, or coastwise.

The Law of Speed.

But there is one fact which is worth considering in this connection. There seems to be a kind of natural law that the speed of the fastest practical aeroplane is always just about twice the speed of the fastest airship. Which means that on a given air-route, aeroplanes flying by day only can cover the same distance in a given number of days that an airship would cover flying steadily by day and night.

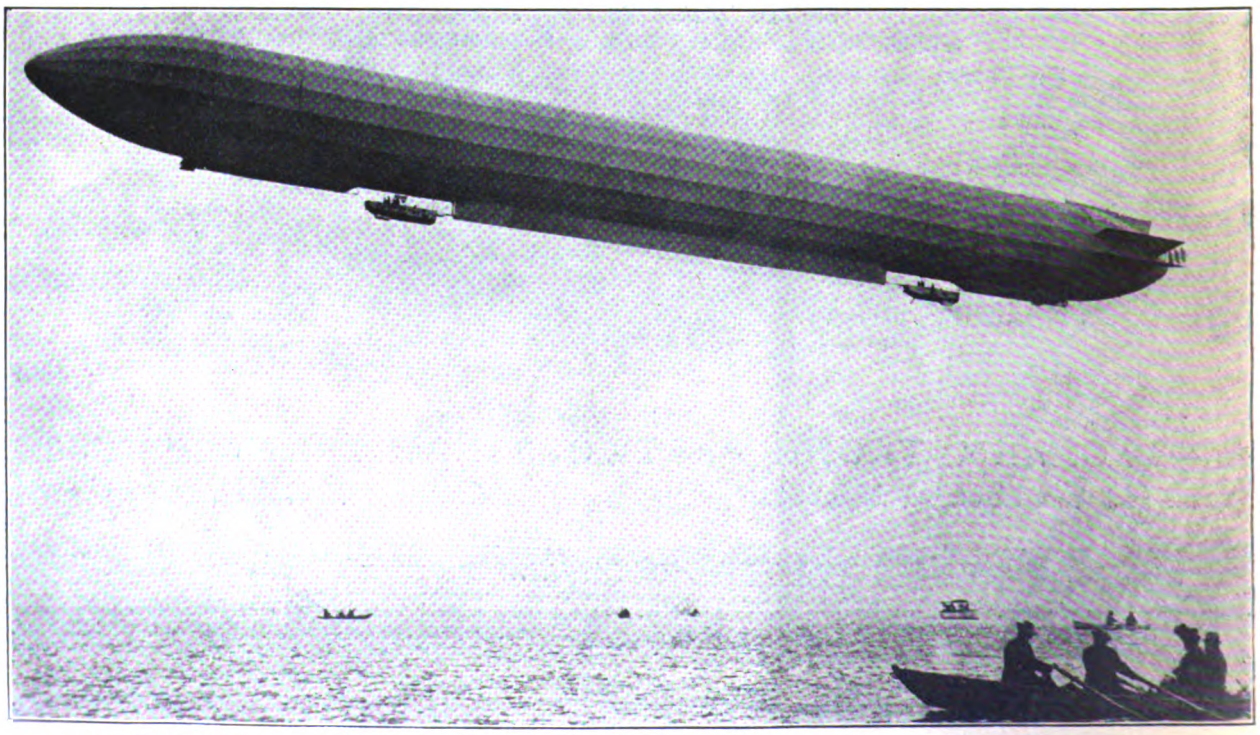
Therefore, when at last we have properly lighted air routes, and aeroplanes can fly by night as well as day, the aeroplane will always have a pull over the airship in the transport of mails, and of passengers who are really in a hurry.

When airships are fully developed, and when one can travel in them with as much confidence as we do in aeroplanes to-day, there will no doubt be quite a number of passengers who will prefer the peace and quiet of a voyage by airship to the inevitable racket of an aeroplane, and its constant frequent landings. But many years must pass before airships reach even that degree of safety.

The partisans of airships always rather spoil their case by claiming too much for their pet vehicle. Even to-day a good many aeronautical enthusiasts make claims for safety of transport by aeroplanes which certainly do not tally with the facts.

Only a few days ago at one of the many recent public functions, somebody who ought to have known much better said that air transport to-day is as safe as railway transport. That is sheer nonsense. The railways in the London area alone put up more passenger-miles per day than all the commercial aircraft in the World put up in a year. And quite often several days pass without anybody being killed on the railways in that area.

Quite possibly the time may come when airships will be safer than aeroplanes because they will not be compelled to alight when a few engines quit working. But if we are going to look sanely at the development of airships, we must be careful to regard R.100 and R.101 purely as experiments, and when they do wreck themselves, instead of bursting into floods of reproach or expressing bitter disappointment, we must simply hope that the people who are in the ship have learned something which will help towards preventing their next effort from wrecking itself.



THE GREAT GERMAN PIONEER.—The Zeppelin Airship of 1908-09 over Lake Constance.

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A GREAT TEST FOR THE GEARED JAGUAR

54,000 miles in 21 weeks, 4,000 full throttle take-offs, 40,000 air passengers, and 562 hours without complete overhaul, by the GEARED JAGUAR fitted in Sir Alan Cobham's D.H. Giant Moth "Youth of Britain."

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The proper spirit is that shown by Mr. Koolhoven, when he built the World's first commercial aeroplane, the F.K.27, in 1919. One pointed out that by putting his passengers in front and perching his pilot up at the back, if there were a crash the pilot would be the sole survivor. "Then," said Mr. Koolhoven, "I shall get an intelligent explanation of why the accident happened."

The best way to make use of the £780,000 or so which has been spent on these ships in the last five years is to work them to death and find out what is going to break. But, as soon as ever they are both out of their sheds, work ought to begin on a couple of new ships, the designs of which could be based on all the lessons which the designers of both ships have learned in the past five years.

In fact, if we went about the job properly, we should start a couple of new ships every two years, so that in them could be embodied improvements based on what has been learned from the ships which would be already in the air, and those which were in process of building. Such a programme would only cost us just about the same amount of money that the Royal Aircraft Establishment at Farnborough costs us to-day, and the money would be well spent.—C. G. G.

THE GRAF ZEPPELIN.

The *Graf Zeppelin* left Friedrichshafen on the evening of Oct. 15 for a tour of the Balkans. The airship returned to its shed on the evening of Oct. 17 after a flight of 49 hrs. 20 min. During the trip the airship passed over Belgrade and Vienna.

THE SECOND TEST FLIGHT OF THE R.101.

The R.101 made her second flight on Oct. 18 when the Secretary of State for Air, Lord Thomson, was a passenger. The ship left Cardington at 08.00 hrs. and, besides Lord Thomson and his private secretary, Major Ll. Bullock, there were on board Mr. L. G. S. Reynolds (Air Ministry), Sq. Ldr. R. B. B. Colmore, Lt. Col. V. C. Richmond, Wing Cmdr. Cave-Browne-Cave, Sq. Ldr. Rope and Lt. Cmdr. Pressey, who is an officer of the R.C.A.F. With four other ranks this last-named officer is over here to learn mooring-mast routine, so that he may receive R.100 at the Montreal Mast, if and when called upon so to do.

During her cruise the ship passed over Northampton, Rugby, Coventry, Birmingham, Nottingham, Derby, Leicester and thence back to Cardington, which was reached at 14.15 hrs.

There was some delay in getting the ship down to the mast. This appears to have been due to the unsettled state of the air currents round the mast and to the fact that the mooring cable and the two side guys became entangled on being dropped from the ship. But most of the delay was caused by the skipper experimenting with the controls before mooring.

So far the controls have been manually operated as there has been no need to bring the servo-motor into action.

Mooring Out.

Oct. 20 was a day of heavy rainstorms and high winds which at times reached a velocity of 48 m.p.h. in the vicinity of the mooring mast at Cardington. The airship rode steadily at the mast-head through all these climatic disturbances.

Lord Thomson, Secretary of State for Air, opening a bazaar at Dewsbury on Oct. 19, said,

People are always asking me to give a name to R.101. I hope it will make its reputation with that name. If I know anything about the loyal crew who man it, it is that they would like to stick to "R.101."

BACK TO THE SHACK.

The Air Ministry issued the following announcement on Oct. 21:—

R.101 was moved from the mooring tower to the shed this evening shortly after 8 o'clock, as the meteorological conditions this afternoon indicated the possibility of strong, gusty winds to-morrow, and it was desired to complete as soon as possible certain work on the airship principally on the starting engines, in preparation for her full speed and other trials which have not yet been carried out.

[R.100 is alleged to be ready for her trials but as there is no mast at Howden she will have to fly straight to Cardington and be moored to the mast there. Presumably this impending arrival may have influenced the decision to re-shed the R.101 while the weather was sufficiently good for the operation.—Ed.]

THE ALL-METAL AIRSHIP.

As was recorded in The Aeroplane recently the ZMC-2 metal-clad airship built for the Navy by the Aircraft Development Corporation of Detroit has been duly delivered at the Lakehurst Naval Air Station.

According to the *American Metal Market* of Sept. 17, 1929, information made available by the Navy Department, U.S.A., states that the general theory of the metal-clad airship has been mathematically and experimentally proved, and the metal construction proves to be superior in every respect to fabric construction, whether the ships are filled with non-inflammable helium or with the more buoyant hydrogen. It has been determined that all-metal construction makes possible an actual reduction in weight compared with fabric construction, owing to the fact that the shell or hull-plating of the metal airship itself carries the tensile and shear stresses, and also reduces the amount of framing necessary.

The claim is made that in most practical sizes the metal-clad ship can be made approximately twice as strong as, and at the same time somewhat lighter than, the fabric-covered ship.

Increased safety and more positive control are said to be afforded by the range of safe internal pressure. The same ends are also served by the fact that the strong and stiff metal covering will not have a tendency to tear. There will be no soaking of rain water, and the highly conductant surface is favourable for the equalisation of temperature in the air.

These improvements mean that it can be handled in the air by half the usual crew for a ship of its size, and at the same time is under much better control. The ship is practically fireproof, and, in addition to its direct fire resistance properties, the metal cover makes the ship entirely immune from ordinary static discharges, and is practically lightning proof.

AIRSHIP DEVELOPMENT.

Things in the lighter-than-air trade seem to be looking up somewhat. Besides the R.100 and R.101, the Airship Development Co. Ltd. have turned out their little airship at Cramlington, and if they can run it cheaply enough they certainly ought to be able to get quite a handsome income from letting advertisement space on the envelope. They hope to have a second ship of similar type out before very long. Mr. R. F. Dagnall, of the R.F.D. Co. of Guildford, who is at present about the only manufacturer of lighter-than-air components in this country, says that he is building a second envelope for the Airship Development Co., and has just finished some kite balloons for the Air Ministry. Also, he is at work on three nurse balloons for the kite balloons.

AN HISTORIC INCIDENT.—An illicit photograph, taken by an enthusiastic amateur, of R.33 returning to Pulham after her famous breakaway from her mast. She was blown by a gale across the North Sea and over Holland. Thence, as the wind dropped, her commanding officer, Flt. Lt. Booth, drove her skilfully and carefully home,—conserving petrol and in continual danger of the broken nose crumpling back and wrecking the whole ship.—The emotion of the photographer accounts for "This Cock-eyed World."

NEXT WEEK—THE AIR PARK ISSUE.

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FROM THE COMMERCIAL STANDPOINT THE "Bristol" JUPITER IS THE ULTIMATE AND THE WISEST CHOICE.

One of the most important matters for consideration when determining the aircraft suitable for commercial purposes is that of the power unit to be installed. The conditions of service, such as range of flight, climate, and the load to be carried are a few of the points that bear directly upon this decision—but at all times the reliability of the engine is of the utmost importance. General running costs and questions of maintenance cannot be isolated from the initial expenditure. The experience and records of existing airlines and other concerns operating aircraft must obviously be noted, and from such experience a ready choice may be made. The "Bristol" Jupiter is manufactured in a range designed to satisfy the most exacting circumstances. The Jupiter engine is in use on all the principal air lines in Europe and is used over four-fifths of the longest air line in the world.

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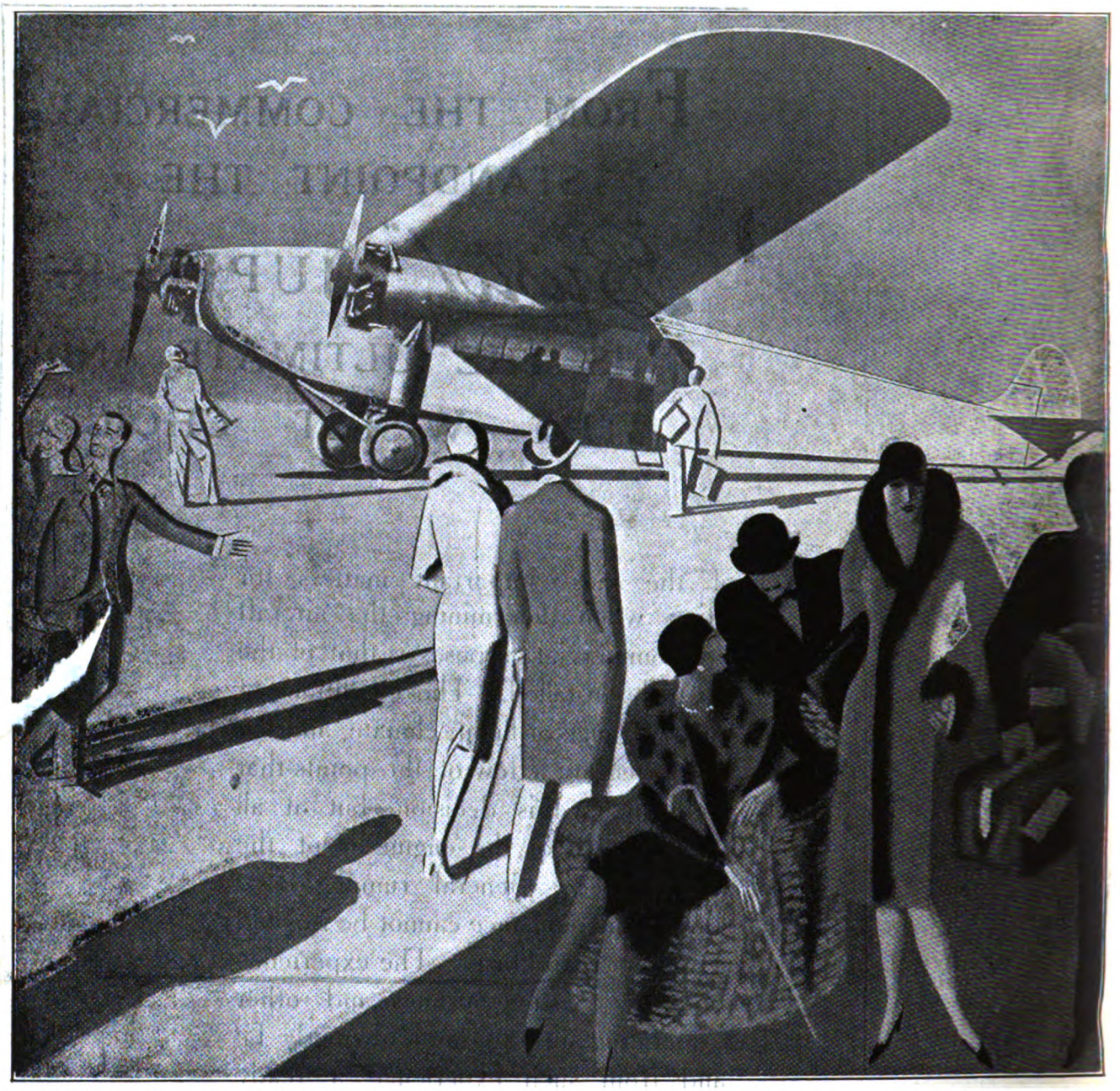

THE PULLMAN OF THE SKIES

The Avro 10 is the British version of the Fokker F7-3M. It embodies all that is excellent in modern air travel, comfort, speed and great reliability under all climatic conditions. It is equipped with three 230 h.p. Armstrong-Siddeley engines and the whole machine is British built to the Air Ministry's standard of airworthiness. This type is used by the Dutch, Swiss, Italian and Canadian air lines and has recently been selected for passenger and freight service by Australian National Airways Ltd., who have ordered four Avro 10's for passenger and freight traffic on their Brisbane to Sidney route.

AVRO·10

Cruising speed 100 m.p.h. Range from 400 miles upwards.
Payload up to 2000 lbs.

Specifications and full particulars both of the above plane and of the Avro 5 (seating pilot and four passengers) will be supplied on application. Those interested should write also for special catalogue of the famous "Avian" light aeroplane.

A. V. ROE & CO. LTD., 166 PICCADILLY, LONDON, W. 1. *Works:* MANCHESTER AND HAMBLE, SOUTHAMPTON

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SPREADING THE GOSPEL.

On Oct. 21 the Aviation Group of the Forum Club, the famous club for women in Grosvenor Place, held its Inaugural Dinner. The Honourable Lady Bailey, President of the Group, was in the Chair.

Opening the proceedings after dinner Lady Bailey said that there were 116 members of the Group, which had been formed to help the general interest in aviation. Lord Thomson's presence was a great encouragement to them, and they were also glad to welcome Sq. Ldr. Orlebar, Sq. Ldr. Jones Williams, Mr. and Mrs. Bentley and Mr. Barnard. Referring to Mr. and Mrs. Bentley, Lady Bailey remarked that they were "continually flying backwards." She was obviously going to say "backwards-and-forwards to the Cape," but everybody laughed so much that she had to explain that she did not really mean that they flew backwards as a habit.

LORD THOMSON, Secretary of State for Air, said that Lady Bailey herself was one of our greatest aviators, and remarked that her last flight had ended upside down in Germany. Fortunately for her a six-foot German arrived promptly and lifted the machine up so that Lady Bailey was able to climb down him. After which she was escorted to the local Burgomaster who took her name and address and allowed her to go home.

His own recent experiences in the air were in a branch of aeronautics which was not represented on the Club's Committee. He warned the heavier-than-air people that if present experiments with airships were half as successful as they promised to be we were going to see a form of travel with which no other could compare.

In the R.101 one travelled in a spacious saloon with a complete feeling of detachment and a sense of security and aloofness. One could work and smoke, and one was not conscious of any motion. And yet one felt air-borne in a curious way. One had no sense of speed. Things merely receded at between 40 and 70 miles an hour. Counties slipped by.

In the big cities, during the maiden voyage of R.101, those on board saw lines of people and cars standing still watching the ship. It was an experience like nothing else.

Admittedly the R.101 was an experiment. For five years the best brains available had been meditating on this problem. If they had merely wanted to imitate they could have had four or six ships two years ago. Actually no ship had been built expressly for passenger traffic until the *Graf Zeppelin*. In the war-machines built previously performance only had been considered.

In our new ships, R.100 and R.101, safety was the first consideration. Hence they were using heavy oil in R.101. Much had been sacrificed to the experiment, especially weight and load. R.101 was not the fastest ship, but she was the safest and the strongest. She was something in the nature of a portent.

He paid a high tribute to Dr. Eckener and his voyage round the World, but he said that the *Graf Zeppelin* could not be used in the Tropics because of the danger of the effect of the heat on petrol. [Here one begs to disagree. During the War a Zeppelin flew from Bulgaria over Khartum across the Equator to German East Africa with medical supplies to General Lettow von Vorbeck, and returned, without coming down low, because the captain received a wireless signal from Bulgaria saying that the German Forces in East Africa had already surrendered. And that ship got safely home.—C. G. G.]

Continuing, Lord Thomson said that he could foresee masts all over the World, at Australia and at India (where there is one already), at South Africa and at Canada (where there is one already). Airships, he said, would not be tied to rigid routes. One could imagine oneself travelling from Delhi to Chicago and thence to Melbourne. [Here at any rate is one who could not, especially remembering the dictum of Mr. Will Rogers, that the chief beauty of the American trans-Continental air-line was that one could go past Chicago without going into it.—C. G. G.]

Lord Thomson said that we were now experimenting with a form of travel which was of incalculable importance to the Empire. He had had the luck to persuade the Chancellor of the Exchequer five years ago to invest money in airships and he was sure that that money was not wasted.

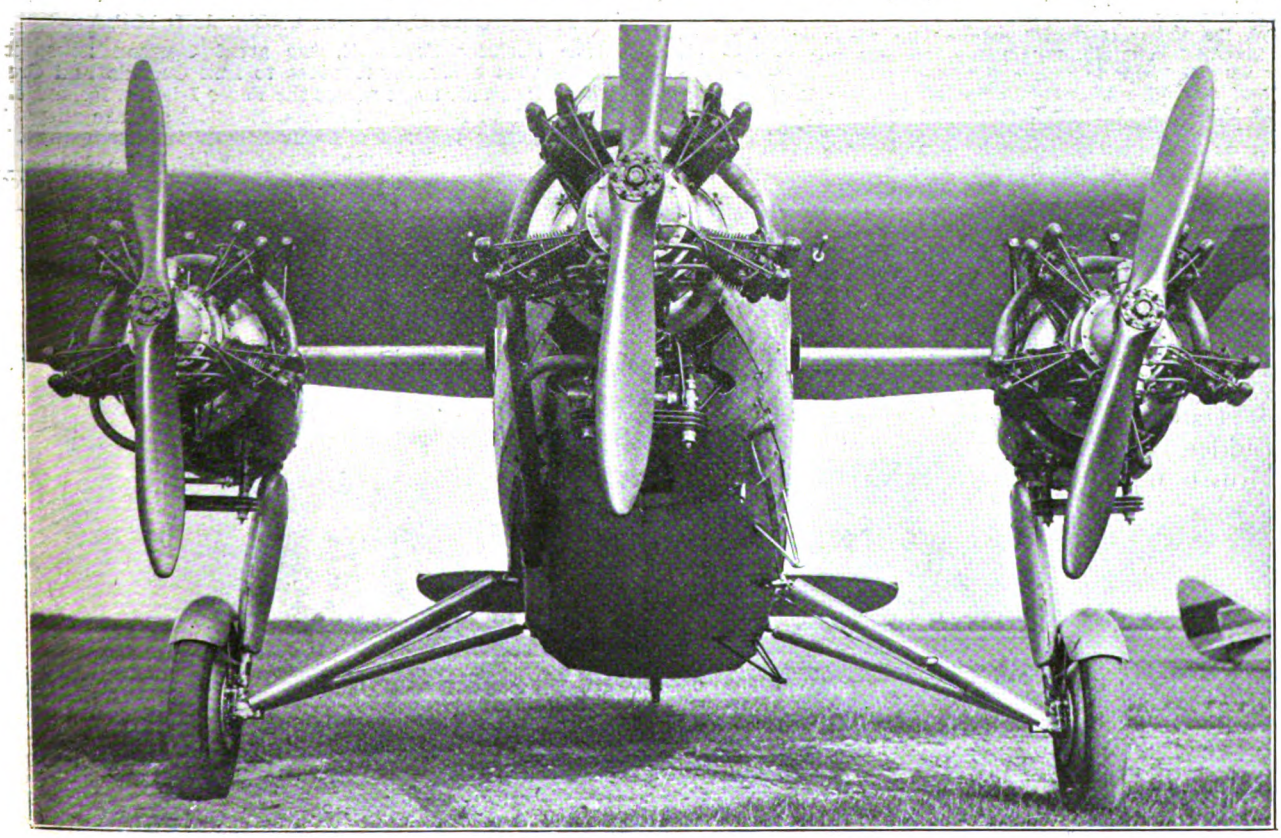
Referring to R.101 he said how much he had been struck by the quiet but intense enthusiasm of the crew. As for the ship itself, all the designer's calculations had been justified. He reminded us that all ships had to "find" themselves, whether airships or sea ships. A member of the crew of the R.101, formerly a sailor-man, had said to him that there were some ships that you loved from the start and some you could care for, but they all loved R.101. Lord Thomson said that the most over-taxed of us would not grudge money for these ships.

R.101 was now back in her shed for modifications. She had not shown any serious defects. He reminded us that the *Mauretania* made several trips across the Atlantic before her designers discovered screws which fitted her. [Lord Thomson might also have reminded us that if the critics of the first great steamship, *The Great Eastern*, had been believed, we should never have had any *Mauretania* or any of our other great liners.] He had been thinking of offering a free flight to the critics of R.101, but he had come to the conclusion that the critical faculty was not to be encouraged. He hoped that next year the Forum Club would elect a lighter-than-air member to the Committee.

SQ. LDR. A. H. ORLEBAR, A.F.C., who was called upon to speak, said modestly that he thought he had been an extraordinarily lucky person this year. As he had been asked to express an opinion he said that he thought that aeroplanes were not so much of an experiment as airships, and that high-speed flying felt merely like flying. The pilot could not look down out of those high-speed machines so he got little impression of speed. The only novel impression was that approaching land seemed to loom up a bit quickly. But one soon got used to that.

Referring to the Schneider Trophy victory he said that we were frightfully lucky to have calm water and we were lucky in the wonderful design of our machines and engines. If the Friday or Saturday had been a bad day the great crowds would have got a very bad impression of aviation.

He told quite a delightful story of a little boy who on the Sunday after the Schneider Contest went to a Children's Service at Alverstoke. When he came back he was asked what he thought of it. He said that it was "not much fun, because the parson never once went into the cockpit."



A BRITISH TRI-MOTOR.—The three Genet-Major engines of the new Avro Five, built for Wilson Air Lines Ltd., of Nairobi, at Heston Air Park.—(*"Aeroplane" photograph.*)

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In conclusion Sq. Ldr. Orlebar said how encouraging it was to hear the leader of our national air sense, Lord Thomson, when referring to mooring masts for airships, talk about masts *at* Australia, not merely at Perth or at Sydney or *in* Australia. It gave one the idea of the immensity of the scope of air transport.

Flt. Lt. R. R. Bentley, M.C., A.F.C., said that his last flight from Africa in a Moth was actually be his last, because, having seen the Schneider machines since then, he was convinced that he must really have been flying backwards. He said that his wife had made the journey with him twice (a remark which deservedly drew considerable applause). He said that Africa had a magic of its own and that the African route was definitely fascinating and that he felt honoured that he had had the opportunity of blazing that trail. (Mr. Bentley evidently agrees with Mr. Kipling on the subject of the magic of Africa.—C. G. G.)

Mr. C. D. Barnard said that he was ashamed to talk about flying to India in front of Sq. Ldr. Jones Williams, but he understood that that officer was adamant on the subject of making a speech. His own flight to India and back had been quite easy, though he admitted that when airships were safe they might be preferable to taking off and landing a heavily loaded aeroplane. He said that he was now trying to persuade the Duchess of Bedford to fly to the Cape and back in fourteen days.

Apropos nothing in particular, he told a story which was certainly new to the present writer. A certain man had gone joy-riding at Margate with a pilot who was feeling somewhat elated. After looping low down over the town and performing a variety of stunts the pilot climbed up high, shut off his engine and remarked to the passenger "Fifty per cent. of the people down there thought that we were going to crash." To which the passenger replied "And so did fifty per cent. of the people up here."

The Honourable Mrs. Forbes-Sempill, proposing the Guests, said that she was specially privileged to welcome Lord Thomson, who after all his experiences in the air now seemed to aspire to be an intrepid mountaineer and conquer Snowden. She said that she was glad to pay a tribute to those in the Service who had done so much for aviation.

Lieut.-Colonel N. G. Thwaites, C.B.E., M.V.O., M.C., Secretary of the Air League, complimented the Aviation Group of the Forum Club on their success and loyally acknowledged that his former chief General Groves had originated the idea of forming the Group. He reminded us how much women had had to do with the development of aviation, and remarked that he could not recall that women had had anything to do with the development of sea transport, with perhaps the exception of Grace Darling. Nor could he remember that women had much to do with the development of motoring. [Here Col. Thwaites is wrong. Miss Dorothy Levitt was one of the finest drivers on the road when there certainly were not more than a dozen first-class racing drivers in this country. Apart from that, woman, rather than any particular women, has been the making of motoring. As soon as any man acquired a motor vehicle of any kind he becomes fair game for a designing female.—C. G. G.]

Unfortunately lack of space forbids reporting the rest of Col. Thwaites' speech, which was quite one of the wittiest that one has heard for a very long time, but had surprisingly little to do with aviation. As Col. Thwaites failed to get into Parliament as a Conservative one strongly recommends Lord Thomson to enrol him as a Labour member.

Col. the Master of Sempill proposed the health of the President of the Aviation Group, Lady Bailey. He said that as a pilot she was unrivalled even in such a gathering. But he reminded us that without Miss Alice Williams who was the mainstay of the whole Club there would have been no Club to form the Group.

Lady Bailey having suitably acknowledged the compliment the party broke up and talked aviation till midnight. One hopes that they will spread abroad all that they heard.—C. G. G.

A JUNKERS IN ABYSSINIA.

A Junkers W33 (of the same type as the *Bremen*) with a Junkers L5 engine recently arrived in the Abyssinian capital, Addis Ababa, when it was greeted with much enthusiasm.

The Junkers press notice which conveyed this information states that "King Ras Taffari cabled his joy and satisfaction to Professor Junkers"!

A NEW POWER IN AVIATION.

Statements have appeared in various papers that Sir Henry Segrave has resigned his connection with the Red Triangle Cement group, and has accepted a seat on the board of a big financial group in the City of London which is concerning itself with aviation.

The Aeroplane is happily able to confirm this statement on the authority of Sir Henry Segrave himself.

Unfortunately, at the moment a disclosure of the composition of this particular group is not advisable. But one can say that this combination is the biggest thing that has ever happened in British Aviation.

Knowing something of the financial interests concerned, one can almost agree with a remark made about the same group some few weeks ago to the effect that they could buy up the whole of the British Aircraft Industry without worrying themselves. But one can assure the British Aircraft Industry that the said group is not the least likely to do any such thing. It is much more likely to develop along its own lines. And quite a high proportion of the Aircraft Industry will probably feel the cold unless they wake up and make what the market wants.

The enlistment of Sir Henry Segrave as technical adviser is one of the wisest things that this group could have done. People are apt to forget that although Sir Henry made his name among the newspaper-reading public of the World as a driver of high-speed motor-cars, and was deservedly knighted for upholding the prestige of Great Britain as he did, he is primarily an aviator.

He did between 1,200 and 1,500 hours' flying during the War and was one of the finest single-seat pilots in the R.F.C. and R.A.F. Towards the end of the War he was badly crashed and lost about half of one leg, with the result that, though he can drive a car, and can still fly well, he cannot do anything athletic. After recovering from his crash he went to America on a special mission for the Air Ministry, which had then only just come into being, and there proved that he possessed the qualities of a diplomat as well as being a fine pilot.

Although he went into the motor business to make a living after the War he has never lost his interest in flying, and has always kept his ideas thoroughly modernised. Consequently, though there are a good many people in the Aircraft Industry who do not know Sir Henry Segrave personally, there are very few people in the Aircraft Industry about whom Sir Henry Segrave does not know a good deal.

His return to an active part in British Aviation, together with the power of the money which can be used by the group with which he is connected, is one of the healthiest happenings to British Aviation for a very long time.—C. G. G.

THROUGH THE SNOW AND ICE.

The *Berliner Tageblatt*, the great German newspaper, alleges that a scheme is afoot to link Canada and Great Britain by an air route across the Faroe Islands, Iceland, and Greenland, to Northern Canada. Negotiations are alleged to be proceeding between a Canadian air line company and Imperial Airways Ltd., represented by Sir Eric Geddes.

The scheme is stated to comprise air bases in the Faroes and Iceland with emergency depots along the southern shore of Greenland.

Trans-Arctic routes have certainly many advantages and offer the shortest Great Circle routes between a number of places as well as providing short hops instead of colossal leaps across the wastes of the Atlantic.

—The Avro Five (pilot and four passengers) with three Genet-Major engines,—and s,—flying at Heston Air Park. —("Aeroplane" photograph.)

A BRITISH TRI-MOTOR.
wheel-brake

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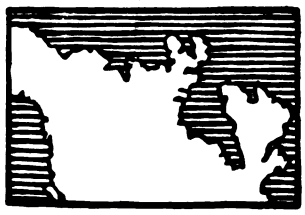
AIR FORCES *of the* WORLD *choose* MOTH *for Training*

GREAT BRITAIN
Royal Air Force

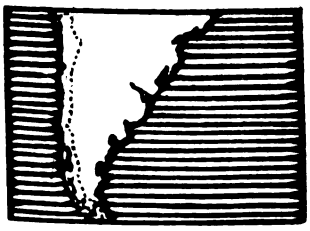


CANADA
The Royal Canadian Air Force

AUSTRALIA
The Royal Australian Air Force

NEW ZEALAND
The New Zealand Ministry of Defence

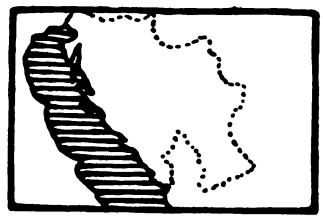
IRELAND
The Irish Free State Army Air Corps



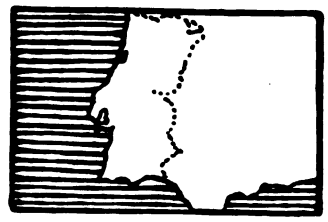
CHILE
Chilean Military Air Force

GREECE
The Greek Naval Air Service

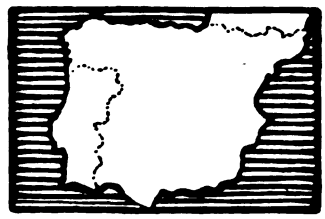
DENMARK
The Danish Royal Air Force and Naval Air Service



JUGO-SLAVIA
The Jugo-Slavian Ministry of War



PORTUGAL
The Portuguese Naval Air Service



SPAIN
The Royal Spanish Air Force

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LODGE PLUGS LIMITED RECEIVED 10 SEP 1929 RUGBY

Messrs. Lodge Plugs Ltd.,
Rugby.

Dear Sirs:

We wish to congratulate you on the success of your plugs fitted to the Rolls-Royce engines in Supermarine S.6 in the Schneider Trophy Race, and also to the machine which holds the world's record for speed.

Lodge plugs were used in both Schneider Trophy machines with our engines.

Our decision to use Lodge plugs was only arrived at after exhaustive tests at Derby; and during the actual Race and on all the practice flights we had no troubles.

We thank you for the assistance you gave us.

Yours faithfully,

For ROLLS-ROYCE LIMITED

Managing Director.

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THE ROYAL AIR FORCE.

The London Gazette.

October 15.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—Air Commodore W. G. S. Mitchell, C.B.E., D.S.O., M.C., A.F.C., is appointed Director of Training, Air Ministry (Oct. 4).

D. H. F. Barnett is granted a perm. comn. as a Plt. Off. with effect from Oct. 5, and with seniority of Oct. 5, 1928; Flt. Lt. J. C. E. A. Johnson is granted a perm. comn. in this rank (Oct. 1).

Major V. M. Kenny-Leveck, M.B.E. (R.A.R.O.) is granted a S.S. comn. as a Flt. Lt. (Hon. Sq. Ldr.) for three years on the active list (Sept. 30); C. I. Sempill, M.M., is granted a S.S. comn. as a Flg. Off. for three years on the active list (Sept. 30).

The following Lieutenants are granted temp. comns. as Flg. Offs. on being seconded for duty with the R.A.F. (Oct. 1):—A. O. Simpson (R.A.); E. O. Wanliss (E. Lancs. Regt.); E. A. Airy (The Buffs).

The following are re-attached to the R.A.F. as Flg. Offs. with seniority of June 16, 1924:—Lt.-Cdr. I. R. Grant, R.N. (Sept. 29); Lt. H. Ditton, R.N. (Oct. 7).

Flg. Off. A. R. Perry is placed on the retired list on account of ill-health (July 6); Capt. J. M. Fuller, R.M., Flg. Off., R.A.F., ceases to be attached to the R.A.F. on return to naval duty (Oct. 12); the S.S. comn. of Plt. Off. on probation A. R. MacKewn is terminated on cessation of duty (Oct. 16).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—H. G. Watkins is granted a comn. in Class A.A. (ii) as a Plt. Off. on probation (Sept. 30); Plt. Off. on probation A. D. Moore is transferred from Class A.A. (ii) to Class C (Jan. 12); Flg. Off. G. F. E. Harrison relinquishes his comn. on completion of service (Feb. 4); Flg. Off. L. R. Mizen relinquishes his comn. on appointment to a comn. in the Indian Army (Sept. 20); Flg. Off. D. H. P. Barnett relinquishes his comn. on appointment to a perm. comn. in the R.A.F. (Oct. 5).

AUXILIARY AIR FORCE.

ACCOUNTANT BRANCH.—No. 600 CITY OF LONDON (BOMBER) SQUADRON.—The following to be Plt. Off.:—R. Hiscox (Aug. 3).

Appointments.

Week ending October 21.

GENERAL DUTIES BRANCH.—Group Captains F. E. T. Hewlett, D.S.O., O.B.E., to R.A.F. Training Base, Leuchars, to command, 7/9. R. J. Bone, C.B.E., D.S.O., to R.A.F. Depot, Uxbridge, on transfer to Home Establishment, 18/8.

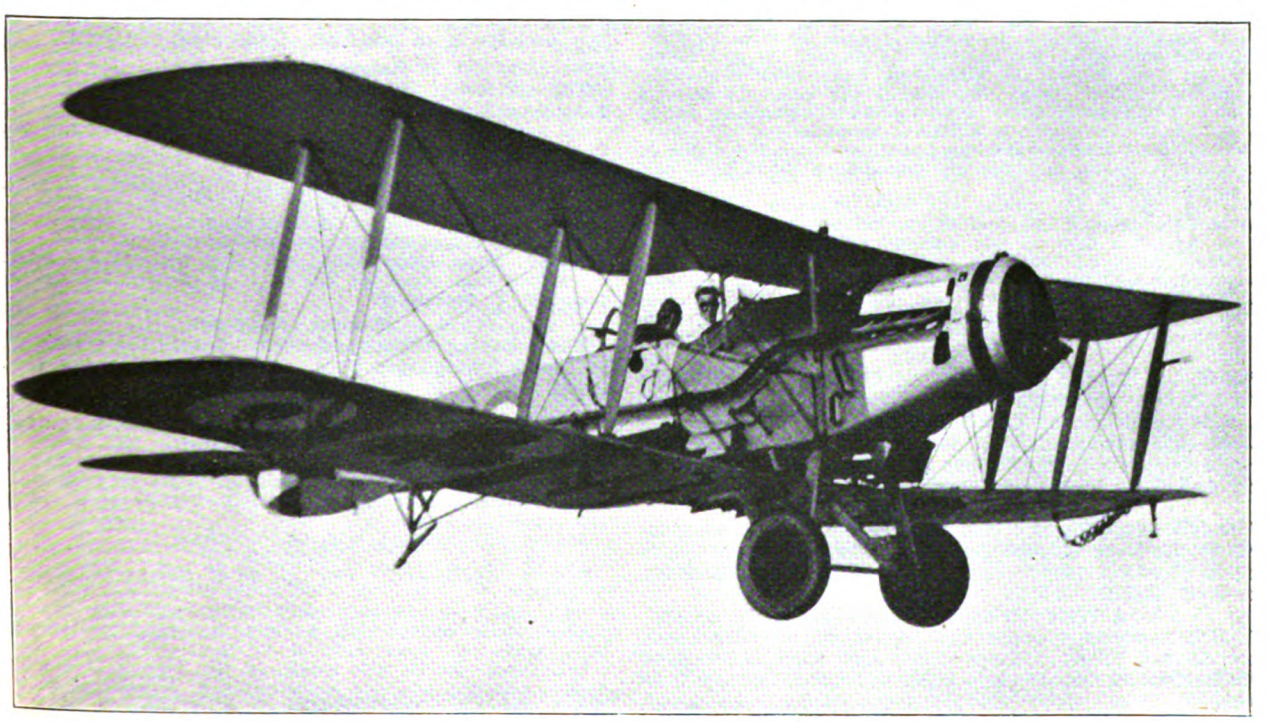
Wing Commanders F. W. Stent, M.C., to H.Q., A.D.G.B., Uxbridge, for Air Staff duties, 7/10. R. G. D. Small, to H.Q., Fighting Area, Uxbridge, for Air Staff duties, 18/9. W. B. Callaway, A.F.C., to H.M.S. *Furious*, for duty as Senior Air Force Officer, 7/9.

Squadron Leaders W. H. Dunn, D.S.O., to H.M.S. *Vindictive*, 26/8. H. H. James, O.B.E., to R.A.F. Depot, Uxbridge, 31/8. H. S. Scroggs, to R.A.F. College, Cranwell, 3/9. D Iron, O.B.E., to R.A.F. Base, Gosport, 23/9. R. F. S. Leslie, D.S.C., D.F.C., A.F.C., to Home Communication Flight, Hendon, 16/9. J. S. T. Fall, D.S.C., A.F.C., to Superintendent of R.A.F. Reserve, Hendon, 26/9. T. P. Y. Moore, to H.Q., Fighting Area, Uxbridge, 29/5. L. T. Keeble, to R.A.F. Depot, Uxbridge, 17/8.

Flight Lieutenants T. S. Horry, D.F.C., A.F.C., to No. 22 Sqdn., Martlesham Heath, 1/10. J. M. Glaisher, D.F.C., to No. 56 Sqdn., North Weald, 1/10. W. Badley, to No. 1 F.T.S., Netheravon, 7/10. F. G. Cater, to A. and G. School, Eastchurch, 24/9. B. T. Hood, to No. 9 Sqdn., Manston, 1/10. C. J. Collingwood, to No. 23 Group H.Q., Grantham, 2/9. P. J. R. King, to Cambridge University Air Sqdn., 8/10. H. D. O'Neill, A.F.C., to No. 100 Sqdn., Bicester, 8/10. G. A. Simons, to R.A.F. Depot, Uxbridge, 6/7. R. C. Savery, D.F.C., to R.A.F. Depot, Uxbridge, 26/9. G. Y. Tyrrell, M.C., to H.Q., Wessex Bombing Area, Andover, 16/9. F. R. Wynne, M.B.E., to School of Army Co-operation, Old Sarum, 23/9. J. I. T. Jones, D.S.O., M.C., D.F.C., M.M., to Experimental Section, Royal Aircraft Establishment, S. Farnborough, 18/9. A. King-Lewis, to Coastal Defence Co-operation Flight, Eastchurch, 24/9. H. E. Forrow, to No. 12 Sqdn., Andover, 13/9. F. K. Damant, D.F.C., to No. 5 F.T.S., Sealand, 27/9. H. S. Broughall, M.C., D.F.C., to No. 22 Sqdn., Martlesham Heath, 18/9. C. T. Walkington, to No. 43 Sqdn., Tangmere, 29/8. E. D. H. Davies, to School of Naval Co-operation, Lee-on-Solent, 14/9. F. W. Long, to M.A.E.E., Felixstowe, 18/9. G. A. R. Muschamp, to No. 10 Sqdn., Upper Heyford, 3/9.

Flying Officers J. H. Sender, to No. 5 F.T.S., Sealand, 25/9. D. A. Boyle, to No. 601 Sqdn., Hendon, 5/10. F. J. P. Dewhurst, to No. 16 Sqdn., Old Sarum, 3/9. A. J. W. Geddes, to No. 4 Sqdn., S. Farnborough, 3/9. M. Brunton, to No. 25 Sqdn., Hawkinge, 17/9. A. V. Harvey, to No. 602 Sqdn., Glasgow, 13/9. E. A. T. Murray, to No. 15 Sqdn., Martlesham Heath, 30/9. P. Hill, to No. 58 Sqdn., Worthy Down, 16/9. R. J. A. Ford, to No. 15 Sqdn., Martlesham Heath, 25/9. J. McGuinness, to No. 13 Sqdn., Netheravon, 8/10. J. H. Lindell, to R.A.F. Depot, Uxbridge, 1/10. C. A. Bell, to Cambridge University Air Sqdn., 8/10. R. O. O. Taylor, to No. 33 Sqdn., Eastchurch, 23/9. A. L. T. Naish, to A. and G. School, Eastchurch, 3/10. V. Harris, to No. 99 Sqdn., Upper Heyford, 11/10. C. H. A. Colman, to A. and G. School, Eastchurch, 17/9. J. E. Allen, to No. 15 Sqdn., Martlesham Heath, 3/10. C. C. Edwards, to No. 4 Sqdn., Northolt, 6/10. W. J. P. Sloan, to No. 33 Sqdn., Eastchurch, 3/10. E. J. Ellis, to R.A.F. Depot, Uxbridge, 31/8. V. J. Sofiano, to R.A.F. Depot, Uxbridge, 8/9. E. A. Airey, A. O. Simpson and E. O. Wanliss, to No. 5 F.T.S., Sealand, on appointment to Temp. Comns., 1/10.

Pilot Officers J. D. Roden, to R.A.F. Depot, Uxbridge, 3/9. R. J. T. Barrett, to No. 43 Sqdn., Tangmere, 3/10. J. Cherrill, to No. 111 Sqdn., Hornchurch, 3/10. T. Gadd, to No. 41 Sqdn., Northolt, 3/10. R. P. Garnons-Williams, to No. 23 Sqdn., Kenley, 3/10. C. R. J. Hawkins, to No. 207 Sqdn., Eastchurch, 8/10. M. T. M. Hyland, to No. 35 Sqdn., Bircham Newton, 3/10. J. O. H. Lobley, to No. 33 Sqdn., Netheravon, 3/10. B. A. Oakley, to No. 35 Sqdn., Bircham Newton, 3/10. J. D. H. Slade, to No. 35 Sqdn., Bircham Newton, 3/10. J. R. Stebbing, to No. 56 Sqdn., North Weald, 3/10. A. T. Wilson, to No. 32 Sqdn., Kenley, 3/10. A. N. I. Worger-Slade, to No. 207 Sqdn., Eastchurch, 3/10. C. Sarsfield-Sampson, to No. 70 Sqdn., 'Iraq, 13/9. A. G. Adnams, to No. 10 Sqdn., Duxford, 3/9. A. F. P. Anning, to No. 26 Sqdn., Catterick, 3/9. B. A. Blythe, to No. 3 Sqdn., Upavon, 3/9. A. L. Brain, to No. 26 Sqdn., Catterick, 3/9. C. M. D. Chamber, to No. 111 Sqdn., Hornchurch, 3/9. C. M. Champion de Crespigny, to No. 4 Sqdn., S. Farnborough, 3/9. G. H. Clarks, to No. 25 Sqdn., Hawkinge, 3/9. H. R. Collins, to No. 13 Sqdn., Andover, 3/9. E. W. Downing, to No. 32 Sqdn., Kenley, 3/9. H. A. Fenton, to No. 4 Sqdn., S. Farnborough, 3/9. H. R. Hughes-Hallett, to R.A.F. Base, Calshot, 3/9. A. E. Louks, to No. 29 Sqdn., North Weald, 3/9. D. S. McDougall, to No. 23 Sqdn., Kenley, 3/9. F. A. McNeill, to No. 13 Sqdn., Andover, 3/9. G. O. St. J. Morris, to No. 111 Sqdn., Hornchurch, 3/9. K. W. Pell, to No. 2 Sqdn., Manston, 3/9. A. F. Powell, to No. 13 Sqdn., Andover, 3/9. R. A. R. Robinson, to No. 41 Sqdn., Northolt, 3/9. L. P. Rowley, to No. 32 Sqdn., Kenley, 3/9. J. S. Shakespeare, to No. 26 Sqdn., Catterick, 3/9. H. B. Collins and G. C. Holland, to No. 5 F.T.S., Sealand, on appointment to Perm. Comns., 28/9. The under-



"FAREWELL, A LONG FAREWELL TO ALL MY GREATNESS."—This picture of a machine of No. 208 (Army Co-operation) Squadron, R.A.F., is positively the last photograph of a Bristol Fighter which will be published in "The Aeroplane."

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mentioned Pilot Officers are posted to No. 5 F.T.S., Sealand, with effect from 28/9:—A. G. Adnams, S. H. Bell, D. P. A. Boitel-Gill, J. C. L. Bruce, R. R. Chapman, L. E. Chiswell, G. B. S. Coleman, C. R. Davies, J. L. M. Davys, S. W. H. Egan, G. Egerton-Hine, T. N. Fraser, J. S. Hamilton, C. J. Hansford, J. N. Hepworth, L. M. Hooper, R. G. Hosken, N. C. Hyde, B. N. Matson, L. R. Mouatt, E. E. Noddings, R. C. Parker, I. N. Roome, K. N. Sayers, G. D. Seabourn, M. W. Simons, S. D. Slocum, J. A. MacD. Teacher, H. J. Ward, C. A. Washer, H. J. Wilson.

Medical Branch.—Flight Lieutenants C. W. Coffey, to No. 4 Sqdn., S. Farnborough, 21/9. E. K. T. McWeeney, M.B., to Palestine General Hospital, 30/8. E. P. Carroll, to Palestine General Hospital, 30/8. F. P. Schofield, M.C., to R.A.F. Officers' Hospital, Uxbridge, 1/10.

Flying Officer G. W. Paton, M.B., to Palestine General Hospital, 30/8. The undermentioned Flying Officers are posted to the Medical Training Depot, Halton, on appointment to S.S. Comns., with effect from 1/10:—J. J. Corcoran, M.B., C. C. Fenton, M.B., B.S., B.Sc., C. G. Harold, M.B., A. Sheehan, M.B., D. D. Watson, M.B., E. A. Wilson, M.D.

Stores Branch.—Flight Lieutenants H. Parker, to R.A.F. Depot, Uxbridge, 27/9. A. H. Allan, to H.Q., Wessex Bombing Area, Andover, 21/9. V. B. Ranford, to Station H.Q., Heliopolis, Middle East, 28/9.

Flying Officer M. H. Jenks, to No. 101 Sqdn., Bircham Newton, 26/9.

Accountant Branch.—Squadron Leader C. C. J Croydon, to Station H.Q., Andover, 1/10.

Flying Officer H. C. Bakes, to No. 1 School of T.T. (Apprentices), Halton, 1/10.

Chaplains Branch.—The Rev. F. G. B. Sutherland, R.A.F. Depot, Middle East, 10/9. The Rev. C. P. N Rowband, to R.A.F. Base, Gosport, on appointment to a S.S. Comn., 6/9. The Rev. S. H. Keen, to H.Q., R.A.F., Halton, on appointment to a S.S. Comn., 12/9.

An Air Display at Constantinople.

A display of flying by the R.A.F. Units in H.M.S. *Courageous*, which has been visiting Turkey, is described in *The Times* of Oct. 19 by that paper's correspondent at Constantinople. The writer states that this was the first time that the Fleet Air Arm, operating from an aircraft-carrier, has provided a pageant on such scale for the benefit of a foreign Power. But there are those who will remember a "pageant" on even a bigger scale which was arranged over Constantinople some few years ago by Group Capt. Peregrine Fellowes and General Harrington.

The account of the latest display reads:

Early this morning the *Courageous*, which had been lying at Moda, steamed at high speed into the Sea of Marmora. The weather was beautiful and as there was hardly any wind she was obliged to steam at full speed in order to facilitate the taking off of the aeroplanes from her deck. Just before 10 o'clock the air pageant, which was co-ordinated under Captain H. J. S. Brownrigg, of H.M.S. *Courageous*, and Wing Commander R. Collishaw, started. Punctually to the minute at 10 o'clock the first aeroplanes appeared over Constantinople. One wing, consisting of nine Darts, torpedo-bombers with 470 h.p. Napier Lion engines, 12 Fairey Flycatchers, with 330 h.p. Jaguar engines, and nine Fairey III.F, with 470 h.p. Napier Lion engines, took part in the pageant.

The aeroplanes, flying in three formations, passed over the Galata Tower simultaneously at heights of 2,000, 2,500, and 3,000 ft. respectively, and then separated. They then crossed over in squadron formation, afterwards in V formation, and finally in line abreast. Only a few yards separated each machine during these flights, and the precision with which the three squadrons carried out various manœuvres was remarkable.

At 10.15 the Darts formed a large circle extending from the Golden Horn to the *Queen Elizabeth*, from which Admiral Sir Frederick Field, the Commander-in-Chief, was watching the display. As soon as the circle had been formed the Flycatchers corkscrewed downwards through the circle of Darts. This exercise was admirably executed and made a very pretty sight. After that three Flycatchers, led by Flg. Off. G. H. Birley, gave a display of aerobatics.

At 10.40 the 30 machines assembled, and, after forming flights in line astern, made slow dives over the Golden Horn before flying past the *Queen Elizabeth*.

The last item of the pageant was most impressive and entirely original. The Crescent and Star of the Turkish flag was pictured in the sky. The Crescent was formed by 15 machines, and one represented the Star. Assuming this formation some three miles from Constantinople, the 16 machines flew in perfect formation over the city, and finally disappeared over the Asiatic shore *en route* for the *Courageous*. This compliment to Turkey awoke great enthusiasm among the huge crowd which was watching the display.

Royal Pilots.

H.R.H. the Prince of Wales and H.R.H. Prince George both had over an hour's dual instruction in D.H. Moths at Northolt aerodrome on Oct. 16. The Prince of Wales used his own machine and Mr. Fielden was his instructor. Prince George was in a machine lent by the De Havilland Company and flown by Sq. Ldr. Don.

The Staff College, Camberley.

The following officers of the R.A.F. have received nominations to the Staff College, Camberley, for the course beginning in January, 1930:—Wing Cdr. R. P. Willock and Sq. Ldr. R. D. Oxland, O.B.E.

A West African Service Flight.

A *Reuter* message dated Oct. 20 states that the R.A.F. West African Flight of three Fairey IIIF machines took off from Helwan on Oct. 19 for a flight to Nigeria and the Gold Coast.

The Squadron stationed at Helwan is No. 45 (Bomber) Squadron, which, according to the current Air Force List is equipped with D.H.9as. Presumably the Squadron has been re-equipped with Fairey IIIFs.

An Award for Gallantry.

The London Gazette of October 18 announced that His Majesty the King has approved the award of the medal of the Military Division of the Order of the British Empire to Flt. Cadet William Neil McKechnie, Royal Air Force, for gallantry.

On June 20, 1929, an aeroplane piloted by Flt. Cadet C. J. Giles crashed on landing at Cranwell Aerodrome and burst into flames. The pilot was stunned, but managed to release his safety belt and fall out of the machine in a dazed condition.

Flt. Cadet McKechnie, who had landed in another aeroplane about the same time some 200 yards away, left his machine and ran at full speed towards the scene of the accident. The petrol had spread over an area of about ten yards diameter in full blaze, with Giles lying in it, semi-conscious.

McKechnie, without hesitation, ran into the flames and pulled out Giles, who was badly burned about the legs and face, with his Sidcot suit and clothes actually burning. After dragging him clear of the flames, during the process of which he was scorched and superficially burned, McKechnie proceeded to extinguish the flames of Giles's burning clothing.

By this time the machine was in full blaze, with the petrol spreading along the ground, so that without McKechnie's assistance there is no doubt Giles would have been burned to death, as he was quite incapable of moving himself. Ultimately the machine was entirely destroyed by fire, and the ground for some distance around was completely burned up by the spread of the ignited petrol.

No. 205 (Flying Boat) Squadron.

An Air Ministry Order states that the address of No. 205 (Flying-Boat) Squadron, R.A.F., is:—Royal Air Force Base, Singapore, Straits Settlements.

Engineers and the R.A.F.

Replying to the toast of "The Royal Air Force" at the annual dinner of the Institution of Mechanical Engineers in London on Oct. 17, Lord Thomson, Secretary of State for Air, spoke of the close association between the R.A.F. and the work of the Institution of Mechanical Engineers.

He said that reference had been made to publicity but he had never been conscious of R.A.F. publicity except from the point of view that they had many critics. He thought it was fair to say that 70 per cent. of the publicity given to the Air Force was due to hostile criticism. The young men over whose work he presided led perilous lives. They had been very much in the public eye this year because of certain magnificent opportunities. The Air Force did not seek publicity. It was essentially a technical profession and every member of it had to be a skilled technician. High courage and extreme skill was absolutely essential for the efficiency of the Force.

Referring to the airship R.101 he said that Mr. Chorlton (Vice President of the Institution of Mechanical Engineers) had been working with the Air Ministry for months in connection with the engines. The speaker had been told by experts that these engines had more than surpassed their expectations and that this country had given a lead to the whole world in using a fuel with a flash point of 215 deg. Fah. which flowed satisfactorily at 1 deg. Fah. which, for the same weight, gave 26 per cent. more range to the airship and a cost of one-fifth of the price of petrol.

Extensions of Service.

The service of the following officers of the Reserve has been extended as indicated:—

For Five Years.—*Class A*: Flg. Offs. W. R. Bannister, J. R. Foster, D. P. Jones, S. F. Woods, R. E. La F. Wyatt.

Class C: Flg. Off. S. A. Dismore.

For Four Years.—*Class A*: Flg. Offs. F. J. Brunton, F. J. E. Feeny, D.S.O., F. J. Islip, D. Page, M.M.

Class D.1.: Flt. Lt. J. A. Quin, M.D., B.A.

For Three Years.—*Class A*: Flg. Off. C. M. Willy.

For Two Years.—*Class A*: Flg. Offs. A. M. Diamant, J. J. Scholes.

For One Year.—*Class A*: Flt. Lt. M. D. Barber; Flg. Offs. H. C. Cooke, H. E. Greenberry.

Modern Languages.

The following officers and airmen passed the examinations in modern languages held in June, 1929, at the centres stated:—

London.

French.—(*Preliminary*): Flt. Lt. G. N. P. Stringer, D.F.C.; Flt. Lt. E. B. Addison; No. 509443 AC.2. R. L. Deadman.

(*Interpreter (2nd Class)*): *Sq. Ldr R. L. G. Marix, D.S.O.; Flt. Lt. F. Beaumont; Flt. Lt. G. A. R. Muschamp; Flt. Lt. C. R. Davidson, M.C.; *Flt. Lt. P. R. Chamberlayne, A.F.C.; *Flg. Off. M. H. Jenks; No. 335556 L-AC. H. Masse.

Arabic.—(*Preliminary*): *Flg. Off. V. Harris.

Middle East.

French.—(*Preliminary*): Flg. Off. S. C. George; No. 355960 Cpl. J. E. Ann.

German.—(*Interpreter (2nd Class)*): Flt. Lt. A. Rowan.

Arabic.—(*Preliminary*): *Flt. Lt. E. V. Humphrey; No. 363887 L-AC. W. J. Ashbee; No. 355048 L-AC. A. V. Conway.

(*Colloquial*): Flt. Lt. E. V. Humphrey; *Flt. Lt. J. J. Lloyd Williams, M.C., *p.s.a.*; *Flg. Off. C. S. Cadell; *Flg. E. A. Burridge; No. 355576 Sjt. J. Thom; No. 362704 L-AC. A. S. W. Thorpe; No. 363887 L-AC. W. J. Ashbee; No. 362394 L-AC. E. A. Hickman; No. 355048 L-AC. A. V. Conway.

'Iraq.

Arabic.—(*Colloquial*): No. 354438 AC.1. A. Winwood.

NEXT WEEK—THE AIR PARK ISSUE.

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MALTA.

FRENCH.—(*Preliminary*): Wing Cdr. H. B. Porteous, M.B., D.P.M., D.P.H.; No. 505638 AC.2. H. F. Simpkins; No. 363225 AC.1. J. A. McKinnon.

INDIA.

BRITISH SERVICE OFFICERS' URDU TEST.—Flt. Lt. E. C. de V. Lart (July 2, 1928).

FRENCH.—(*Preliminary*): Flg. Off. A. J. L. Hughes.

The awards payable under King's Regulations will be issued to the officers marked *.

Specialisation of Short-Service Officers.

The following Flying Officers (short-service) of the General Duties Branch have been accorded permission to sit for the examination to be held in December, 1929, for specialisation:—

Air Defence of Great Britain:—Barwell, P. R.; Bruce, J. D. F.; Elton, J. G.; Loch, H. G.; Miller, A. P.; Nicholas, B. D.; Stevens, A. M.; Turner-Hughes, C. K.; Tuttle, G. W.

Inland Area:—Abraham, T. M.; Donkin, R. H.; Mason, L. H.; Morshead, V. D.; Netherton, K. C.; Powell, G. J.; Walker, G. H.; Weighill, G. R.

Coastal Area:—George, E. J.

Middle East:—Calwell, A. K. K.; Clark, R. W. M.; Edwards, R. C.; Gibbon, D. W.

'Iraq Command:—Evans, C. H. L.; Fairhead, F. G.; Mackay, U. S.; Walker, H. J.

India:—Ashton-Jinks, C. P.; Bradley, P. F. G.; Collings, R. W. P.; Ferrier, F. G.; Keens, L. T.; Jenkins, G. H. G. S.; Merrett, T. K.; Monro-Higgs, W. R.; Russell-Stracey, E. G. H.; Spittle, W. R. J.; Stroud, R. W. A.

Mediterranean:—Hatcher, V. G. A.; McNeil, W. C.; Russell, E. G. L.

Aden Command:—Allen, A.

Rugby Football at Cranwell.

A match between the R.A.F. College, Cranwell, and a team of Old Cranwellians was played at Cranwell on Oct. 16. The College won by five placed goals and a penalty goal and a try (31 points) to two placed goals and a dropped goal and a try (17 points).

The Cadets were playing their third match of the season and thus, to a certain extent, they had an advantage over their opponents. On the other hand their training has been seriously interrupted by the hard state of the ground and consequent casualties. Considering these handicaps the Cadets put up a remarkably fine show and thoroughly deserved their victory. They were fast, fit, and well together.

The Old Cranwellians were an opposition not to be despised. The R.A.F. team of last season was represented, and also several of the first class Rugger clubs, including the Harlequins, the London Scottish and Leicester. They improved, as a team, as the game went on but they never had quite the same amount of thrust nor the same close follow-up as the Cadets.

The Old Cranwellians opened the scoring after a quarter of an hour of fairly even play, when Llewellyn dropped a goal. The College replied promptly, Coote drawing the defence and passing to McKechnie for a try. Coote converted. The next try was a brilliant solo effort by Coote following a combined attack by the rest of the team. Then Pott scored for the Old Cranwellians. Coote again scored for the College and again placed the goal.

A few minutes later the Coote-McKechnie combination ran through from an opening by Bader, and Coote again converted. A stiff attack by the Old Cranwellians was held up by some fine tackling, but just before half-time White broke through on the wing at high speed and ran round to score near the centre. Llewellyn converted.

In the second half the visitors did more team work but the Cadets lasted better. Bader, who played a consistently good game at stand-off half, used his speed and an effective hand-off to score. Coote converted from an awkward angle. Windsor, a fast, light-weight, wing threequarter gained a lot of ground for Bader to score again, and once more Coote converted. Coote, who is the Captain of the team this year, added a penalty goal from a good length. The final score at the end was a try by White, converted by Llewellyn.

If the R.A.F. Selection Committee took the trouble to go to Cranwell for this match they must have learned several things which will be useful to them. Coote, who played for the R.A.F., will not be available this season, but two others in the Cadets' team are due to pass out of Cranwell at Christmas and one of them at any rate should solve one of the problems of the Representative team.—C. M. MCA.

Inter-Service Swimming.

The Inter-Services Swimming Championships were held in the Aldershot Command Bath on Oct. 14. The Championship was won by the Army, with 81 marks. The Navy were second with 77 marks and the R.A.F. third with 49 marks. The results in detail were:—

100 *Yards Free Style*.—Lt.-Cdr. A. A. Havers (R. Navy), 1; Spr. May (Army), 2; Tel. Goodman (R. Navy), 3. Time, 62 sec.

100 *Yards Back Stroke*.—Lt. E. G. Brown (Army), 1; A.B. Fryer (R. Navy), 2; B.Q.M.S. Rex (Army), 3. Time, 74 2-5 sec.

100 *Yards Breast Stroke*.—Pte. Rimmer (Army), 1; A.B. Mullins (R. Navy) and AA. Bradshaw (R.A.F.), dead-heat, 2. Time, 79 sec.

220 *Yards Free Style*.—Spr. May (Army), 1; Cadet Cockburn-Mercer (R. Navy), 2; Lt.-Cdr. A. A. Havers (R. Navy), 3. Time, 2 min. 16 4-5 sec.

440 *Yards Free Style*.—Marine Richards (R. Navy), 1; Tel. Goodman (R. Navy), 2; L.-Sgt. Mackenzie (Army), 3.

Diving (*Spring Board and* 12 *ft.*).—Cpl. Weale (R. Navy), 1; Driver Wooler (Army), 2; AC. Richards (R.A.F.), 3.

Plunging.—Col. W. Allason (Army), 79 ft. 6½ in., 1; Sub-Lt. A. C. Reed (R. Navy), 68 ft. 11 in., 2; Flt. Lt. G. Smylie (R.A.F.), 67 ft. 6½ in., 3.

400 *Yards Relay Race*.—Army (Capt. A. Mulligan, Lt. I. H. Mackillop, Lt. E. G. Brown, Bdr. Norris, Spr. May, Pte. Drane), 1; R.N. and R.M., 2; R.A.F., 3. Time, 3 min. 56 2-5 sec.

Water Polo.—R.N. and R.M. 3 v. R.A.F. 3; R.N. and R.M. 2 v. Army 2, Army 0 v. R.A.F. 0.

Championship Marks.—Army, 81; R.N. and R.M., 77; R.A.F., 49.

THE HEALTH OF THE ROYAL AIR FORCE.

Air Vice-Marshal David Munro, C.B., C.I.E., M.B., M.A., F.R.C.S. (E.), K.H.S., Director of Medical Services, R.A.F., in submitting his Report on the Health of the Royal Air Force for the year 1928, states that the health of the force at home and abroad has been good and compares favourably with that of previous years. The high level of physical fitness among officers called upon to fly and airman pilots, which has been noted in previous years, was well maintained during 1928. Eighty-eight per cent. were found fit for full flying duties on the occasion of their annual medical examination.

The most interesting part of the Report concerns the transfer of casualties by air. A short outline of the history of this type of ambulance work in the Service is given since the first R.A.F. aeroplane ambulance for duty in 'Iraq was sent to Egypt and became unserviceable in 1922 before reaching 'Iraq and without carrying any cases. The unhappy history continues:—

Two further ambulances marked with a red cross were erected at Abukir: one completed in the winter of 1922-23 was damaged on its journey to 'Iraq and was returned to Abukir for repair, the other arrived at Baghdad early in 1923 and within a few weeks met with an accident and was not flown again. Early in 1924 the repaired ambulance from Abukir reached Baghdad and was the last ambulance as such to be used in the R.A.F. In October, 1925, the red cross was deleted and the aeroplane came on the strength of troop carriers.

This does not mean that casualties are no longer carried by air. Since 1924 all troop carriers allocated to 'Iraq are modified so as to be convertible locally to carry two stretcher cases in addition to sitting cases when called upon. Other, smaller types of aircraft are also employed in evacuating lying and sitting cases when the nature of the ground prevents a troop-carrier from landing. A lying case is carried on a Neil Robertson stretcher secured along the top of the fuselage.

The Report states:—

The important part that the evacuation of patients by air plays in those commands where the nature of the country is such that any other means of transport is impossible or so laborious that the discomfort of the journey and the time taken would severely menace the patient's chances of recovery, becomes more evident each year.

In Palestine the evacuation of casualties by air has also developed into a routine procedure but there are no red cross air ambulances in that country either.

Another interesting section of the Report concerns the 1928 punitive operations in 'Iraq, described as having afforded an opportunity of testing the preparedness and ingenuity in improvisation of the medical organisation in that command. The operations were carried out by a base party and two mobile columns, in all some 300 men, and lasted from January to June under climatic conditions varying from the cold and rainy weather of winter to the tropical heat and frequent dust storms of Summer. Considering the difficulties the health of the force and the standard of sanitation was commendably high. At points where no desert water holes were available, water was carried by air to the columns from the base.

The coolest building was found to be one the walls of which consisted of earth-filled petrol tins two deep, covered by a roof of an inner layer of tarpaulin and an outer covered with muttee and the floor sunk four feet below the level of the ground. The experience gained in this expedition has resulted in several recommendations and the introduction of a revised scale of sanitary equipment for each unit.

A disquieting note in the section of the Report dealing with the Home Command is that forty-one cases of acute rheumatism were reported during 1928 among the aircraft-apprentices at Halton. Most of the cases followed an epidemic of tonsilitis and naso-pharyngitis.

The total number of deaths while flying on duty during the year was 65 as compared with 52 in 1927 and 78 in 1926. Flying accounts for 76 per cent. of the deaths due to injury on duty. Of the 23 deaths off duty, twenty were caused by motor accidents. Of the 2,364 cases of injury during the year, 946 were attributed to athletics and 498 to motor transport.

Only three cases were reported of injury during voluntary parachute descents compared with 12 cases, one of which was fatal, during 1927.

One officer was killed by rifle fire while flying.

In 1928, as in previous years, the flying Units, which

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demand a high standard of fitness, show the lowest sickness incidence. The incidence of disease is twice as heavy in flying Units abroad, as in those stationed at home.

There has been a very considerable reduction in the share of the total sickness taken by sandfly, malaria, and influenza. The table of sickness at principal stations abroad shows that Hinaidi has the highest percentage of sandfly fever with Malta a close second. Karachi has the highest percentage of malaria with Abu Sueir (Egypt) the next highest. The case incidence per 1,000 strength for all diseases in the principal stations abroad is highest at Malta where it is 809.9. Hinaidi is 632.9, Cairo 529.3, and Karachi 507.5.

Although an epidemic of plague occurred in Aden in February, 1928, resulting in 1,107 deaths, no cases occurred in the R.A.F.

A daily ration of wheat germ is being issued to personnel in 'Iraq and Aden for a period of 20 months, the minimum time in which an opinion can be formed of its utility.

C. M. MCA.

TWO BOOKS TO BUY.

[The Vickers Virginia X Aeroplane (Two Lion Engines) Air Publication No. 1363. The Armstrong Whitworth Atlas Army Co-operation Aeroplane. Air Publication No. 1375. Both published by H.M. Stationery Office and obtainable from The Aeroplane Book Dept., Cannon House, Pilgrim Street, E.C.4., each for 3s.]

These official Air Ministry Publications are meant in the first instance for Service use and no doubt anybody in the Service who is interested in the habits and family history of the Virginia X or in getting Atlas-tic information has seen these handbooks long since. The purpose of this notice is not to bring coals to Newcastle but to bring these books to the notice of another section of the aeronautical community.

Anybody who wants to know all about the construction of these machines can now have the information they require. These handbooks contain amongst a mass of other detail, complete descriptions of the structures of the machines together with lay-outs of controls and bomb systems. There are any amount of good sketches and photographs, which make a study of the books well worth the while of anybody connected with aircraft design.

DATES TO BE NOTED.

November 5:—An interesting paper entitled *Steels for Automobiles and Aeroplanes* will be read by Dr. W. H. Hatfield, of the Brown-Firth Research Laboratories, before a joint meeting of the Institution of Automobile Engineers and the Iron and Steel Institute, to be held at the Royal Society of Arts, John Street, Adelphi, London, W.C.2, at 7.45 p.m. The present paper is a valuable addition to Dr. Hatfield's previous writings on the subject of special steels for automobile construction and is of the utmost interest to all automobile and aero designers. Dr. Hatfield will also read his paper at the Queen's Hotel, Birmingham, on Monday, Nov. 11, at 7 p.m.

November 21:—*The Inspection of Metals and their Alloys*, by Capt. L. W. Johnson, to be read at a Joint Meeting of the Institution of Automobile Engineers and the Royal Aeronautical Society at the Royal Society of Arts, John Street, Adelphi, W.C.2, at 7.45 p.m. This paper will also be read at the Merchant Venturers Technical College, Unity Street, Bristol, on Monday, Nov. 4, at 6.45 p.m.

November 25:—*The Mercedes-Benz Diesel Engine*, by Mr. W. H. Goddard, to be read before the Scottish Centre at the Royal Technical College, Glasgow, at 7.30 p.m., and before the Wolverhampton Centre at the Engineering and Scientific Club, Queen Street, Wolverhampton, on Tuesday, Nov. 19, at 7.30 p.m.

November 27:—*The High-Speed, Compression-Ignition, Heavy-Oil Engine*, by Mr. F. R. Banks, to be read at the Engineers' Club, Albert Square, Manchester, at 7 p.m.

Cards of invitation to admit visitors to any of the above meetings may be obtained on application to the Secretary, The Institution of Automobile Engineers, Watergate House, Adelphi, London, W.C.2.

THE ROYAL AERONAUTICAL SOCIETY.

An Informal Dinner (for men only) and Discussion will be held at the St. Ermin's Hotel, Caxton Street, Westminster, at 7.30 p.m., on Friday, Nov. 15, 1929.

After the dinner, Major J. S. Buchanan, O.B.E., A.M.I.Mech.E., F.R.Ae.S., will move:—

"That this meeting is of the opinion the present rules for the Schneider Trophy Race and the High-Speed Record are not consistent with the proper development of high-speed aircraft."

The Chair will be taken by Col. the Master of Sempill, A.F.C., A.F.R.Ae.S., President of the Society.

The price of tickets is 6s. 6d. each and members may bring guests. Early application is necessary. Informal morning dress will be worn.

Tickets may be obtained on application to J. Laurence Pritchard (Secretary), 7, Albemarle Street, W.1.

THE RECORD-BREAKERS' RETURN.

On Oct. 21 MM. Costes and Bellonte, who between Sept. 27-29 flew non-stop from Paris to Tsitsihar, Manchuria, a distance of 5,000 miles, in a Breguet XIX (600 h.p. Hispano-Suiza engine), arrived at Shanghai from Mukden.

They propose to return to Paris in three further stages, with stops at Hanoi and Karachi.

FOR THE FUTURE.

The Société Aéronautique Française (Avions Dewoitine) of Chatillon (Seine) is completing a machine, to the order of the French Government, which will be used for a further attempt on the World's Distance Record.

It will be a low-wing cantilever monoplane to be fitted with a 650/750 h.p. Hispano-Suiza engine. The wings are built round a single spar and are entirely of duralumin, including the covering.

The fuselage is a duralumin monocoque and will have accommodation for three. The undercarriage is of the cross-axle type.

The empty weight is estimated at 2,200 kgs. (4,840 lbs.) and provision is being made for 6,000 kgs. (13,200 lbs.) of fuel and oil to assure a range, in still air, of 10,000 kms. (6,210 miles) at a speed of about 200 km.p.h. (124 m.p.h.).

The dimensions of the machine will be: Span 28 m. (91 ft. 10 in.), Length 12.5 m. (41 ft.), and Wing area 75 sq. m. (808 sq. ft.).

The new machine is expected to be ready for test flights in March or April of next year and for the record attempt by about November. The pilot will be M. Doret.

J. B. RICHARD.

From a *Handley Page* Bulletin recently published one learns with great regret of the death of Monsieur J. B. Richards, of Brussels, who died suddenly on Sunday, September 8. For some strange reason the death of M. Richard did not become known in this country at the time, although M. Richard was known to almost everybody in the Aircraft Industry and in the past ten or eleven years has done valuable service for British Aviation.

One first met M. Richard when he began to deal in the products of the Aircraft Disposal Co. Ltd. on the Continent of Europe. M. Richard either knew then, or very soon came to know, practically everybody of note in connection with aviation in Europe.

During those early years after the War France and Italy flooded all the newly formed self-determined nations with obsolete war-time aircraft and almost gave them away, presumably with the idea of establishing their national aircraft in those countries. M. Richard, with his extraordinary commercial ability and his strong personality, managed to sell at quite reasonable prices aeroplanes which had been reconditioned and practically rebuilt by the Aircraft Disposal Co. The result was that, although our war-time machines like those of France and Italy were built very largely of material which would never have been passed as fit for use in time of peace, they built up for British aircraft a reputation for first-class workmanship and design which laid the foundation for the present high reputation of our aeroplanes and engines of modern design and construction.

There were those at that time who held that M. Richard and the Aircraft Disposal Co. were doing harm to the British Aircraft Industry because by selling reconditioned machines cheap they were preventing us from selling new machines at high prices. This was a foolish argument worthy of the British shop-keeper. While French and Italian machines were being practically given away there was obviously no hope to getting our price for new machines from little new-born nations which had practically no money, or were paying for their war material with money lent to them by France on the condition that the money was spent with French manufacturers of armament.—Though this money was in fact owed by France to us.

The truth is that M. Richard by his tact and skill and ability laid the foundation throughout Europe for the introduction of modern British aircraft as soon as the smaller nations made the money to pay our prices.

Some few years ago M. Richard parted company from A.D.C. Aircraft Ltd. and more recently has been representing Handley Page interests on the Continent.

M. Richard was a man of strong personality and of remarkable charm. He was a big man with what at first seemed to be a fierce expression, but when one got to know him one found that he was one of the kindest-hearted of men. He was hospitality personified, and however busy he might be he could always find time to do a good turn for a friend, or even for a chance acquaintance.

By the death of M. Richard, England has lost a very valuable friend on the Continent and many people in all nations will grieve personally that he is no longer with us. To Madame Richard and his family one offers the deepest sympathy.—C. G. G.

NEXT WEEK—THE AIR PARK ISSUE.

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

THE RELIABILITY OF THE D.H. GIPSY ENGINE.

The D.H. Tiger Moth made its first appearance in the Race for the King's Cup in 1927 and startled everyone by its amazing performance and almost incredible top speed. The Tiger Moth was twice as fast as anything else with the same power.

Later in the same year, on Aug. 24, to be precise, Mr. Hubert Broad flying a D.H. Tiger Moth with a Gipsy engine, which at that time was still pagan and unchristened, put up a World's Record for speed over 100 km. in the Light Aeroplane category for machines between 200 and 350 kgs. The speed was 300.1 km./hr. (186.3 m.p.h.), and as the course was across country in a bad light, and included a sharp turn, the actual top speed must have been 200 m.p.h. For this achievement the engine was giving 135 h.p.

After this successful attack on the Record the engine was detuned to its present h.p. by lowering the compression-ratio and using smaller valves. One immediate result of this was that ordinary commercial No. 1 petrol could be used in the engine. An even more important result was complete reliability.

Here was an engine, which had given a most convincing demonstration of its capabilities, detuned to a lower horse-power and at the same time retaining all those features, if the lessened compression-ratio and the decreased valve-heads be excepted, which had made its record performance possible. Such a policy was a complete reversal of the usual business of tuning up a production engine for some special object.

At the end of 1928 a standard Gipsy engine was selected at random from the flow of production engines and fitted to a standard D.H. Moth, G-EBTD. This engine was then sealed throughout by the Aeronautical Inspection Department.

The carburettor was sealed to the induction-pipe, which was then sealed to the cylinder-heads. The valve-rockers and cylinder-heads were next sealed to the cylinders, which were in turn sealed together. The magnetos and oil-pumps were sealed to the crank-case, the halves of which were also sealed together. Thus no replacements could be effected without breaking the seals.

On Dec. 29, 1928, began the attempt to compile a total of 600 hours in the air without overhaul, repairs or replacements. As far as possible the Moth was to be flown at a cruising speed of 85 m.p.h.

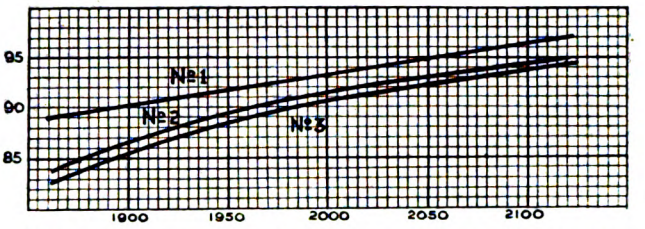
For nine months G-EBTD has flown without any overhauls, repairs or replacements to the engine. The only attentions that the power-plant received were the cleaning of sparking-plugs and filters, checking of the contact-breakers and valve-clearances and the correction of a minor defect in the impulse-starter mechanism of one magneto.

The 600 hours' flying-time were finished on Sept. 24 of this year, by which date G-EBTD had flown 51,000 miles, a distance of more than double the circuit of the Earth round the Equator. An even more interesting comparison is that such a distance represents about five years' mileage of a normally-run car. Who would run a car for five years, without overhaul, replacement or decarbonising?

The total running-time including bench-tests, taxying and running up before each take-off was 661 hours 5 min.

The petrol consumption (Pratts No. 1) for the 661 hours was 4½ gallons per hour, or 19 1-7 miles per gallon. The oil consumption (Wakefield's Castrol XXL) was .45 pint per hour, or 1,400 miles per gallon.

Three bench-tests were made on the Heenan and Froude Hydraulic Brake, one when the engine was new, the second after 500 hours' flying when the engine was removed for display at Olympia, and a final test after the completon of the 600 hours.



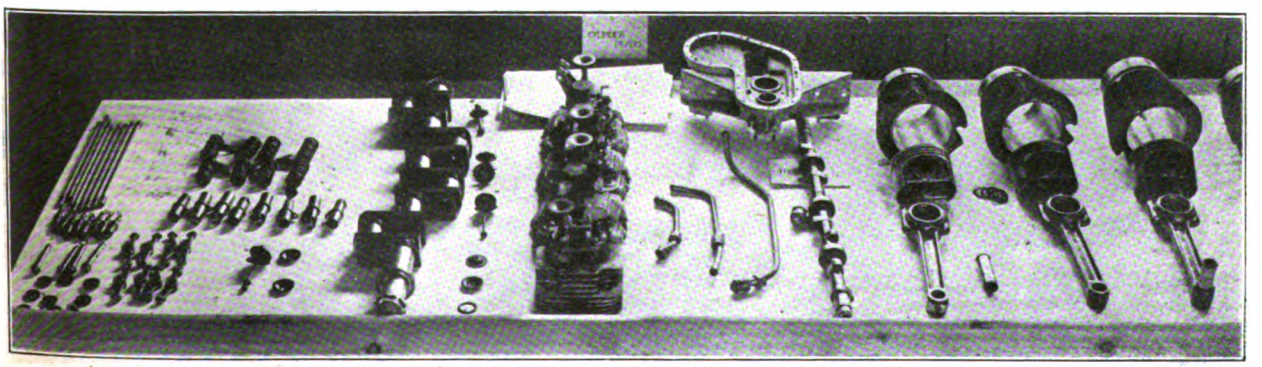
The power-curves of the Gipsy engine. No. 1, the original acceptance curve. No. 2, after 500 hrs. No. 3, after the conclusion of the trial.

The curves show how extremely slight the actual decrease in power after this long trial was, a matter of 2.4 b.h.p. at 2,050 r.p.m.

The cost, based on the spares retail price list, of the replacements necessary to make the engine airworthy again was £7 2s. 11d. This was made up as follows:—

	£	s.	d.
8 Piston-rings and scraper-rings (worn)		14	0
1 Piston (Broken piston-ring "land")	1	12	6
8 Valve-guides (worn)	1	19	4
8 Valve-rocker bushes (worn)		14	8
8 Valve-rocker adjusting screws (worn)		18	0
2 Valve push-rod tubes (worn by rubbing on cowling)		5	0
1 Oil-pipe nut (fractured)			4
1 Carburetter float (distorted)		4	0
2 Carburetter balance-weights (worn)		2	0
2 Carburetter throttle-spindle bushes (worn) ..		2	0
1 Magneto carbon brush (worn)			9
1 High-tension lead		3	2
4 Cylinder-head gaskets (always replaced on overhauls)		3	8
Induction pipe repaired		3	6
	£7	2	11

These figures and the remarks which follow show that the aero-engine, although it runs constantly, at or near full power is far more durable than is any car-engine. No car on Earth could do 50,000 miles without overhaul. This is largely because aero-engines run in pure air and do not suck in road dust to wear away their parts. On the other hand the Gipsy is a big-bore slow-running engine compared with those of high-speed cars, and so its bearing-surfaces are less highly stressed. Which is interesting in view of the



THE GIPSY IN PIECES.—Parts of the Gipsy engine laid out for inspection after the conclusion of the Reliability Trial.—(*"Aeroplane" photograph.*)

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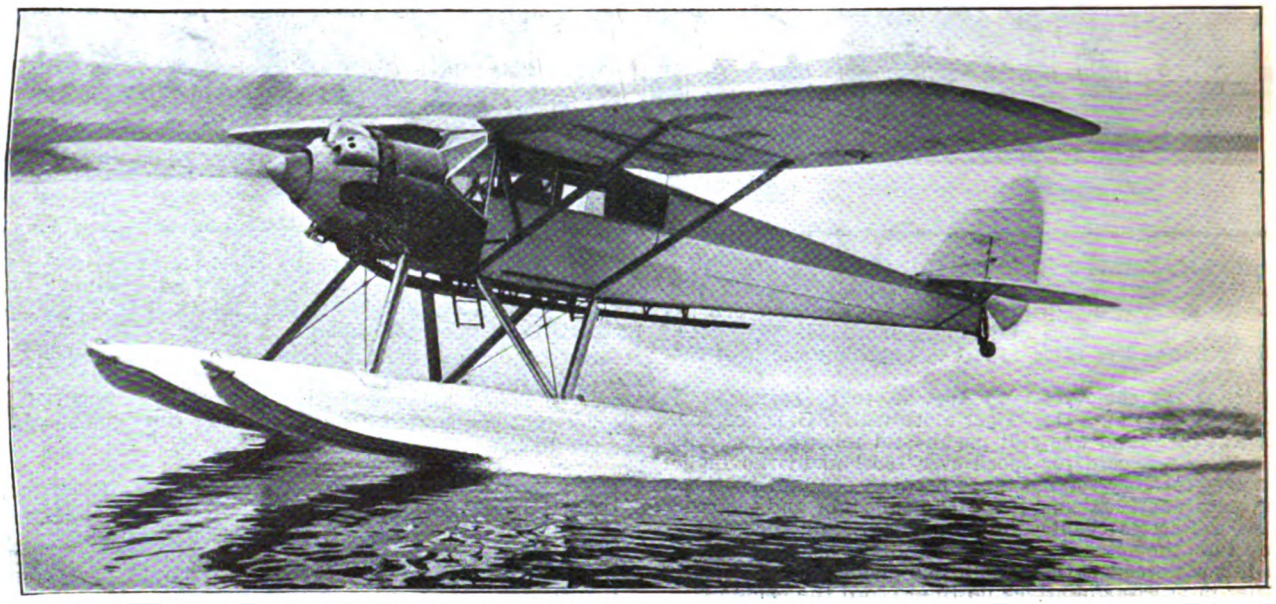


THE LATEST D.H. SEAPLANE.—The D.H. Hawk-Moth fitted with Short metal floats taxying on the Medway at Rochester.—(*"Aeroplane" photograph.*)

tendency of British motor-manufacturers to follow American practice in this matter, as shown at Olympia.

Major F. B. Halford, who is co-designer with Capt. G. de Havilland of the Gipsy engines makes the following comments on these replacements and the probable causes thereof.

Piston and Scraper Rings.—The wear experienced appears to be about normal and it is difficult to see how to lengthen the life of these rings appreciably, bearing in mind that they must remain capable of keeping the oil consumption down to half a pint per hour, a consumption lower per horse-power than that of any other known aero-engine.

Piston.—The exact cause of the broken "land" is not known. It appears to be an isolated case, based on the experience of other Gipsies."

Valve-guides, Rocker-bushes, Adjusting-screws.—The wear on these parts is probably normal under the circumstances, but the life of them does not compare favourably with the rest of the engine. Modifications were already in hand, before the completion of this test, which now treble the life of these parts.

The remaining items call for no particular comment, although none, however small, will be neglected.

Carbon deposit.—Considering the number of hours run, the absence of carbon deposit both inside the cylinder heads and in the crowns of the pistons is most satisfactory. In no place does it exceed .012 in. (twelve thousandths of an inch). Bearing this in mind in conjunction with the valve-gear modifications already referred to, it is no exaggeration to say that the "500 hours between top overhaul" period for all "Gipsies" is very near at hand.

Although, in order to secure inter-changeability of parts the drawing limits are necessarily close, it is interesting to note that the dimensions of the following details when measured up after the test, on their wearing surfaces, were found to be still within the tolerances permitted: —

(*Crankcase*)—Main bearing bores; (*Crankshaft*)—Crankpin diameters; (*Camshafts*)—Cam profiles and bearing; (*Connecting-rods*)—Big-end bores, Small-end bores, Alignment; (*Gudgeon-pins*)—Diameter; (*Cylinders*)—Bores, ovality and parallelism; (*Valve-springs*)—Loads; (*Rocker-bracket Spindles*)—Diameters; (*Valve-rockers*)—Bores; (*Tappets*)—Diameters; (*Timing-gears*)—Wear and backlash; (*Oil-pump*)—Clearances in gears and bushes.

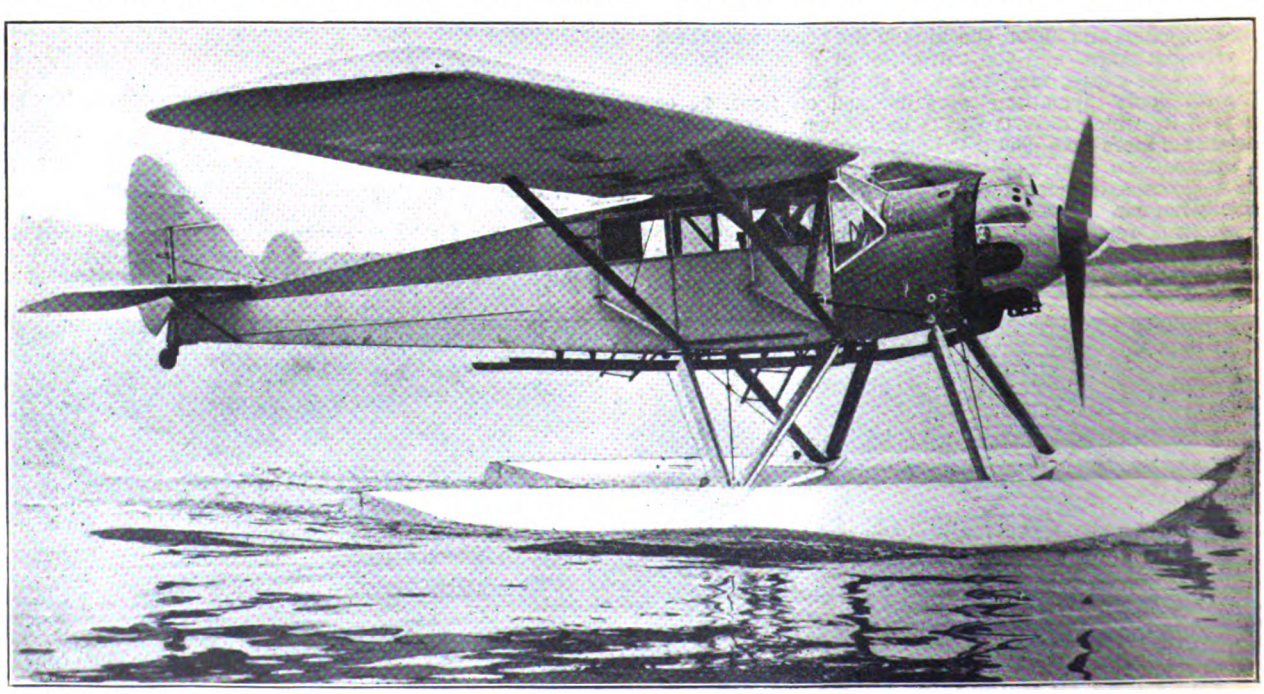
Judging by the experience gained from this test, particularly in relation to "wear," there appears to be no reason why the period between complete overhauls should not be increased to 1,000 hours in the near future. With a machine cruising at 100 m.p.h. (which is already in sight) this would be equivalent to a complete overhaul every 100,000 miles.

ANGLO-FRENCH RECORDS.

The Aeroplane of Sept. 18, 1929, reported that, subject to homologation the Mauboussin single-seat monoplane flown by M. Fauvel had beaten three World's Records for aircraft weighing less than 200 kgs. (440 lbs.). These records were for height, for speed over 100 kms., and for distance over a closed circuit.

Since then M. Fauvel in the same machine has, subject to homologation, flown the record distance non-stop in a straight line for machines in the above class. He flew from St. Inglevert to Pau, a distance of 850 km. (528 miles) in 7 hrs. 20 min., at an average speed of about 72 m.p.h.

The Mauboussin monoplane, which was described in The



A CABIN SEAPLANE.—The D.H. Hawk-Moth (Armstrong Siddeley geared Lynx engine) fitted with Short all-metal floats.—(*"Aeroplane" photograph.*)

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51,000 Miles Test under Seal!

600 hours Flying at average of 85 m.p.h.

On October 15th the sealed De Havilland Gipsy Moth engine, having completed a test flight of 600 HOURS covering 51,000 MILES at an average speed of 85 m.p.h. without deca bonisation, was dismantled under the supervision of the Air Ministry Aeronautical Inspection Directorate

The machine was found to be in need of only £7 replacements to maintain the Air Ministry Certificate of Airworthiness.

This performance by a British machine, is unapproached by any aero engine in the world, of whatever size, and was carried out on Pratts High Test petrol, the petrol consumption being 19½ miles per gallon. At the end of the test the engine was still running perfectly.

Pratts

HIGH TEST

PETROL

Anglo-American Oil Company, Ltd., 36, Queen Anne's Gate, S.W.1.

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AN EMPIRE MARKETING DISPLAY.—Avro and Armstrong Siddeley products shown by the Ottawa Car Manufacturing Co. Ltd., which holds the manufacturing and sales rights for these products in Canada.

Aeroplane of Feb. 13, 1929, is fitted with an A.B.C. Scorpion engine, which for all these successful attempts was equipped with K.L.G. sparking plugs. One may truthfully say that an *Entente Cordiale* had a lot to do with this success.

THE KARACHI AERO CLUB.

The Karachi Aero Club, which began flying last February, flew 1,094 hrs. 45 mins. between February and September. The Club started with two Moths, but since one of them was written off as the result of a forced landing on July 12 the work has fallen on the remaining one. The Club consider that the hours flown by these two machines, one of them 255 hours 25 minutes, and the other 839 hours 20 minutes, a very fine tribute to De Havilland workmanship.

During the month of September 183 hrs. 25 mins. were flown on one machine, a record for the Club and an achievement which reflects great credit on the Club's Pilot Instructor, Flt. Lt. William Jones, R.A.F.O., and the Club's Ground Engineer, Mr. D. M. Langford, whose untiring efforts have kept the machine in commission.

During September seven members got their pilots' "A" certificates *ab initio*, and one ex-R.A.F. officer requalified.

The total membership of the Club is 159, including 71 flying members,—of whom 36 are Europeans and 35 Indians. From February to September 20 members qualified for "A" certificates and two members requalified.

The Club has been using the Government hangar on the Civil Aerodrome at Drigh Road up till now, but hopes to move into its own new hangar at the end of this month.

AN AIRBORNE LECTURER.

Lady Bailey, as reported in The Aeroplane of Oct. 16, left Croydon on Oct. 12 on the start of a trip to Oslo but was forced by inclement weather to land at Gothenburg and proceed to Oslo by train. On Oct. 14 in Oslo she gave a lecture before a large audience on her African flight.

THE D.H. GAZETTE.

The attention of all subscribers to the *D.H. Gazette* is called to the necessity of notifying the Editor of their changes of address. At the present time the Editor is inundated with copies returned by the Post Office.

Another point in connection with the *D.H. Gazette* is that subscribers who write complaining that they have not received "last month's-issue" should refer to the wording of their subscription forms, which state that the subscription entitles them to 12 numbers as and when they appear. The trouble is that the Editorship of the *D.H. Gazette* is a part-time job and, occasionally, pressure of other duties prevents the regular appearance of the paper.

A GOOD PULL-UP FOR AVIATORS.

A new landing-ground for light aeroplanes is in course of preparation and will be ready next Spring at Wansford. The field is immediately opposite a Garage and Filling Station and is the property of "The Haycock," an excellent old coaching inn, which provides hunting and shooting in the winter and tennis and boating in the summer.

Wansford is conveniently near the Norwich, Northampton, Leicester and Nottingham Aero Clubs and is only 50 minutes from Heston Air Park.

The Automobile Association, who assisted in the negotiations with the owner of the land, state that owner-pilots and flying club members can no longer say that they have nowhere to go.

AN ACCIDENT TO MR. H. A. BROWN.

On Oct. 19 Mr. H. A. Brown, the chief test pilot of A. V. Roe and Co. was badly injured when the Avro machine he was flying crashed at Woodford Aerodrome. Nobody saw the accident but Mr. Brown is stated to have said that the engine suddenly failed.

AT THE SIGN OF THE HAYCOCK.—Some private owners and flying club members at The Haycock, Wansford, where seven machines landed for lunch on the day after the Leicester Club meeting. Left to right (front row): Messrs. Linnell, Tyzark, Linnell, Grey, Tapper, Whittome; (back row): Messrs. de Havilland, Malcolm, Tyler, Ballantyne, Olney, Buckingham, and McDougal.

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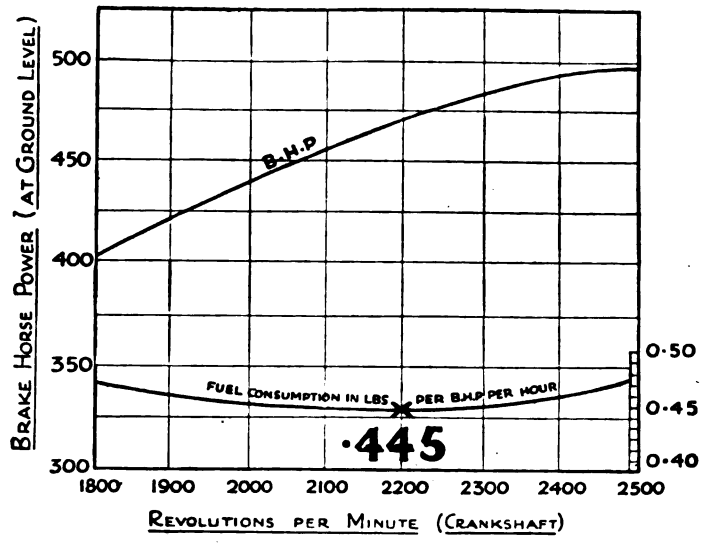

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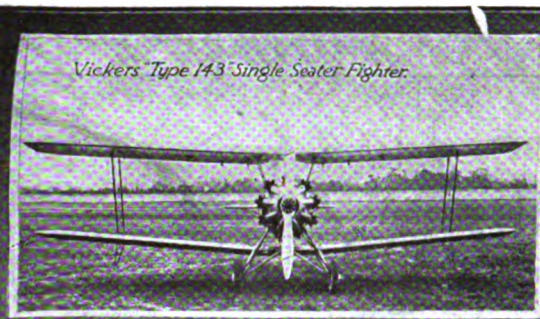

Vickers "Type 143" Single Seater Fighter.

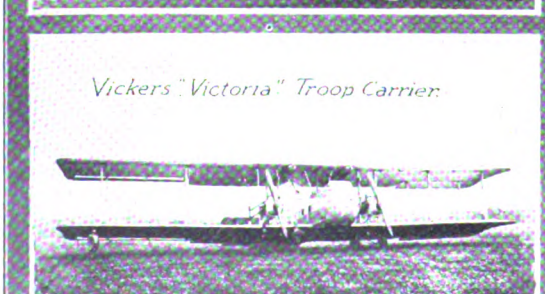
Vickers "Vespa" Two Seater for Military Reconnaissance.

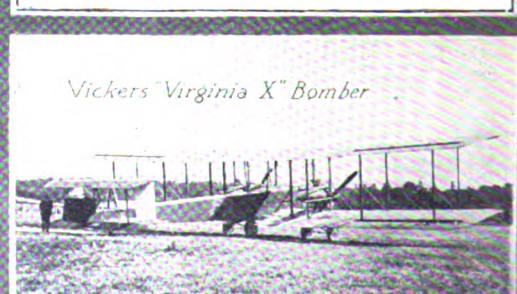
Vickers "Vivid" Military Two Seater. Napier Lion XI. Engine.

Vickers "Vivid" Seaplane.

Vickers "Vixen" (Condor) Military Two Seater.

Vickers "Vellore" Freighter.


Vickers "Victoria" Troop Carrier.


Vickers "Virginia X" Bomber.

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COMMERCIAL AERONAUTICS.

TEN YEARS OF AIR TRANSPORT.

On October 7, 1919, in the same year in which the International Air Traffic Association (I.A.T.A.) was founded in The Hague, the K.L.M. (Koninklijke Luchtvaart Maatschappij voor Nederland en Koloniën (The Royal Air-Traffic Company for the Netherlands and Colonies) was founded by a group of prominent bankers, trading companies, and shipping concerns.

As they were convinced of the great future of air traffic and of the necessity that Holland should enjoy as soon as possible this new means of transport in Europe, they agreed that Holland should participate in it with its own airlines. In particular then they had also in view the future establishment of air lines in the Netherlands East Indies and of air services between the European and Asiatic Netherlands.

Of course, they were aware that years and years must pass before air traffic in Europe and in the Colonies would become self-supporting.

Relations with the Netherlands Government were very friendly from the beginning, though somewhat uncertain, as nobody could actually have any clear idea of the running expenses and the extent of Government support.

The Netherlands authorities at once took up the organisation of the aerodromes, wireless service, meteorological information, etc., and declared their readiness to cover two-thirds of the losses of the company, up to a certain limit. Thus from the beginning the private character of the company was well maintained, as the shareholders would have to cover at least one-third of the losses, and even more. This principle was maintained from 1920 till 1922.

The company was originally founded with a capital of 1,015,000 florins (more commonly called guelder). This amount was raised to Fl.1,513,000 in the year 1925.

In 1923 the Government granted a subsidy for four years, ending on December 31, 1926. The principle of this contract was: granting a diminishing subsidy (Fl.400,000 for each of the years 1923 and 1924 and Fl.300,000 for each of the remaining years, 1925 and 1926) for running a limited number of lines. After this period a new contract was made over seven years, expiring on December 31, 1933.

The basis of the latter contract was that the Government granted a fixed yearly subsidy on a diminishing scale, whereas the Company engaged itself to produce a steadily increasing quantity of ton-kilometres on its international routes.

Thus again the purely private character of the company was clearly indicated.

In 1927 the old shares were written off to 40 per cent., and a new capital was raised, bringing the total amount to Fl.1,253,200. The Government itself took shares to the amount of Fl.500,000—included in the above-mentioned.

K.L.M. Airlines.

Actual flying services were started on May 18, 1920. The first line operated was a service from Amsterdam to London and back. This is the oldest of the K.L.M. lines. It was stopped during the Winters 1920-1921 and 1921-1922, but has been running ever since.

Successively the operations were extended to Bremen, Hamburg, Kopenhagen, Brussels, Paris, and Malmö.

In 1928 the K.L.M. was running its own lines to London, Brussels and Paris. The line to Hamburg was flown in collaboration with the Deutsche Luft Hansa, to Kopenhagen—Malmö in co-operation with the A.B.A., and to Basle—Zürich in collaboration with the Balair.

Transit routes Malmö—London and Malmö—Paris, by way of Amsterdam in both directions, were established.

Airports.

Originally in Holland only one aerodrome was available. This was the military aerodrome of Schiphol, near Amsterdam.

THE CHIEF.—Mr. A. Plesman, founder, organiser, and chief director of the Koninklijke Luchtvaart Maatschappij (K.L.M.), to whom primarily is due the prominence of Holland in the air traffic of the World.

In 1921 the Community of Rotterdam created an aerodrome, and thus was the first town in the World to possess its own municipal aerodrome, setting an example which afterwards has been followed by numerous other cities and countries.

In 1927 the Community of Amsterdam took over part of the aerodrome of Schiphol, which afterwards was highly improved.

The K.L.M. has tried from the very beginning to attract the public to the aerodromes, in order to popularise flying and get the visitors over certain prejudices.

K.L.M. has therefore run her own restaurants and hotels on both aerodromes, and has organised joy-riding, and has invited the visitors to come and see the hangars. Also many joy-rides were organised in the country. These measures have contributed enormously to make the public of the Netherlands more air-minded.

Traffic.

The following figures demonstrate the development of K.L.M. traffic:

FIGURES FOR TEN YEARS OF AIR TRANSPORT.

1920	1921	1922	1923	1924	1925	1926	1927	1928
Kilometres flown:—								
82,000	350,000	397,000	540,000	790,000	965,000	895,000	1,310,000	1,623,060
Passengers carried:—								
345	1,664	1,414	3,937	3,648	5,729	6,275	12,916	17,007
Goods carried (Kgs.):—								
22,000	44 000	90,500	166,500	147,000	225,000	255,000	402,000	674,000
Letter mail carried (Kgs.):—								
2,900	1,500	1,000	1,700	1,650	2,100	2.400	19,900	34,862
Parcel mail carried (Kgs.):—								
—	—	2,700	7,300	10,500	9,800	6,000	16,500	23,237
Persons carried on joy-rides:—								
—	150	2,300	2,000	2,550	6,900	2 500	16,000	17,200

NEXT WEEK—THE AIR PARK ISSUE.

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The K.L.M. has always made very strong efforts to develop goods traffic as much as possible. It was the first company in the World to establish its own booking offices, first at Amsterdam, in 1921, and afterwards at Rotterdam, in 1924.

With these booking offices as a centre, strenuous canvassing has been done, with remarkable results. The shipment of flowers and other horticultural and agricultural products, especially, has developed enormously. Contracts were made with the most prominent firms.

Special Flights.

The K.L.M. has made a special point of organising big tourist flights for various purposes.

In the year 1927, about 80,000 kilometres were covered on special flights, and in 1928, 99,520 kms.

In particular, mention may be made of special flights to bring food and mail to the islands off the coasts of the Netherlands when in Winter they were entirely isolated owing to ice-drift.

Aircraft.

In 1920, when commercial aircraft were not built anywhere, to buy a fleet of old warplanes changed for this purpose would have been highly uneconomical, the K.L.M. entered into a charter-agreement with the British firms Aircraft Transport and Travel, Limited, and Handley Page Transport, Ltd.

At the end of 1920, however, the Fokker Works at Amsterdam produced the first commercial aircraft, the so-called type FII, a monoplane with cabin for four passengers and a Siddeley Puma water-cooled engine of 240 h.p. The K.L.M. bought two of these machines. It may be noticed that these same machines are still to-day in actual service with the S.A.B.E.N.A. [Here one may add that actually the first commercial aeroplane designed as such was the Koolhoven F.K.27, built by the British Air Transport (Bat) Co. in 1919.—C. G. G.]

In 1921, a new type was developed, the Fokker FIII (Siddeley Puma), of which a fleet of ten machines was bought.

In 1924, the first of the FVII type (Rolls-Royce Eagle IX. engine) was put into service, and soon was followed by the well-known Fokker F VIIa, with a Bristol Jupiter engine of 450 h.p. The K.L.M. were thus the first air traffic company to use air-cooled engines for commercial purposes.

In 1927 and 1928 the FVIII machine, with two Bristol Jupiter engines, were entered into service, and in the latter year also the FVIIb, with three Titan engines.

At the end of the year 1928 the fleet of K.L.M. consisted of the following machines:—

1 plane for photographical purposes PH-ABX,
1 FIII (Jupiter) PH-ABV,
2 FVII (Jupiter) PH-ACR and PH-ACJ,
8 FVIIa (Jupiter) PH-ACT, PH-ADN, PH-ADO, PH-ADR, PH-ADX, PH-ADZ, PH-AEB, PH-AET,
5 FVIII (twin Jupiter engines) PH-AED, PH-AEF, PH-AEG, PH-AEH, PH-AEI,
4 FVIIb (three Titan engines) PH-AEO, PH-AEP, PH-AEZ.

The policy of K.L.M. has always been to keep the fleet as small as possible and to get the greatest number of flying hours out of the machines. Of course, this depends largely on the type of machine and its ease of maintenance.

In the year 1921, of every hundred days a machine was only 53 days out of a hundred available for service, and had to be kept 47 days in the hangar for maintenance. In 1928, each machine was available 88.1 days out of 100.

K.L.M. have made a custom of selling all aircraft not strictly wanted in its organisation, so as to keep the fleet up to date. The two FIIs sold to S.A.B.E.N.A. have already been mentioned. The Balair bought five FIIIs, the Czecho-Slovakian Company two FVIIas. Also, many private persons have bought K.L.M. aircraft for special purposes.

In the beginning the machines flew only 300 hours a year, but lately 1,000 flying hours per machine have been obtained. This was possible owing to a very strict system of control of machines and engines, and by very severe organisation in the workshops.

The commercial results developed accordingly. In 1922, the ton-kilometre cost Fl.4.74. This was already reduced to Fl.1.21 in 1927. This amount includes all expenses, and is obtained by dividing the total running costs of the company per year by the total ton-kilometres produced. Here is the scale 1922 1927:—

Year.	Ton-Kms.	Price per Ton-Km.
1922	163,000	Fl. 4.74
1923	239,000	Fl. 3.00
1924	359,000	Fl. 2.23
1925	610,000	Fl. 1.80
1926	883,000	Fl. 1.41
1927	1,272,000	Fl. 1.21

Technical Service.

The workshops of K.L.M. on the aerodromes of Waalhaven were in the beginning very small and confined to repairs of engines and smaller parts of the machines. Big repairs were done by the Fokker Works.

The K.L.M. workshops have developed steadily and have taken over all repairs. Even new machines have been built, and very important improvements on machines and engines, which have later been adopted by the constructors, have been made by the Technical Service of K.L.M.

In this connection, the fact may be mentioned that the K.L.M. has done much pioneer work by bringing into Civil Aviation for the first time new types of aircraft, and especially new types of engines. As was pointed out already, the K.L.M. was the first air traffic company to use air-cooled engines, and recently it was the first to use the new Bristol Titan engine.

Pilots.

In 1921, the K.L.M. began running its air services with British and German pilots, and only two Netherlands pilots left the Army to enter Civil Aviation. In 1922, however, the greater number of the pilots was already of Netherlands nationality. And in 1923, only one foreign pilot was in service with K.L.M.

As there is no commercial flying school in Holland, the K.L.M. has to take her pilots from Army and Navy service and give them additional instruction.

The last year's candidates from the Flying Services were detached during the Winter months to K.L.M., and have been following there special courses in meteorology, wireless telephony, navigation, instruments, etc. A separate course was given in so-called "blind flying" in machines with dual control.

Wireless Service.

K.L.M. machines are all fitted with wireless telephones, which, on the whole, has given satisfactory results. The Marconi type A.D.6h has been used lately.

Foreign Organisation.

The K.L.M. has had from the very beginning its own ground organisation on Croydon aerodrome, and has recently founded such an organisation on the aerodrome of Le Bourget (Paris).

In other ports it has left the care of the ground organisation to the local air traffic company, but in the principal ports it has appointed its own representative, who has often been assisted by a special "commercial attaché," so that not only technical service, but also the commercial interests of the business, should be run acording to the K.L.M. system. This has given excellent results, and has helped to develop the traffic considerably.

Co-operation with Foreign Companies.

Co-operation with foreign companies has always been excellent. On many lines this co-operation has taken the form of pooling services, as, for instance, with the A.B.A. on the Amsterdam-Malmö route, with the Deutsche Luft Hansa on the line Amsterdam-Hamburg, and with the Balair for the service Amsterdam—Basle—Zürich.

Aerial Photography.

The K.L.M. established in 1921 a department for aerial photography, which has been from the very beginning a big success. Aerial photography is used for illustrations in many prominent papers and periodicals, and series of postcards, with air views of picturesque towns in Holland, are sold in all bookstalls, stationery shops, etc. Specially big industries, communities, public works, etc., have used K.L.M. aerial photography for various purposes.

In 1926 the K.L.M. published the book Nederlands Grootste Bedrijven Vanuit de Lucht, giving descriptions of the most prominent factories, concerns, towns, etc., with splendid aerial photographs. This publication awoke the highest interest among the various industries, etc., of Holland.

In 1928 an English edition of the same character was published called "The Importance of Holland Seen frem the Air."

The Amsterdam-Batavia Service.

In 1924 the first trial flight from Amsterdam to Batavia was made with an FVII (Rolls-Royce) machine.

In 1927, two return flights were made, one with the purpose of bringing a tourist to the Netherlands East Indies and back, and one to establish a quick postal connection between the two parts of the Dutch Kingdom.

In 1928, four machines were sent by air to their destination, the Netherlands East Indies, and two other trial flights for postal purposes were made.

It is the intention of K.L.M. to continue these flights and study the possibilities of a weekly postal service in both directions, with a flying time of about 12 days (by steamer at least 23 days), so that a regular service may be established in 1931.

NEXT WEEK—THE AIR PARK ISSUE.

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Services in the Netherlands East-Indies.

In 1927, a part of the shareholders of the K.L.M., together with other firms, specially interested in Dutch Colonial work, founded the N.V. Koninklijke Nederlandsch-Indische Luchtvaart Maatschappij (K.N.I.L.M. Royal Netherlands Indian Air-Traffic Company), which is working in close collaboration with the K.L.M.

The first services opened, on the first of November, 1927, on the routes Batavia-Bandoeng and Batavia-Semarang. Other services, such as to Soerabaia, Singapore, and Palembang-Medan will follow soon

From the very beginning traffic on these routes has been intense.

The Indian services will in future link up with the Amsterdam-Batavia route and with the British lines to Australia and New Zealand.

Conclusion.

From the first the K.L.M. has made a very strong stand against foreign companies which were enjoying greater subsidies and other facilities. As an average competing concerns were receiving a subsidy many times greater than K.L.M. per kilometre flown.

This often has been the reason why K.L.M. could not develop as fast as desired. But, on the other hand, it has compelled K.L.M. to keep its organisation on strict business lines and to try to make air traffic as soon as possible a self-supporting enterprise.

Although there have been many crises in the existence of K.L.M., it is to-day the oldest air traffic concern. And on October 7, 1929, it had worked without interlude for ten consecutive years under the same name and the same management.

A Personal Note.

[In these ten years air traffic and air services have developed steadily and satisfactorily. For these results the highest credit is due to Mr. A. Plesman, who first conceived the idea of the K.L.M., did all the first organising, and has remained the manager and guiding spirit of the firm ever since. His determination has carried the business through many difficulties, and his strong personality has made Holland, although a small country, one of the greatest influences in the World-development of Civil Air Traffic.

In his work he has been ably seconded by Mr. Hans Martin, the Secretary and General Business Manager of the firm, whose tact and organising ability have done so much to back up the initiative and driving power of his chief.

No account of the K.L.M.'s work would be complete without recognising the value of the work done by the various Aerodrome Managers of the firm. Mr. Thomson, at the Schiphol Aerodrome at Amsterdam, besides managing the firm's business on the aerodrome, is also Chief of Flying, and has the allocation of the different journeys to the different pilots and machines, and so forth. Mr. Bouman, at Rotterdam, has to deal with a vast amount of traffic, and with the synchronising of the various services at that important junction.

At Le Bourget, the firm have Mr. Mohr, whose tact in adjusting temperamental differences between his Nordic and Latin co-operators has been of great value. And at Croydon, since the K.L.M. business began there, the firm have had Capt. H. Spry Leverton (late, the Duke of Cornwall's Light Infantry), whose personality and humour, combined with sound business ability, have helped to make the K.L.M. one of the most popular institutions at our Terminal Aerodrome.

A great deal of the success of the K.L.M. is certainly due to Mr. Guillonard, the firm's Chief Engineer. His particular task is to study the technical developments of the commercial aircraft of all nations and learn what he can from them, while on the other hand he learns the very valuable technical lessons which are taught by the bitter experience of regular air-line operation. Combining both kinds of experience, he has been able to make improvements in the firm's aircraft which have been of the highest value not only to the K.L.M. but to the Fokker Co., which firm has built practically all the aircraft which are used by the K.L.M.

Also, the Civil Aeronautical Community must recognise the good work that has been done by Mr. Stephan, the manager of the Fokker Company, in co-operating so closely with the K.L.M. and arranging to modify Fokker aircraft to suit the needs indicated by the experiences of the K.L.M.

This experience gained in K.L.M. work has helped materially to make Fokker aircraft the most widely-used commercial machines in the World, in the United States and Canada as well as in Europe and Asia. And the fact that the Duchess of Bedford, Mr. Holt (the financier), Lt. Glen Kidston, Mr. Van Lear Black, Lord Carbery, and other private owners, have had to buy Fokkers because nothing else would do the jobs they wanted done, is largely due to the fact that the work of the K.L.M. produced machines which fitted those jobs.

In every way Mr. Plesman and his able helpers in the development of the K.L.M. may feel that in the work of the past ten years they have not only made themselves World-famous, but that they have done service to the World by advancing the cause of Air Traffic very considerably.—C. G. G.]

TRANSPORT.

Speaking at the Twenty-fifth anniversary banquet of the Commercial Motor Users' Association on Oct. 15, at which H.R.H. the Prince of Wales was the Guest of Honour, Lord Thomson, Secretary of State for Air, said that shortly after Parliament opened he hoped to invite 100 members of all parties to take a flight in R.101 and he hoped there would not be 100 bye-elections. He hoped to see the day when great railway centres in London and the big cities were equipped with overhead aerodromes.

Among those present at the banquet were Mr. Montague (Under-Secretary for Air), Col. the Master of Sempill (President of the R.Ae.S.), Sq. Ldr. Orlebar, and Flg. Off. Waghorn.

AN ENGLISH COMMERCIAL AIRCRAFT.—The Avro 5 (three Genet-Majors), for pilot and four passengers, built by A. V. Roe and Co. Ltd. on Fokker lines.

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THE AIR-DOGS' DINNER.

Squadron Leader E. L. Johnston and Captain A. G. Lamplugh and Mr. Laurence Wingfield must have felt very proud of themselves on Saturday night at the Inaugural Dinner of the Guild of Air Pilots and Navigators of the British Empire. That is the proper title of the Guild, which aspires to be, and undoubtedly will be in time, as important as is the Guild of Master Mariners. It may never be as rich as some of the ancient City guilds, but, seeing the influence and the power it will have over the development of Imperial air transport it may very soon become more important. In spite of all this, the Guild will justly be known all its days as the Ancient Order of Air-Dogs, for it does include within itself the finest collection of thoroughly able, seasoned, weather-beaten and tried-out air pilots of any organisation in the World—and a real good crowd they are.

Presumably by way of giving the proper atmosphere, the Hotel Cecil put the Guild into the coldest dining-room in which one has ever eaten. Personally one sat in a draught which made one feel that one was in the open cockpit of some trans-Polar air-liner on the Grand Circle course to Japan. However, that atmosphere was counter-balanced after dinner, when the party transferred itself to the Palm Court, where the temperature was about that in which Imperial Airways' pilots will probably bask when the line gets to Singapore or thereabouts. We certainly had Greenland's icy mountains and India's coral strand to give us the illusion of World Travel.

A pleasing incident at the start of the dinner was the saying of Grace by the Reverend P. Donald Robins, who was known and respected in the earliest days of Civil Aviation as one of the most reliable pilots of Air Transport and Travel, Ltd.

After dinner, Mr. Montague (Under-Secretary of State for Air), proposing "Success to the Guild," emphasised the importance of air navigation and the necessity of a Guild which should make air pilots and navigators equal in status to members of the other great professions. He remarked how struck he was by the great number of interests covered by the Memorandum of Association, and pointed out its wisdom—for consideration should come before discussion.

Referring to the benefits of a Guild as such, he told a rather nice story of a nigger teamster who had been skilfully flicking flies off his mules with the lash of his whip. Further along the road the vehicle passed a hornet's nest, and a passenger suggested that he should upset the hornet's nest with his whip. To which the driver replied: "I guess not. Dem hornets is organised."

Mr. Montague said that a few months ago he knew nothing about aviation, but had now become a convert, and had profound belief in the commercial possibilities of air transport. [He has flown over 3,000 miles in the past six weeks.—C. G. G.]

Air Vice-Marshal Sir Sefton Brancker, K.C.B., A.F.C. (the Worshipful Master of the Guild), said that this was the first time in his life that he had been called Worshipful, and added that if he was going down to History at all he would rather go down as the Master of this Guild than as anything else. He reminded us that aviation was only ten years old, and that it had done extraordinarily well. We had set up a wonderful standard of efficiency and safety.

He pointed out that the Prince of Wales and Prince George were doing a lot of flying, and were likely to become pilots, and their lead would do an immense amount of good.

This meeting, he said, was the first since air pilotage had become a legally recognised profession. Their nearest relatives were the Guild of Master Mariners. He remarked that the old Guilds were wealthy and were able to be charitable. None of us were likely to see this Guild rich, but he hoped that it would follow in the steps of the others. The Guild was itself Imperial, and would be quite a big factor in keeping the Empire together. He reminded us that every member must do his best work.

He said that the Press were doing their best, but we wanted more propaganda for aviation. Our revered Prime Minister was the finest example in the World of an Apostle of Peace. The International Commission of Air Navigation now included twenty nations, and the representative of each was himself a good patriot, but they were always a happy party. This was a great factor in holding the nations together. He remarked on the spirit of good fellowship which one found among pilots of all nations. The pilots of other nations were just as keen as ours, and showed just as fine a spirit.

Mr. Lawrence Wingfield, M.C., D.F.C., the Clerk to the Guild, proposing "The Guests," said that the Guild would be a free and independent and critical body. Already it embraced men from the ends of the Empire, and the Guild hoped to meet them and hear of their experiences at future dinners. He said that the Guild could not afford to put a £5 note under the plate of each guest, as one City Guild was said to do, but at least they had been able to give each lady guest a spray of flowers, to express their sentiments.

Lieut.-Colonel I. A. E. Edwards, C.M.G., Managing Director of National Flying Services, Ltd., said that this dinner was an epoch-making event. The position of pilots was daily becoming more analagous to that of the Master of a ship. There was a time when pilots were regarded as super-men, but actually they were not. He told the story of the test pilot who, having come down to a strange aerodrome to test a new machine, sat in it and waited for the engine to start while the mechanics swung the airscrew. Presently another pilot strolled up, and remarked: "What about turning on a spot of petrol?" Which only showed that even test-pilots were not super-men.

But in these days, Col. Edwards said, pilots had to be very highly qualified, and so they might in time become super-men with bulging eyes and ears.

THE INAUGURAL DINNER OF THE GUILD OF AIR PILOTS AND NAVIGATORS OF THE BRITISH EMPIRE ON OCT. 19, 1929.

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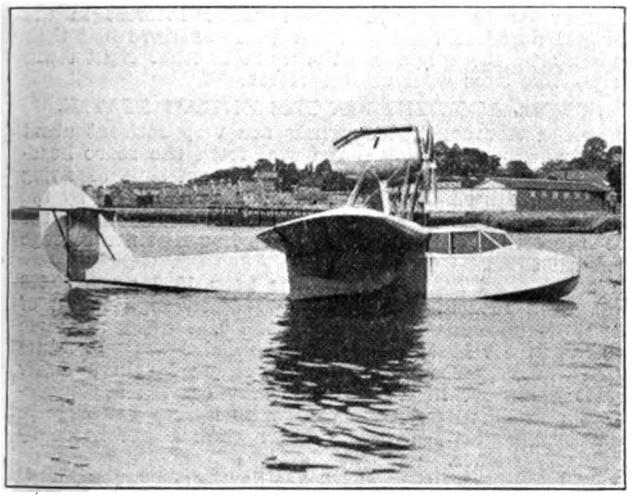
CUTTY SARK

CABIN FLYING BOAT.



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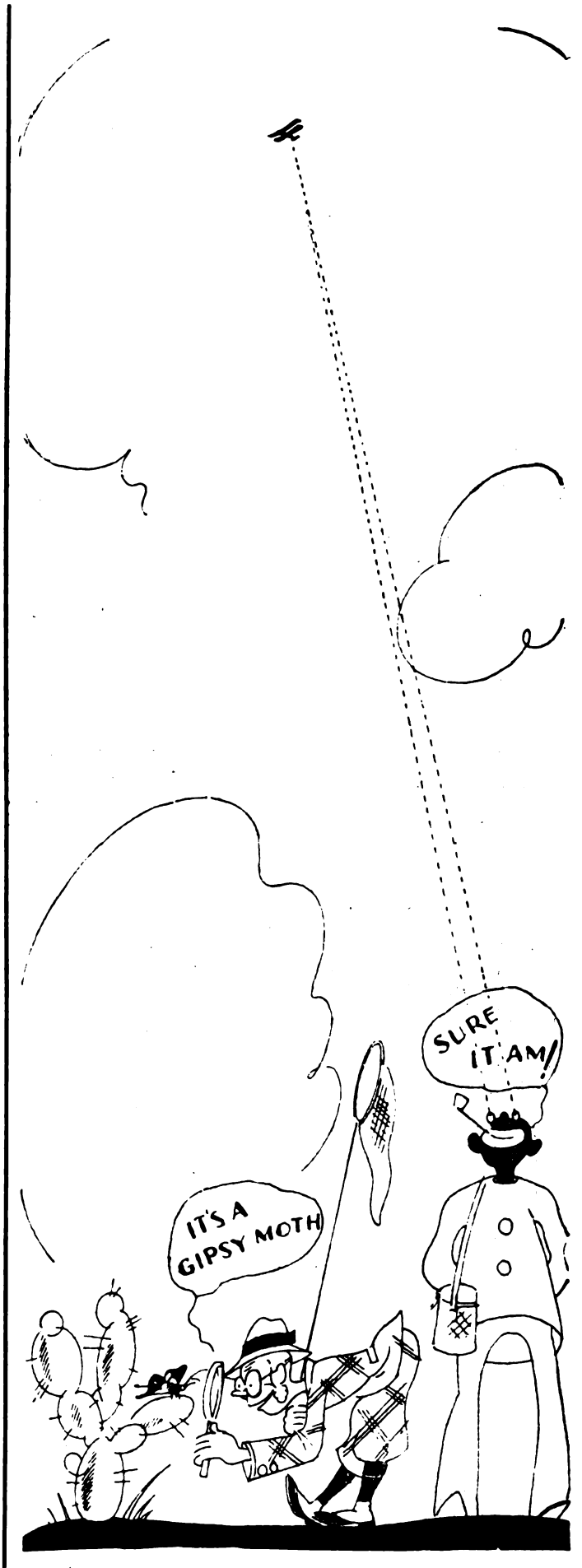

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He expressed his particular respect for navigators. Even second-class navigators had to be skilled mathematicians.

The present fashion of finding the way about a country by following the roads and railways was going to make air along those routes unhealthy. The wise pilot would navigate on a compass-course and keep away from them. The existence of this Guild might even make private owners learn to be navigators.

He said that he was particularly struck by the wonderful way in which the status of the Guild had been recognised so soon.

Lady Cobham also returned thanks for the Guests, saying that the first and only speech she had ever made at a public dinner had been such a success that she had decided never to make another.

The members of the Committee of the Guild present were the Deputy Master, Sq. Ldr. E. L. Johnston, O.B.E., A.F.C.; the Wardens, Mr. A. S. Wilcockson, Mr. O. P. Jones, Capt. A. G. Lamplugh, and Capt. Norman Macmillan, M.C., A.F.C.; and Honorary Members of the Court, Colonel the Master of Sempill, Sir Arthur Whitten Brown and the Reverend P. Donald Robins.

Among the guests were Sir Alan and Lady Cobham, the Honourable Mrs. Forbes Sempill, Mrs. Montague, Air Vice-Marshall Sir Vyell and Lady Vyvyan, and Mr. Alan Butler. The airship people were noticeably absent. Presumably they were all sitting round the mooring mast at Cardington waiting for R.101 to blow away.—C. G. G.

THE AIR NAVIGATION CLASSES.

At the first of the classes for Air Navigators, held on the evening of Oct. 21, thirteen students attended, one of them a woman. These classes will be held every Monday night until January, after which date they will be held on Mondays and Fridays.

There are still some vacancies in these classes, and those desirous of joining should communicate with Captain A. G. Lamplugh at the British Aviation Insurance Group, 3 and 4, Lime Street, London, E.C.3, enclosing five guineas.

THE APOTHEOSIS OF THE DO.*x*.

On Oct. 21 the Dornier flying-ship, Do.*x*, made a flight of nearly an hour with a crew of 10, 150 passengers and, as is now done, 9 stowaways, making a total of 169 persons. This is easily a record for aircraft of any kind, either heavier or lighter than air,—even to the number of stowaways.

The flight was made shortly after 11.00 hrs. at Altenrhein, on Lake Constance. The total loaded weight is said to have been 52 tons. The maximum speed attained was 170 km./hr. (105.6 m.p.h.), and the height reached was 1,200 ft. The time to take off was 50 secs.

The Do.*x* has twelve Siemens-built geared Jupiter engines, giving a maximum total h.p. of 6,300. With a full load of 52 tons this makes a power-loading of 18.5 lbs. per h.p. The wing-loading for this flight was 23 lbs. per sq. ft. (this includes the auxiliary wing joining the engine mountings).

The same figures for the Short Calcutta are 13 lbs. per h.p. and 11.2 lbs. per sq. ft. The Calcutta lands at about 56 m.p.h., while the landing speed of the Do.*x* may be as high as 90 m.p.h., and is certainly above 70 m.p.h.

With the big power-loading the ceiling of the Do.*x* is not likely to be very good.

Quite apart from these points the feat is notable, and definitely shows the feasibility of really useful-sized flying-boats,—or ships. One has little patience with the views of experts and others, as expressed in the daily press, who state there is no call for such big craft. Only by employing large craft can we reduce fares and increase the range.—T. J.

MUNICIPAL AERODROMES.

According to the latest list issued by the Air Ministry, there are now four cities with licensed aerodromes, and a further 88 have acquired reserved sites, or are awaiting the inspection of proposed sites.

The four cities with licensed aerodromes are Hull, Manchester, Blackpool and Nottingham.

Bristol has acquired a site at Whitchurch and is now far advanced with its preparation, and other cities with sites are Carlisle, Liverpool, Plymouth, and Stoke-on-Trent.

The following towns are negotiating for the purchase of sites: Burton, Cardiff, Hastings, Hereford, Ipswich, Portsmouth, Southampton, Southend, Sheffield and Worcester.

The following have reserved sites for aerodromes in their town-planning schemes: Basingstoke, Morecambe, Skegness and York.

Another 56 towns have shown active interest in the municipal aerodrome scheme. Of these 29 have had their proposed sites inspected, and there are another eight towns with possible sites awaiting inspection.

FATAL ACCIDENTS IN THE UNITED STATES.

American Aeronautical Journals are very reticent about fatal crashes, presumably a reaction from the scare headlines of the yellow press. The figures relating to flying fatalities in America during 1928 have been issued by the Actuarial Society of America and are therefore all the more interesting. *Aviation* of Oct. 12 has had the courage to publish them.

In the United States during the year 1928 some 50,000 people were carried on regular scheduled flights and of these 13 were killed,—roughly 1 per 4,000. During the same year British Air Lines (excluding the Cairo—Basrah route) carried 27,659 passengers without a single fatality. Other aircraft flying for hire in this country carried 97,619 passengers and killed one. There are no figures available in the United States for flights other than those made by scheduled air lines.

During the first half of 1928 the death-rate among pilots with Federal licences was 35 per 1,000, decreasing to 25 per 1,000 for the second half of the year.

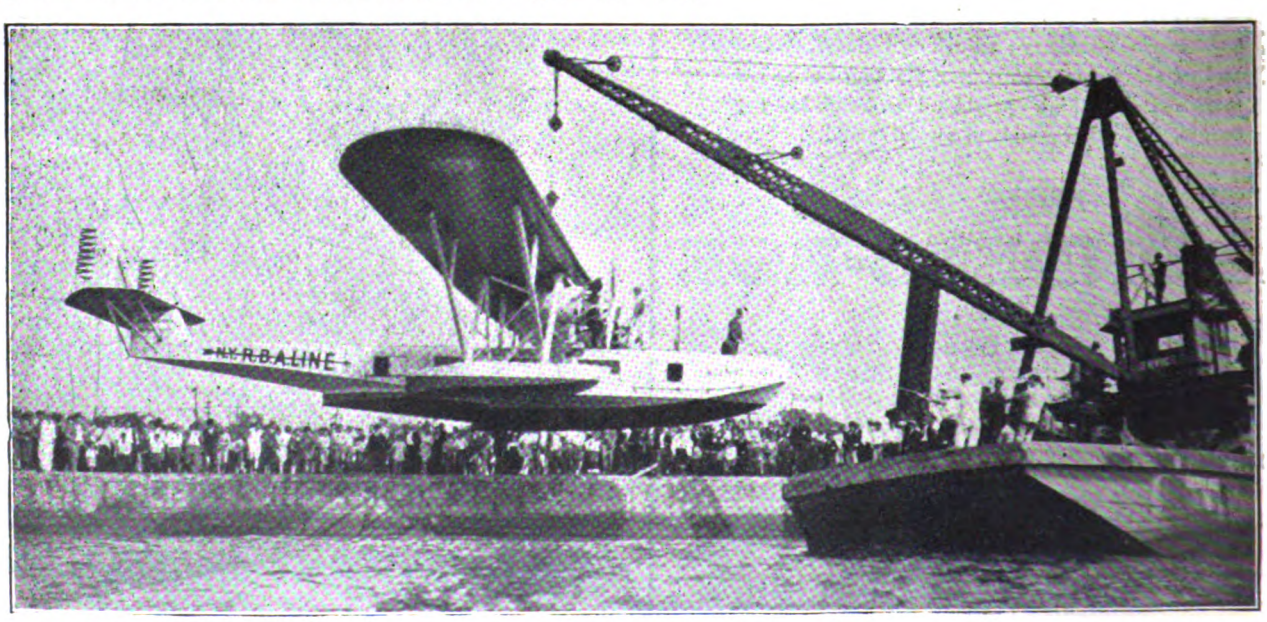
The death-rate for pilots holding transport licences was 32 per 1,000. The fatalities to pilots holding limited commercial licences which restricts their activities to specified areas, were at the rate of 16 per 1,000. The rate for private licensed pilots was 8 per 1,000. Industrial or test pilots of whom there are about 50 suffered no fatalities. The highest rate of all is that of 45 per 1,000 for the mail pilots.

LINKING THE AMERICAS.

The New York-Rio de Janeiro-Buenos Aires Line has been formed in the United States to operate an air line between these cities.

The machine used is a twenty-seat twin-engined flying-boat built by the Consolidated Aircraft Corporation. The type is known as the Commodore and is essentially the same as the Admiral, a five-seat reconnaissance flying-boat, which was built under contract for the American Navy.

The first machine was christened the *Buenos Aires* by Mrs. Hoover some days previously to the start of its maiden voyage on Oct. 17 from Washington to its namecity.



NEW YORK—RIO—BUENOS AIRES.—The Consolidated Commodore "Buenos Aires" (two Pratt and Whitney Hornets) for the new American Line to Argentina.

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THE ZENITH CUP

awarded for the fastest flight by a two-seater light aeroplane weighing under 400 kilogs. over the circuit Orly, Lyons, Marseilles, Toulouse, Bordeaux, Orly, a distance of 1037 miles

has been won for 1929 by

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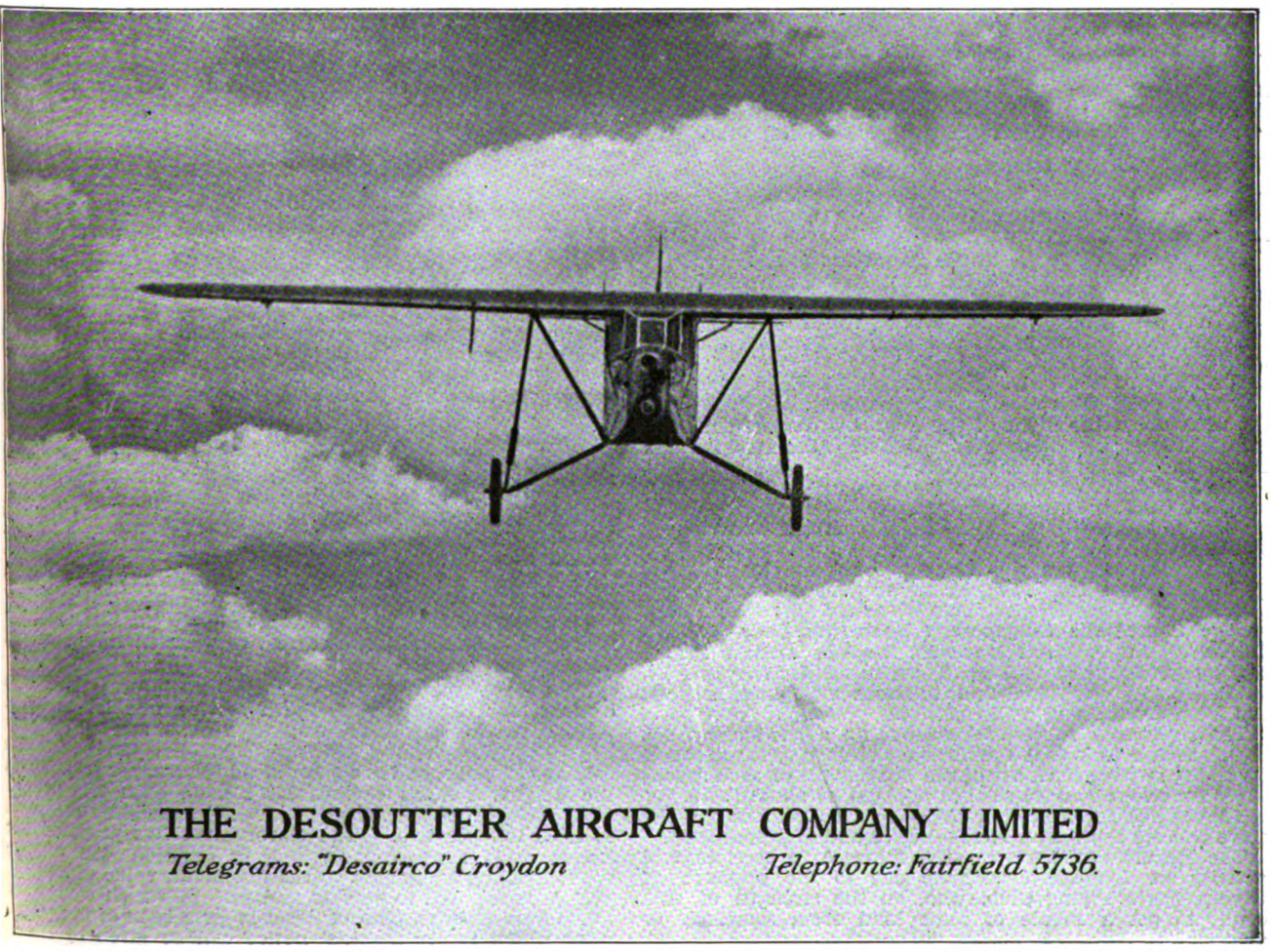

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THE REPORT ON CIVIL AVIATION.

[*Report on the Progress of Civil Aviation.* Issued by the Air Ministry, Directorate of Civil Aviation. Published by H.M. Stationery Office, and obtainable from The Aeroplane Book Department, Cannon House, Pilgrim Street, E.C., for 3s. 9d. post free.]

Events and developments move rapidly in Aviation. New records are made and smashed so quickly that the memory finds difficulty in keeping track of such things. The information of value and importance yesterday is but of academic interest to-day. The speed record of D'Arcy Grieg is of no importance beside the achievements of Waghorn and Orlebar. So, with this Report, for whose delay a Prefatory Note more or less apologises, one feels that the speedy issue immediately on completion of the year under review should be the first consideration, even if this meant omitting a certain amount of relevant matter.

The reader is confused, too, by certain references to events in the present year. We are nearly ready to read about 1929 now!

The Report opens with the statement that Imperial Airways continued with increasing success their services on the London—Paris—Zurich, London—Brussels—Cologne, and Southampton—Guernsey Routes. They must have been bored with their easily-won success on the last mentioned, because when they sent their new flying-boats to the Mediterranean section of the Indian Air Line they made no attempts to continue their service to the Channel Islands.

After chronicling the flights made on the Basrah—Cairo route and touching on the delays in opening up the rest of the route to India, the Report passes on to Miscellaneous Commercial Flying. Under this heading the operations of Surrey Flying Services, A.D.C. Aircraft, Ltd., and Air Taxis, Ltd., are mentioned. In this instance figures up to August, 1929, are quoted, and one wonders why these were not held over for this year's Report. The formation of N.F.S. is also noted.

The sound work done by the Air Survey and Aircraft Operating Companies is given much space. The amount of survey work done by these two concerns is remarkable. From the patriotic standpoint there is much on which to congratulate ourselves in that this particular branch of aviation has been developed more intensively by unsubsidised British interests than by any other concern or nation.

The year 1928 saw a 50 per cent. increase in the membership of the Light Aeroplane Clubs, and a 60 per cent. increase in the number of privately-owned machines. The approved Clubs increased from eleven to thirteen. The Automobile Association began its association with aviation in the same year by the formation of a special branch to help private owners.

The Report next gives the Records obtained by Great Britain in 1928. These were records for Height, and Speed over 100 km., captured by the Gipsy Moth, and the speed Record of Flt. Lt. D'Arcy Grieg.

The Report now refers to the important foreign achievement of crossing the Atlantic from East to West by the Junkers W.33, and then carries on to the important British long-distance flights. Well, of course, one may paraphrase the inimitable Beachcomber and say: "IT all depends on what you call British."

The flight of Mr. C. D. Barnard and Mr. E. H. Alliott in a Fokker FVII (Bristol Jupiter XI) is very nearly British but what about the flight of the *Southern Cross* from California to Australia? Apart from the crew, the machine was Dutch and the engines American.

One is endeavouring to find some ruling on the question of what decides the nationality of such efforts, the registration of the machine, the nationality of the *matériel*, or of the crew?

The year 1928 was a good year for these long flights. There were Mr. Bert Hinkler's tremendous solo trip to his own country, Sir Alan Cobham's Wakefield Survey of Africa in the Short-Rolls Singapore. There was Lady Bailey's Odyssey. Lt. P. M. A. Murdoch, S.A.A.F., made a record flight from England to Cape Town in an Avro Avian. Lt. R. R. Bentley completed multitudinous voyagings between the same countries in a Cirrus Moth.

The University Air Squadrons put up a good show, but owing to the fact that Cambridge obtained prior sanction for flying in term time, out of the 73 strength of each squadron, Cambridge had 45 soloists opposed to Oxford's 33.

The figures for Refresher and *ab initio* courses for Reserve Officers showed an increase of 53 and 41 respectively.

The Report comments on the increase in receipts and activity at Lympne Aerodrome due to the presence of Cinque Ports Flying Club, who, on the strength of this, ought to get a rebate of some kind from somebody or another.

One is interested to note in the Report an account of the steps taken by the Air Ministry to induce Airmindedness in Municipal Authorities. Such activity is now beginning to bear fruit, or shall we say that the seeds are up and with careful tending may bear fruit?

On page 24 the Report mourns the passing of the Light Aeroplane, brought about by the increase of engine power, and breathes a prayer for the coming of cheaper and lower-powered types. Although one feels that lower-powered machines would be nice, the same tendency to increase engine powers may be noticed among all the Continental types which are slowly creeping up to the powers of their English equivalents.

This question of horse-power is bound up with the need for a high cruising speed, and reliability. The first is made necessary by climatic conditions, and the latter is obtained by running an engine of 3 lbs. per h.p. at a comfortable cruising speed. In case the latter point may seem a trifle obscure, one would amplify it by saying that an engine of such a weight means proportionately greater power to obtain high cruising speed.

In March, 1928, as recorded in this Report, the D.H. Gipsy engine passed its type test. A few days ago a standard Gipsy engine completed 600 hours in the air without overhaul, an illustration of how quickly things develop in aviation!

In the section devoted to Airships, the comment is made that both the airships should be ready for operations at the end of the year. Was this a pious wish for the end of 1928?

The Report states that £415,000 was provided for expenditure in connection with Civil Aviation for the year 1928-29, which sum was a reduction of £49,000 as compared with the previous year, which was due to the decrease of capital expenditure at Croydon.

Imperial Airways received £137,000 for their European services and £93,600 for the Cairo-Basrah part of the business. Light Aeroplane Clubs got £16,000. The cost of staffing and maintaining civil aerodromes, mostly Croydon, presumably, was £29,000. A similar sum was allocated to aerial routes, surveys, experimental services, etc., £93,000 went for works services (mostly reconstruction at Croydon), £14,364 paid for H.Q. staff, and £2,000 for Miscellaneous Services.

The following licences or certificates were current on December 31, 1928—Pilots 821, Navigators 15, Ground Engineers 524. Airworthiness (heavier-than-air machines), 611—which figure included 305 for machines sold abroad. Aerodromes 77.

Of these aerodromes, 5 were Government-owned, 16 privately-owned, 7 were club aerodromes, and 49 were for joy-riding.

There were twenty-nine accidents to civil aircraft in 1928, and of these seventeen were due to pilots' errors of judgment. Engine-failure was a primary cause of only two, and in neither case with fatal results.

This part of the report makes extraordinarily interesting reading, as a brief and explanatory account of every accident is given. Limitations of space prevent one from saying much more except to give a brief analysis of the accidents.

Twelve resulted in loss of life, and of these, half happened to machines attached to Clubs. Six accidents resulted in severe injuries, and the remainder had no serious consequences other than structural damage to aircraft. Seventeen people were killed as a result, and of these, none were passengers travelling in British aircraft on scheduled services.

The section devoted to British Aviation then closes with a number of tables, from which one gleaned (as a sidelight) that July is easily the best month for joy-riders, and August is the best month for the scheduled air-lines.

The total Civil Aviation Vote in Australia for 1928-29 was £100,000. The subsidised services operated in 1928 were between Perth and Derby by West Australian Airways, Charleville—Camooweal and Cloncurry—Normanton, by Quantas and Adelaide—Cootamundra, Mildura—Broken Hill and Hay—Melbourne by the Larkin Aircraft Supply Co. Ltd. Quantas also operated an unsubsidised service between Brisbane and Toowoomba.

This 1928 Report now gives some 1929 information. The contract for the Adelaide—Perth service was let to West Australian Airways, and the weekly service started on May 29, 1929. The company will receive 12s. 8d. per lb., for the carriage of mails, and are guaranteed 600 lbs. per trip. When the weight of mails exceeds 800 lbs. on each trip over a period of four months, the guaranteed load will be increased to 1,200 lbs. per trip. The Government has prepared the necessary landing grounds, and in addition will provide night lighting equipment to the maximum value of £12,000. W.A.A. is required to operate and maintain such equipment at its own expense. The contract is for a term of five years, after which twelve months' notice can be given by either party.

The Larkin concern have secured the contract for the

NEXT WEEK—THE AIR PARK ISSUE.

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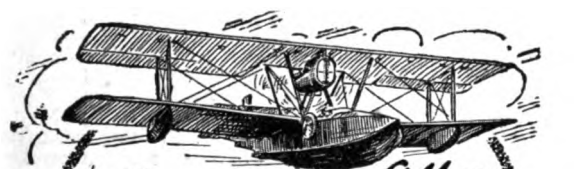

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weekly Camooweal—Daly Waters service at a subsidy of 3s. 4½d. per mile for the whole of the three-year contract. This service is due to start this year.

Quantas secured the contract for the Charleville—Brisbane weekly service, which started on April 17, 1929. Subsidy is 3s. 3d. per mile for first year, 3s. 1d. per mile second year, and 2s. 11d. per mile for third year.

There are six Light Aeroplane Clubs, and 124 pupils obtained licences. At the end of 1928 there were 178 private pilots, 103 commercial pilots, 182 ground engineers, 122 aircraft, and 171 aerodromes.

The total Civil Aviation Vote in Canada for 1928-29 was £684,197. The following Winter air mail services are operated when ice makes navigation of the St. Lawrence impossible,—Two trips a month between Seven Islands and Anticosti by Canadian Transcontinental Airways, Ltd., a six-days-a-week service between Leamington and Pelee Islands by London Air Transport, weekly service between Moncton and Magdalen Islands by Fairchild Aviation; twice-a-week service between Quebec and Seven Islands by Canadian Transcontinental Airways, Ltd.

Canadian Airways Transcontinental also operate regular air mail services between Rimouski and Montreal and Montreal and Ottawa. The Fairchild Aviation Ltd. operate a six-weekly mail service between Montreal and Toronto, and Canadian Colonial Airways Ltd. who are a subsidiary of the American Colonial Airways Corp., operate a service between Montreal and Albany (New York) daily. Western Canada Airways Ltd. have a weekly service serving the Cold Lake mining district, a twice-weekly service for the South-Eastern Manitoba mining district, and a weekly service for the Red Lake mining district in Northern Manitoba.

Mail to the extent of 283,163 lbs. was carried during 1928 by the air mail contractors. A large amount of passenger and freight carrying was done during the year by independent commercial concerns.

There are sixteen approved Light Aeroplane Clubs in Canada, of which fifteen were actually in operation, with a total membership of 2,400. During the year the Clubs completed 8,124 hours' flying, and obtained 111 private licences and 28 commercial.

A large amount of exploration, fire-fighting, aerial photograph, and the like was done by commercial firms under contract to the Governments.

By comparison with the intense activity in Canada, South Africa appears almost stagnant, though in 1928 Union Airways Ltd. received a three-years contract and £8,000 per annum to operate services between Cape Town, Port Elizabeth, East London, Durban, Bloemfontein and Johannesburg.

There are five Light Aeroplane Clubs in South Africa which are not subsidised

New Zealand in 1928 appears to have been in the throes of getting things done, 23 Light Aeroplane Clubs were formed, of which three were assisted by Government.

India was also getting things done and asking for tenders of a regular subsidised service weekly between Karachi and Rangoon. The Aero Club of India and Burma, which controls all Indian Light Aeroplane Clubs, received a subsidy of Rs.30,000.

The Aero Club of Kenya was reconstituted as the Aero Club of East Africa.

There are ten pages more of the Report devoted to Civil Aviation in foreign countries, and there is not enough space herein to deal with all this information. There is at the end of the Report a table giving a number of figures relating to regular air serivces, from which one has derived the following facts.

In 1928 the greatest mileage flown was by Germany, with 6,820,000 miles; the United States was second with 5,585,224 miles. Great Britain is sixth on the list, coming after France, Italy, and Russia with 1,135,910 miles.

One has worked out the rate of subsidy paid per mile flown. The highest rate is that paid by Italy, where 1,238,000 miles were flown at 8s. 5d. per mile. The next highest is Great Britain, with 4s. 5d. per mile. In spite of Germany's enormous mileage, she only pays 2s. 11d. per mile. The United States, with her five and a half million miles, pays only 3s. 3½d. The lowest rate of all is that paid by Switzerland—7d. a mile is paid for a total mileage flown of 330,600.

With regard to the above figures, one should especially note that the mileage figures for the United States only are those for air mail services. No subsidy figures are available for Russia.

In connection with these figures, one should note that both in Germany and Switzerland the rate per mile is for Government subsidy. In Germany the States and Municipal authorities contributed a further £460,790, which makes the rate 4s. 3d. This comparable with the British figure.

There is certainly good meat in the Report, but it has been hung a little too long.—T. J.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 12; Monday, 25; Tuesday, 26; Wednesday, 26; Thursday, 27; Friday, 25; Saturday, 25.

Imperial Airways Ltd.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich. London—Ostend—Brussels—Cologne and return: Machines 51, passengers 549, freight 24½ tons. India Route: Inward, passengers 1, mail 714 lbs; outwards, passengers 5, mail 793 lbs.

Air Union:

Paris—London and return: Machines 50, passengers 279, freight 20¾ tons.

K.L.M.:

Amsterdam—Rotterdam London and return: Machines 25, passengers 55, freight 7½ tons.

Sabena:

Brussels—London and return: Machines 12, passengers 23, freight 1¼ tons.

Deutsche Luft Hansa A.G.:

Amsterdam—London and return: Machines 26, passengers 59, freight 7 tons.

Miscellaneous:

British machines 2, passengers 1.
Foreign machines 0, passengers 0
Total number of trips by British machines 53, carrying 560 passgers. Foreign machines 113, carrying 416 passengers.

COMPARATIVE FIGURES.

Week ending Oct. 19:
Machines, 166; Passengers, 966; Crews, 417; Total personnel, 1,383.
Corresponding week, 1928:
Machines, 128; Passengers, 678; Crews, 248; Total personnel, 926.
Corresponding week, 1927:
Machines, 95; Passengers, 516; Crews, 179; Total personnel, 695.
Corresponding week, 1926:
Machines, 74; Passengers, 209; Crews, 95; Total personnel, 304.
Corresponding week, 1925:
Machines, 56; Passengers, 191; Crews, 65; Total personnel, 256.
Corresponding week, 1924:
Machines, 72; Passengers, 307; Crews, 90; Total personnel, 397.
Corresponding week, 1923:
Machines, 49; Passengers, 116; Crews, 73; Total personnel, 189.
Corresponding week, 1922:
Machines, 82; Passengers, 355; Crews, 139; Total personnel, 494.
Corresponding week, 1921:
Machines, 57; Passengers, 134; Crews, 77; Total personnel, 211.
Corresponding week, 1920:
Machines, 111; Passengers, 192; Crews, 140; Total personnel, 332.

CROYDON NOTES.

A K.L.M. pilot on the Holland—Batavia Air Mail service posted a post-card to the K.L.M. Croydon Manager by ordinary post, *not* air mail, just before he left Java for the return flight to Holland. Nearly a week after the pilot had arrived back in Holland the postcard reached Croydon Aerodrome.

The Editor wants more stories from pilots, but after canvassing a number of bird-men and getting "There was a young lady of Wapping" six times and several versions of that vexed problem, "what the young lady said to the military gentleman" and also accumulating a fund of knowledge about the curious habits of the Scotch, the Irish and the Jews, one can but conclude that pilots do not have adventures these days, except perhaps in the Lido Club.

An interesting bit of news comes from Holland. It is said that Waalhaven Aerodrome will possibly be done away with in favour of a site midway between Rotterdam and the Hague, both of which are highly important cities to commercial aviation in their different ways. It is also said that Waalhaven, being right on the Rotterdam docks, is needed for Dock extension.

A few days ago an air liner was about to depart, the chocks having already been withdrawn. Suddenly an agitated steward appeared in the doorway followed by an extremely agitated passenger. The steward was understood to say that the passenger was suffering from hydrophobia, but nobody had been bitten yet. The usual tests with bits of meat and bowls of water met with no response.

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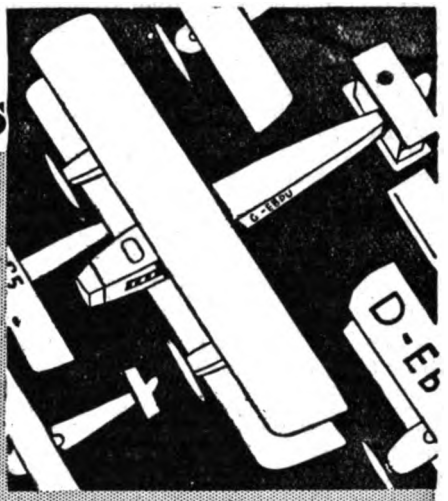

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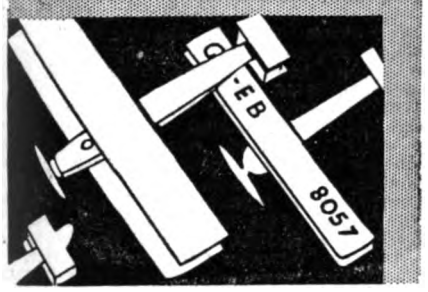

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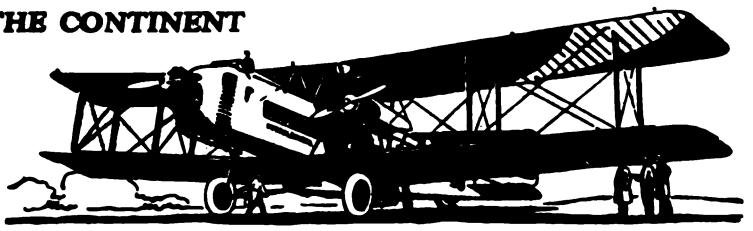

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After some heated dialogue it was discovered that the passenger was suffering from claustrophobia and could not travel in a closed cabin. His luggage and impedimenta were unloaded by a deeply suspicious steward and the passenger left for London again, presumably in an open car.

No responsibility is taken for the detail of this case, though the main fact is strictly accurate.

A learned judge, who was recently asked for a spot of bail for some financiers on the grounds that such a strict watch was kept at the Ports that they could not get out of the country, refused for the remarkable reason that "It is no longer necessary to go to a port to get out of the country. If you have the means," he said, "you can go by air."

It is about time even our judges realised that Croydon is a Port in every sense of the word, and that it is perhaps the most difficult port in England to slip away from to the Continent unobserved. Home Office and C.I.D. supervision are remarkably keen at Croydon, and as there are comparatively few passengers individual scrutiny is possible.

No financier, even shorn of his symbolic spats and disguised in a cloth cap, can hope to drift through amongst a large gang of the cheaper type of passenger, and it seems heartless of our judges to stimulate such hopes of quick get-aways by air, in the artless bosoms of other financial gents.

On Saturday afternoon last one took the air in the Air Express single-engine Junkers with one G.D. It was an extremely pleasant flight, marred only by G.D.'s efforts to locate his ancestral mansion, which he spotted respectively in Purley, Caterham and Upper Warlingham. If G.D. finds as much difficulty in finding his residence from ground-level when returning from the office "of an evening," he must frequently make desperate efforts to go to bed in the front rooms of other people's houses situated many miles away from his own. A practice liable to be misunderstood by all concerned, one would say.—Spry.

"PLEASE TO REMEMBER—ETC."

Towards the latter part of the year 1605 several sportsmen, under the leadership of one Robert Catesby, were planning to get certain High Authorities into the air through the medium of one Guido Fawkes and the timely application of a match to barrels of gunpowder placed under a gathering of the aforementioned Authorities.

Whether Mr. Fawkes forgot to place his usual order with his local newsagent for the Special Issue of whatever corresponded to The Aeroplane of that date, and thereby had not the knowledge contained therein, history does not tell—however, his aerial policy was a failure, and instead of being hailed as a pioneer of Civil Aviation, he is now remembered each year by flashes and bangs accompanied by the vocal complaints of all the neighbouring dogs.

The thought of what might have been must have entered the heads of the gentlemen who sat above those barrels, and the question of where they would land if they had been blown sky-high, must have occurred to them. Anyway, this year, on November 5, we shall see a similar gathering of Municipal Authorities threshing out the question of landing-grounds and air-parks, so that each town shall have facilities for the safe descent of its officials each time they take to the air.

Unlike the meeting of 1605, this is bound to be a success because of the Special Air-Park Issue of The Aeroplane which is being brought out for the guidance of those concerned with the planning of Air-Parks. May we therefore impress upon those who have not already ordered their copy of The Aeroplane for October 30 the necessity for so doing, as there is bound to be an enormous demand for it.—L. W. N.

A FLIGHT IN THE JUNKERS LIMOUSINE.

During the week-end, by the courtesy of Air Express Ltd., one had a flight in the Junkers 6-seater limousine which was described in a recent issue of The Aeroplane. The pilot and a passenger or navigator sit in an enclosed cockpit in the nose of the machine behind the engine and as the aeroplane is a low-wing monoplane they get a perfect view over the whole of the forward hemisphere. The four passengers sit in a comfortable saloon from which they can communicate with the pilot through a small window.

The pilot on this occasion was Mr. I. N. C. Clarke, of Air Express Ltd., who is chief pilot of the Air Express taxi service. There were four of us in the cabin, including Mr. H. Spry Leverton, London manager of the K.L.M. The day was foggy, and it was impossible to see further than the boundary of the aerodrome from the sheds.

The machine was off the ground in four seconds and climbed quickly at a flying speed of between 70 and 80 m.p.h. It cruises at 110 m.p.h. and has a top speed of over 120 m.p.h.

As the petrol is carried in the wings and there are no leads near the cabin, and as the structure is all-metal, the fact that smoking by passengers is allowed is noted on the C. of A. This should definitely be a selling point to the average traveller, who has always found the non-smoking regulation irksome.

After flying around over the Surrey Hills in the fog we climbed presently to 5,000 ft. and found ourselves in clear air and bright sunshine, and one of the advantages of the aerial limousine was well demonstrated.

We came down with a long glide at about 70 m.p.h., and the machine actually touches at something under 50 m.p.h. On touching it pulls up very quickly.

In the air the cabin is quiet enough to make conversation easy.—G. D.

NEW COMPANIES.

Aero Petrol and Petroleum Co. Ltd.—Private company. Registered Sept. 26. Capital, £300 in £1 shares (50 7% cumulative preference and 250 ordinary). Objects: To carry on the business of manufacturers, producers, storers, and refiners of all kinds of petroleum, petroleum products, oils, greases, soaps, paints and oleaginous and saponaceous substances, petrol and all kinds of spirit for driving motor-cars, aeroplanes or other engines, etc.

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Air, Marine and River Craft Finance and Insurance Office Ltd.—Private company. Registered Oct. 8. Capital, £5,000 in £1 shares. Objects: To carry on every kind of air, marine and river craft insurance business, whether on the principle or basis of fixed premiums, mutual insurance or otherwise in respect of all kinds of air, marine and river craft, whether registered or not, and in respect of their cargoes, outfit, and gear or the outfit and gear belonging to any persons on board and all other risks incidental thereto, save as enumerated in Section 1 of the Assurance Companies Act, 1909, and except such classes of insurance as require a deposit under that Act. The directors are: J. Hetherton, senr., 6, Belvoir Terrace, Scarborough, underwriter (permanent director and chairman). J. Hetherton, jnr., Museum Street, York, insurance manager. Solicitor: A. M. Jackson and Co., Hull.

PERSONAL NOTICES.

Forthcoming Marriages.

COHU—BOWLY.—An engagement is announced between John Messurier Cohu, R.A.F., and Barbara, only daughter of Mr. and Mrs. R. T. Bowly, Whyteleafe, Surrey.

MACKAY—ELLERSHAW.—The engagement is announced between Flt. Lt. Malcolm Bruce Mackay, R.A.F., younger son of the late Rev. E. B. Mackay and of Mrs. Mackay, of Worplesdon, Surrey, and Katharine, third daughter of the late Brigadier-General W. Ellershaw, R.A., and of Mrs. Ellershaw, of Wymering, Cosham.

Birth.

MILEY.—On Oct. 17, at Summit Cottage, St. Mark's Hill, Surbiton, to the wife of Wing Cdr. A. J. Miley, R.A.F.—a son.

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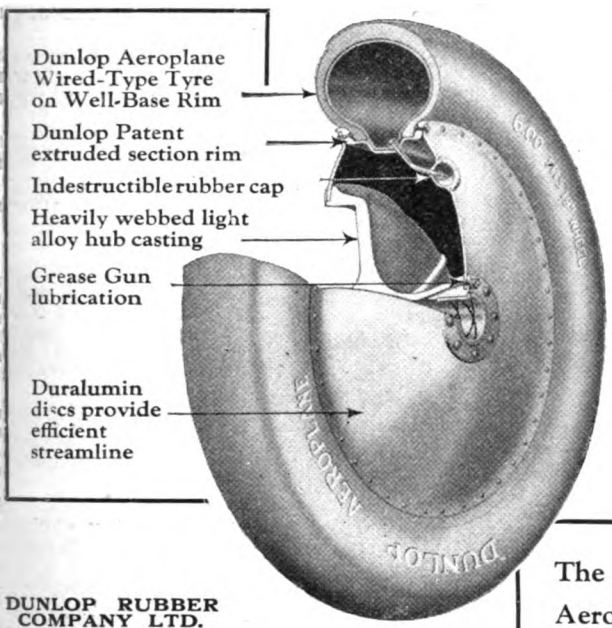

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VOL. XXXVII No. 18.

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ON AIR-PARKS.

Within the next five or ten years a town without an aerodrome will be a curiosity as quaint as a town without a railway station and without a motor parking-place would be to-day. And this will be true not only of the more thickly-populated countries but of every agglomeration of houses bigger than a small village all over the World.

In fact there will certainly be in many parts of the World quite reasonably large towns which will have excellent aerodromes and probably no railways at all. Motor haulage has been so much improved within the last few years, thanks to the development of six-wheelers and caterpillar tracks and so forth, that quite important townships may well arise in Africa and Australia and South America, and even in North America, which can be perfectly well supplied with goods by motor haulage and can be reached by passengers in aircraft in one-fifth of the time, or even less, that they could be reached by ground transport even if roads and railways existed.

Therefore the time seems to have come when THE AEROPLANE, in accord with its consistent policy of keeping in front of the times and telling its readers what ought to be done, gives this particular issue to the discussion of the finding, planning and organising of Air-Parks.

The word Air-Park seems to be on the whole preferable for ordinary purposes to the word Air Port or Aerodrome..

An air port should, properly speaking, be a place of entry into a country, or at any rate into a great manufacturing area. It should imply the existence of a Customs House and of a Police Station at which the entry of undesirable aliens can be checked, and all the other paraphernalia which distinguish a sea port from a seaside resort.

The word aerodrome should be used simply as a generic term for a place where aeroplanes run. Air ports, air-parks, landing-grounds without accommodation for man or machine, and places where private owners habitually land or start in their aeroplanes, are all equally aerodromes.

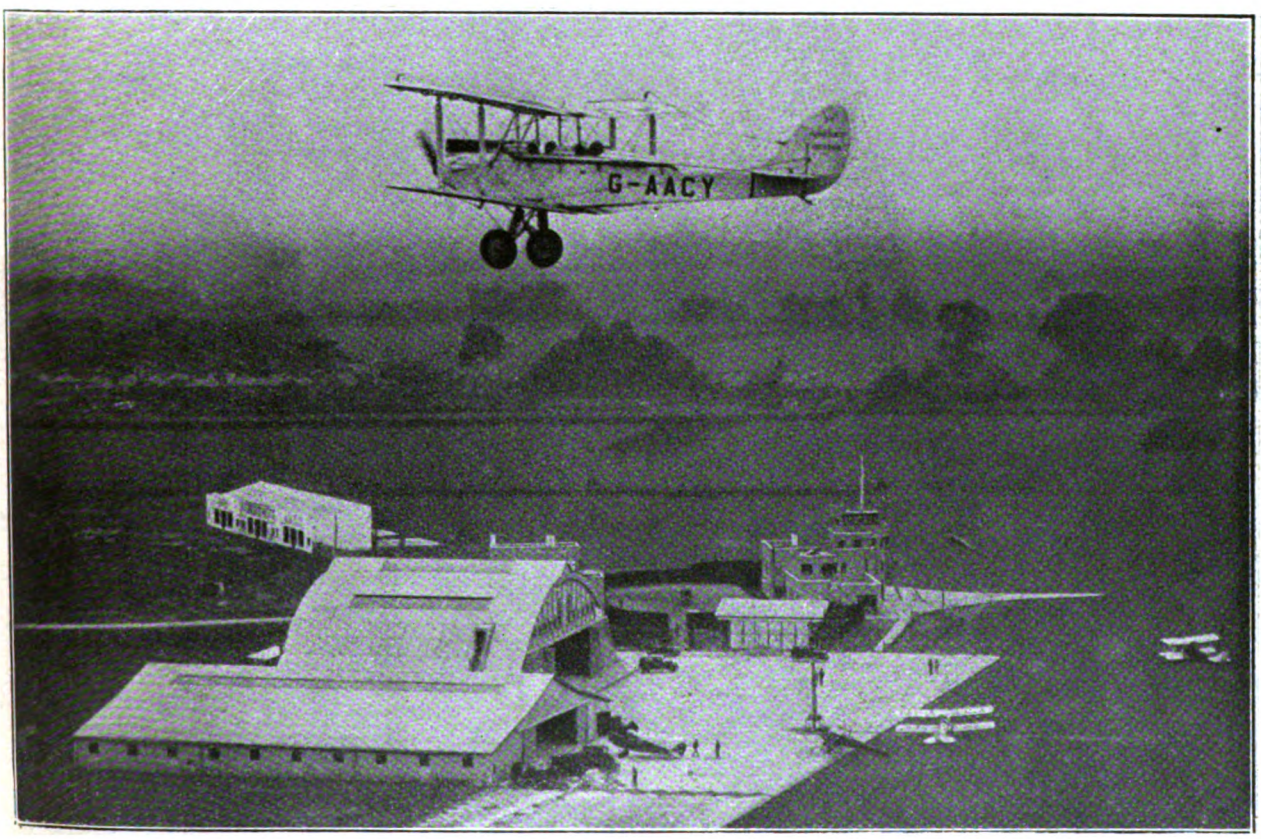
WHY AIR-PARK?

The compound word air-park has much to recommend it. If the local aerodrome is called the air-park it is much more likely to attract visitors, because the word park gives the reader or hearer subconsciously the impression of a place of public resort. And so the local inhabitants may be the more easily induced to come and sit around there on a pleasant afternoon and watch the flying, occasionally going themselves for what is commonly called a joy-ride.

There are to-day in England, and still more in other parts of the British Isles, in spite of wireless and gramophones and bicycles and motor-cars, plenty of places where the daily amusement of the indigenous inhabitants is to go to the railway-station and see the evening trains come in. Similarly, we may quite well expect that when there is nothing particular doing people will go to the local air-park to see the aircraft come in.

These arguments, one may add, were first publicly put forward by Mr. Lester Gardner, at one time proprietor of the leading American aeronautical paper *Aviation*. And

"SURER TO PROSPER THAN PROSPERITY "COULD HAVE ASSURED US."—MILTON, *Paradise Lost*.



A COMMERCIAL PROPOSITION.—Heston Air-Park, a modern aerodrome, laid out with the newest ideas, to meet the needs of the newest methods of transport. Overhead is a De Havilland Moth (Gipsy engine)—the most profitable of commercial aeroplanes—belonging to Airwork Ltd. And it is fitted with Graham Wireless,—also the latest of commercial ideas.—(*"Aeroplane" photograph.*)

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there seems no reason to-day to disagree from them. Therefore as a first suggestion to those who are beginning to take an interest in the establishment of aerodromes one would advise that they call their aerodromes air-parks and do everything possible to make those air-parks as attractive as are other municipal parks of all kinds.

If a municipality is going to spend the rate-payers' money on an air-park it may just as well arrange at that park some way of making money out of the visitors. This may be done in several ways. There may be a special reserved enclosure at a small entrance fee, there may be a small fee for parking cars, there may be a municipal tea-shop. If any municipal authorities want to know how to make money out of indigenes and visitors alike, one recommends them to go and take a few lessons from the Corporation of Blackpool, who are past masters of this art.

The Aerodrome Campaign.

In presenting this Air-Park Issue of The Aeroplane to the regular readers of this paper, as well as to the many hundreds of municipal authorities all over the British Empire, to whom it will be sent, one wishes first of all to make clear that it has been produced primarily with the intention of backing up the campaign for aerodromes and landing grounds all over Great Britain which have been so splendidly begun by Sir Alan Cobham and Sir Charles Wakefield.

Sir Charles Wakefield has rightly been called the Patron Saint of British Aviation. Nobody will ever know quite how much he has spent in prizes for competitions, in giving aeroplanes to flying-clubs, in contributing to the racing funds of the Royal Aero Club, and in financing voyages of exploration all over the Empire. Still less is anybody ever likely to know the great sums which he has given away in private charity. But none of all the money that he has spent for the good of British Aviation will in the end have been better spent than that which he has given towards this campaign in favour of local aerodromes.

Sir Charles is pre-eminently a business man, and even when he gives money away most generously he likes to see that it is spent to the best advantage. So the amount of his contribution to this campaign has, one is told, been given on a strictly piece-work principle. That is to say, he has paid on that principle for the carrying of all the youngsters whom Sir Alan Cobham has taken up in his now famous De Havilland Giant-Moth (with its Armstrong Siddeley Jaguar engine), named, very appropriately, *The Youth of Britain*.

In this campaign, in which Sir Alan has visited just on 100 towns in Great Britain, two generations of citizens have been educated to understand the value of municipal air-parks. First of all, Sir Alan has taken up the Elders of the People, the Lord Mayor or Mayor, the Councillors or the Aldermen, and those all-important, permanent officials, the Town Clerks and the City Engineers or Borough Surveyors. And then he has taken up flocks of children.

Thus the mere people of each place will be influenced from both sides to consent to the expenditure of their money on local aerodromes. On the one side the municipal authorities will persuade them that an air-park, or at least a landing ground, is necessary for their municipal salvation, and on the other side the enthusiasm of the children will soften the severity of the rate collector.

Every good election-agent knows that the candidate who captures the imagination of the children is the one who wins the election. But Sir Alan has done more than merely buy the support of the youngsters. He has in fact laid the foundation in the rising generation for a proper understanding of the value of air transport.

Consolidating the Position.

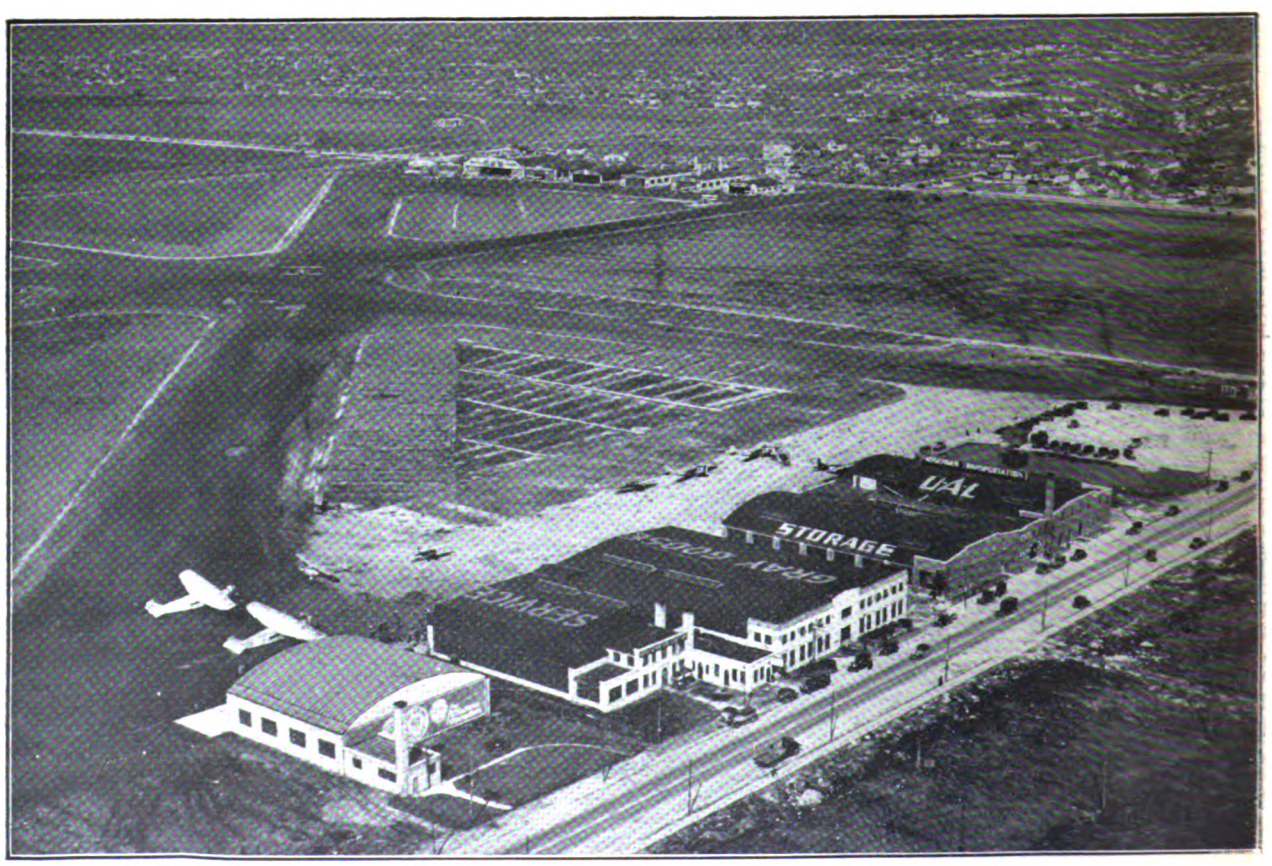
By way of consolidating the position which has thus been won, Sir Alan Cobham (with the wisdom of a good Chief of Staff to Sir Charles Wakefield, as General Officer Commanding) has organised a Conference to be held in London on Tuesday next, to which have been invited the Lord Mayor or Mayor, the Town Clerk, and the City Engineer or Borough Surveyor, of each of the cities and towns and urban districts which Sir Alan Cobham has visited in this tour. And after the Conference Sir Charles Wakefield, with his usual boundless hospitality, is entertaining all these guests to dinner at the Savoy.

Thereafter, during the Winter months, all these various local authorities will be able to discuss the problem of their local air-parks in a properly informed way. That being so, we may now proceed to consider some of the points which they may discuss.

The Ideal Aerodrome.

Speaking at the lunch which he gave at Leeds recently in connection with the establishment of an air-park for that city, Lord Brotherton of Wakefield asked "What is the ideal aerodrome?" And this issue of The Aeroplane is intended to go some way towards answering that question.

In his able article which appears elsewhere in this paper Sir Alan Cobham gives some of his views on the subject. That is to say he gives as much of his views as he could spare time to put on paper in the rush of his campaign. And the readers of The Aeroplane will be duly grateful to him for doing so.



THE AIR-PARK OF CHICAGO.—The huge run-ways and the great distances between the groups of buildings is notable.

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An Epic Story!

"THE RESCUES FROM KABUL

IT is impossible to read without a thrill the story told in the official report of the rescues from Kabul carried out by the Royal Air Force in December, January and February last.

In those winter weeks—destined surely to be famous for ever in the history of the Air Force—the great aeroplanes went to and fro, to and fro, in all weathers over mountainous country of the most forbidding kind, where landing was practically impossible and any sort of failure in skill or in material must have meant disaster. There was no disaster. In more than seventy journeys nearly 600 men, women and children were rescued, and not one suffered injury.

Henceforth it will not be difficult to connect the ideas of precision, punctuality, efficiency under the most exacting conditions, with transport through the element which hitherto men have regarded as more chancy than land or even sea. It is a great thing to have won the Schneider Trophy.

It is a greater thing, greater for the country and greater for the future of travel by air, to have effected the rescues from Kabul.

Not then for the first time, but then for the first time in that new and marvellous manner, and with a swiftness denied to both the older Services, neither of which could have sent help from Iraq to India in two days, those forces came to the rescue of men, women and children in peril; and no less than a great victory in battle, this triumph deserves to be emblazoned on the colours."

The Times, 8 *Oct.*, 1929.

VICKERS aircraft combined with NAPIER engines made these rescues possible.

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Numerous other articles written by people who know their various jobs will give readers a fair working idea of the labour, mental and physical, which is needed in laying out and building and organising air ports and air-parks and landing grounds.

So much information on this subject has not yet appeared in any British publication, but lest the readers of this paper should imagine that we in this country are in any way pioneering this particular industry, one would point out that in the United States there exists a monthly publication called *Airports*, which deals entirely with the organisation, equipment and control of aerodromes without touching on the aircraft and engines used in air transport or the actual running of air transport services. That may give some idea of the extent to which air transport has already developed in the United States.

Furthermore, in this number of The Aeroplane no mention is made of the lighting of aerodromes or of illuminated routes for night-flying. The articles which appear herewith are intended to be purely elementary. Before we need concern ourselves with night-flying equipment of aerodromes and air routes we must reach a stage at which night-flying equipment of aerodromes is likely to be necessary.

The aerodrome at Croydon is fairly well lighted for night-flying, there is night-flying equipment of a sort at Lympne, and there are one or two lighthouses on the route between Lympne and Croydon. But we have no proper illuminated landing-grounds such as they have in the States and as they are building in Germany.

Before long we may have a lighted night-flying route across Arabia and across India. Also, when air-taxi work begins to develop in the British Isles, we shall have proper aerodrome lighting for the benefit of belated taxis. Also we shall probably have our intermediate landing-grounds indicated by flicker-lights showing upwards, but otherwise similar to those used on our arterial roads.

The problems of aerodrome and route lighting, and further details of aerodrome equipment, lay-out, management, and so forth will be discussed in future Special Air-Park Issues of The Aeroplane, which we of this office propose to produce at intervals of a few months. There is so much to be said on this subject that there is no room to discuss it in this particular issue, and, in any case, to do so would be premature.

We in the British Empire have even greater opportunities for the development of air transport, and considerably greater need for air transport, than exists in the United States. We have great undeveloped areas where air transport has only to compete with a very primitive railway system, and we have still greater areas where there is no railway system at all. And so whatever appears in this number of The Aeroplane, though it will seem elementary to the people who have been running air ports and air-parks in the United States for several years, will, one hopes, be quite new and interesting information to the majority of the readers of The Aeroplane.

Fixing A Site.

Obviously the first thing to do about a local air-park is to fix on a site as near as possible to the city or town which it is to serve. In his article Sir Alan Cobham has discussed fairly comprehensively the conditions which govern the selection of such a site. In particular it must be so situated that the aeroplanes of to-day can get into it and out of it safely. Within a very few years, unless all our aeronautical engineers go to sleep, we ought to have aeroplanes which can get into and out of an average football-field without trouble or risk. But in the meantime we have to reckon on making our air-parks fit for such aeroplanes as we have to-day.

And we must remember that even when we do get those aeroplanes which can get into and out of a football-field we shall still need quite big aerodromes. There will be so many aeroplanes using them that we shall need the area of several football-fields joined together so that we may have room for a number of aeroplanes to land and get off at the same time.

Therefore the site selected for an air-park should for choice provide a run of not less than 800 yards in any direction. A run of 1,000 yards will be still better. The boundaries of the site should be free from high trees and buildings. And the aerodrome should not be on the edge of steep-sided hills or mountains,—either below them or on top of them.

Central Stations.

Some day our aeroplanes may be so developed that they can land safely on aerodromes only two or three hundred yards square. Such aerodromes may then be built by the simple process of roofing over areas of that size in the hearts of our great cities.

Six or seven years ago at least Sir Sefton Brancker, our present Director of Civil Aviation, suggested that the London Terminal Aerodrome of the future would be formed by roofing over part of the area in Pimlico between Victoria Station and the Thames. A good many people thought that he was jesting, or, in modern slang, talking hot air. But in fact he was just talking plain common sense and looking a few years ahead.

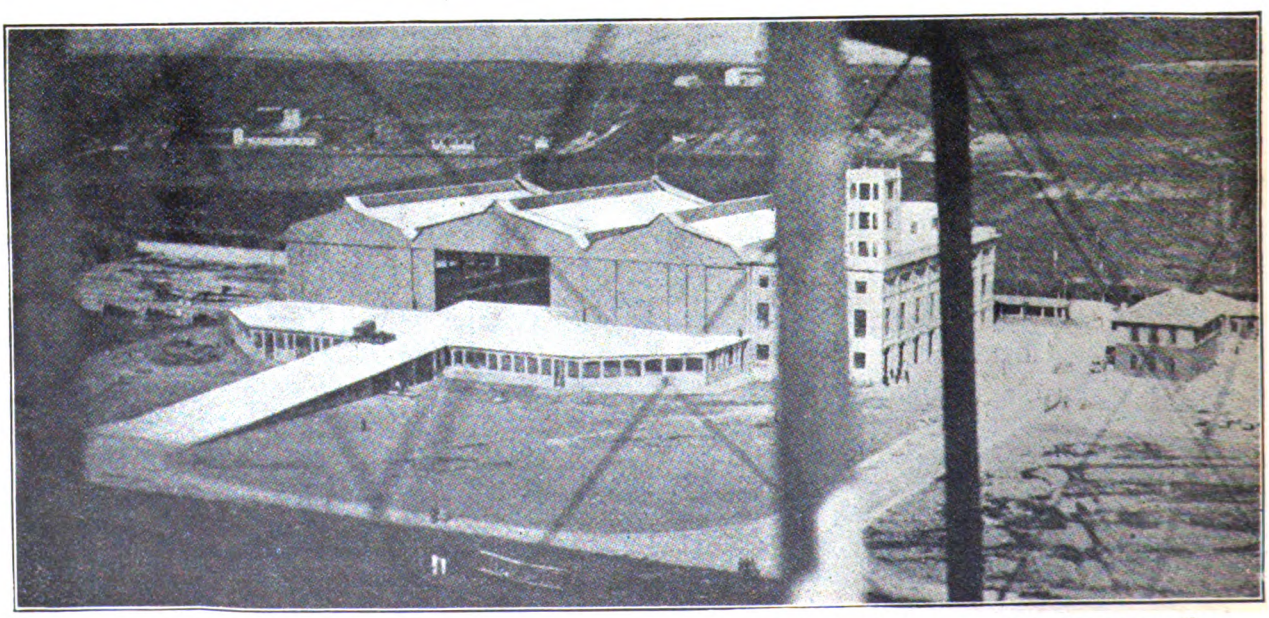
In the meantime we do need big aerodromes. And even when we have our roof air-parks the big aerodromes will still be useful for flying training, and for testing new types of aircraft, and for trying-out machines which have been modified or overhauled, before putting them into service at the central stations.

Financial Considerations.

Municipalities will do well to remember that in any case if they buy their big air-park sites at the right price they cannot lose money on them, because if they are anywhere within reasonable reach of their cities or towns their value as building sites will increase steadily year by year. And so, if we should ever come to the state where aircraft can rise and descend vertically with complete safety, there will always be a profit to be made out of disused aerodromes.

While discussing this financial point one would suggest to local authorities who have duly selected a site for their air-park that the precise locality of that site should be kept dark. Many a good scheme of municipal expansion has been spoiled, or at any rate held up for a long time, by the premature disclosure of the municipality's intentions.

Speculators have bought positions which have entirely blocked some desired expansion or new road. And if the prospective sites of aerodromes are disclosed, obviously speculators will seize their opportunities, or owners will stick out for a big price.



THE AIR PORT OF ROME.—The new Littorio Aerodrome. The curious double-decker hangar deserves notice.

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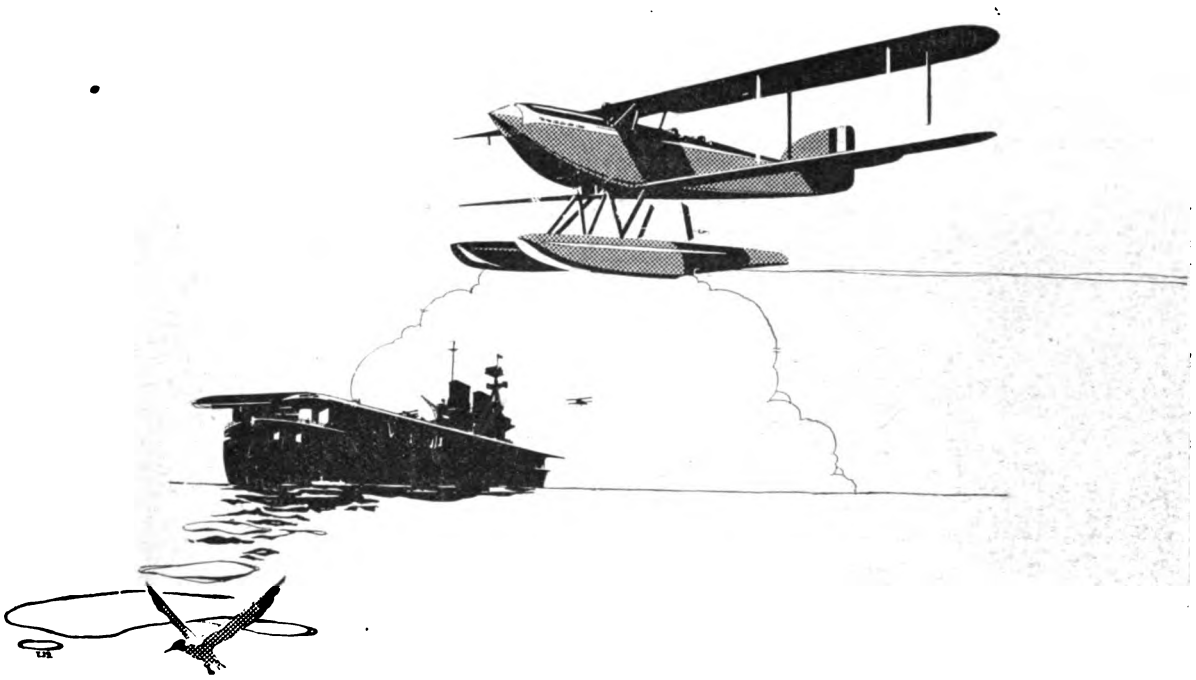

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The wiser course is that somebody who can be trusted should go and buy options on the desired land, as the agent of the municipality. He should be particularly careful to see that he acquires options on *all* the necessary land, so that there may be no Naboth's Vineyards sticking out onto the aerodrome and spoiling it. Paying an agent 10% is better business than paying a speculator 100% or 1,000%.

Placing Buildings.

When the site of the aerodrome has been acquired then comes the question of what buildings are going to be put on it and where they are going to be put.

The buildings themselves are of course an affair which is decided by the size of the city or town which is paying for them, or at any rate on the amount of money that is going to be paid. Nobody expects an ordinary English town to put up on air-port of the magnificence of Berlin's great central air station at Tempelhof. The illustrations and the various drawings in this number of The Aeroplane will give a pretty fair idea of buildings which already exist.

But there is one point which should be remembered by everybody who is laying out an air-park. The public enclosures *must* be placed so that the people in them have the afternoon sun on their backs. No air-park is ever going to be popular if the public enclosures face the sun and are turned into what, in American base-ball and football enclosures, are called "bleachers."

Almost all over the World the prevailing wind is from the West or South-west. Consequently people in enclosures built on the West side of the ground generally have the wind and always have the sun on their backs while they are watching the afternoon flying, and that helps very much to make an air-park a pleasant place of resort. In a well laid-out air-park the public enclosures should be between the main buildings and the aerodrome itself. Thus lookers-on would be under the lee of the buildings, and very often in the shade of the buildings.

If for some reason or another the buildings and enclosures cannot be put along the west side, then the organisers will be wise to put them on the South rather than the North.

Perhaps some readers have not realised that in almost all big towns and cities the West End is the fashionable and expensive end because the prevailing wind keeps it clear of smoke and dirt.

The Importance of the West End.

Also, because the prevailing wind is from the west or south-west, and consequently the aircraft will be taking off in that direction most of the time, care should be taken in arranging the buildings so that they do not interfere with the aeroplanes when taking off against the wind.

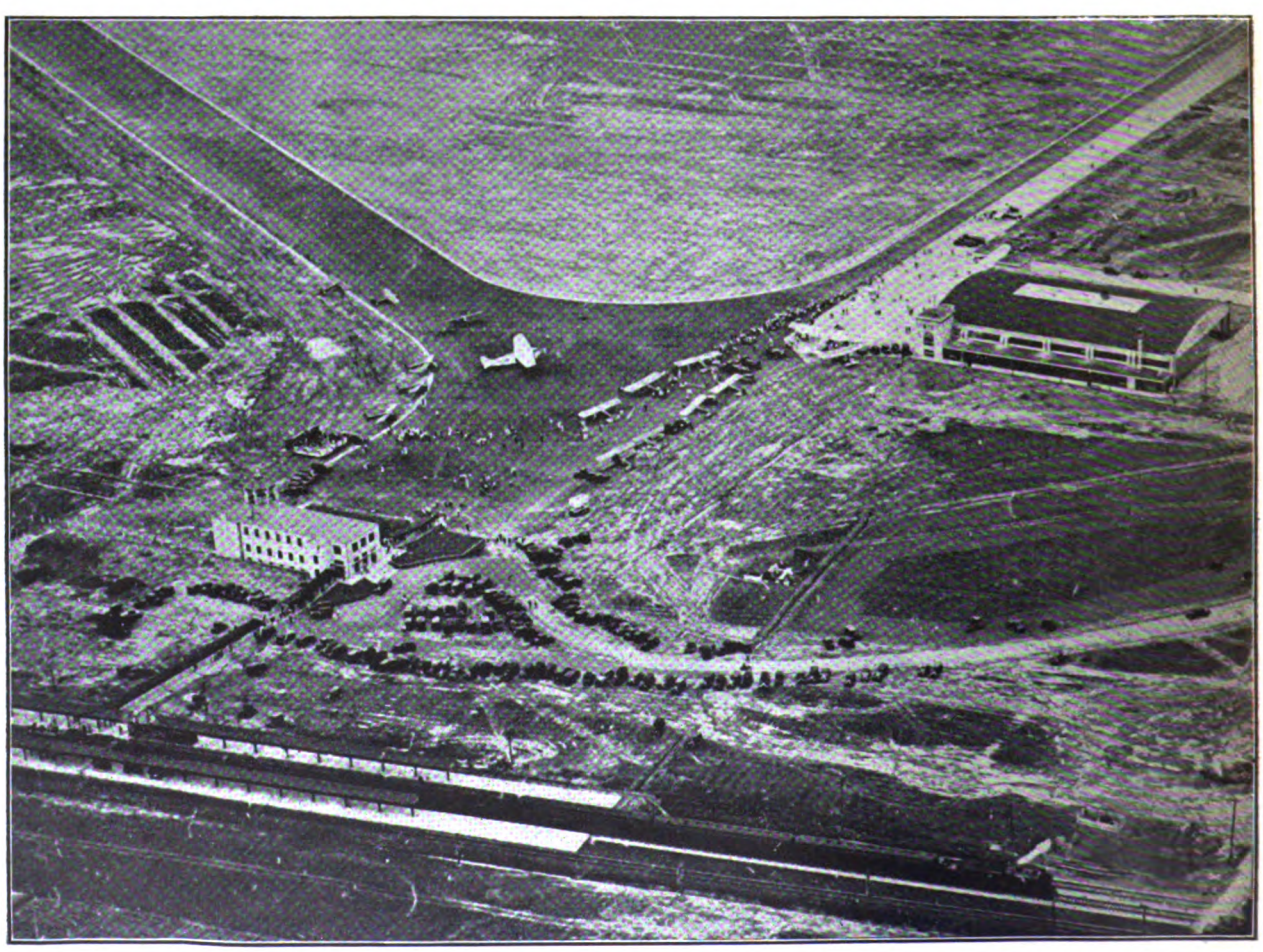
If there are trees or other obstructions which cannot be abolished at that side of the aerodrome, then the higher buildings ought to be put opposite those obstructions. Thus the buildings will not make an additional obstruction.

If there does happen to be one particularly favourable way out of the aerodrome,—especially towards open fields where an aeroplane can be put down easily without turning if the engine should happen to fail just after it has left the aerodrome,—then the line to that open space should be left as clear of buildings as possible.

Putting the enclosures on the West of the aerodrome naturally means that aeroplanes must take off over the heads of the crowd. In these days that is a fairly safe proceeding, and it rather pleases the on-lookers than otherwise. In some twenty years' experience of flying one has never yet seen an aeroplane come down actually in the public enclosure while trying to get off.

If an engine is not giving plenty of power to get the machine off long before it reaches the railings any pilot who is not a fool will have the sense to shut off before he leaves the ground. And if the machine does get off the ground properly, then it will generally have way enough on it to jump the enclosures. But now that so many people, some with money and no brains, are learning to fly, we must take more care than has been needed in the past, to provide for pilots who *are* fools.

One has seen pilots shut off their engines before leaving the ground and run into the railings of enclosures and one has seen pilots just scramble over the railings and come down just outside the aerodrome. But only once has one seen an aeroplane come down into an enclosure. That was a machine which got itself into an uncontrolled spin at Hendon before the War, when it was actually flying quite well. By a miracle it did not hit anybody although there were a great many people in the enclosure at the time, and it fell right onto a stream of people who were making for the gate as the flying was over.



COMBINED TRANSPORT.—The Air-Park of Columbus, Ohio, where Transcontinental Air Transport detrains its passengers from the night mail train out of New York and transfers them direct to aeroplanes for the day journey Westward.

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Deplorable Examples.

Many of our existing aerodromes are just about as bad as they could possibly be in every way. What public enclosures there are at the London Terminal Aerodrome at Croydon face the sun and the prevailing wind, and they get all the dust of every machine that takes off.

No effort at all has been made to attract people to the aerodrome or to make them comfortable when they get there, except those who care to pay for refreshment at the local hotel,—which is quite a decent hotel in its way, but does not compare at all with the restaurants at Tempelhof.

Our other air port at Lympne is simply criminal. The take-off is uphill against the wind, and a heavily loaded machine one often finds that the hill climbs just as fast as the machine does. If a machine does not tear itself off the ground before it gets to the top of the hill it is caught by the downward curl of an airwave from the cliff which borders the South-West side, and is quite likely to foul the telegraph wires or trees on the edge of the cliff or come down in the road. If it does scramble over the trees through curl-over of the airwave, it gets a vertical jolt from the up-current from the cliff's face which is nearly enough to fetch the wings off, and has in fact been known to drive a passenger down through the seat of his chair.

Also there is no arrangement for food or drink at the aerodrome, and the sanitary arrangements are a disgrace to a so-called civilised community.

Fortunately most of our civil aerodromes are reasonably good. But it is typical of our way of doing things that our only two existing air ports should be about as badly arranged and as badly situated as they could have been if real intelligence had been spent on laying them out as awful examples of how not to do it.

Manchester has provided another example of how not to do things. The city is still trying to make an aerodrome out of, or rather in, Chat Moss,—a colossal bog into which the city's ashes have been tipped for years in the hope of filling-in undrainable land. The site can never be made a good aerodrome, and it can only be made usable as such by building runways of cinders. In some places the cinders go down to a depth of thirty feet or more. And at present good pilots on small machines can just use the aerodrome by being very careful.

Another thing to be avoided about aerodromes is having a road running across them. Such an objection is not vital. The club-house at Hanworth can only be reached by a road which crosses a part of the aerodrome, but as the aerodrome is private property and traffic can be kept under control it does not matter.

Several of our Service aerodromes have public roads across them. But they would all be better if their buildings had been so placed that such roads were avoided. Quite lately an accident happened through an aeroplane running into a car on the road across the aerodrome.

Run-Ways.

One thing which is of vital importance to the success of any aerodrome is the proper flattening and draining of the surface. No amount of draining will ever make some aerodromes fit for use in wet weather. But most aerodromes which would almost be unusable in any kind of weather, except those which people have foolishly tried to build on a fathomless morass like Chat Moss, can be made quite good in ordinary weather by adequate draining. And they can be made usable in the worst of weather by arranging proper run-ways.

In America very little trouble is taken about the surface of aerodromes, provided that the ground as a whole is flat and moderately well-drained. The actual getting onto and off the aerodrome is done on wide run-ways of concrete or tarmac or asphalt laid across the aerodrome so that one or other of them can be used in any direction of the wind.

A Bye-Product.

The institution of these run-ways have had one rather interesting effect on the design of American aircraft. In the ordinary aeroplane the pilot relies for a quick pull-up very largely on the tail-skid at the extreme end of the fuselage of the machine digging into the ground and acting as a brake. This naturally ploughs up the ground.

When big heavy air-liners are slewed about by opening up one engine or the other to turn them round sharply these tail-skids tear up a furrow very often a foot wide and five or six inches deep. And one has seen aerodromes so badly cut up in this way that the surface has become dangerous for light aeroplanes to land on because they have been liable to break their under-carriages bouncing across these furrows. In any sane country tail-skids would have been abolished years ago.

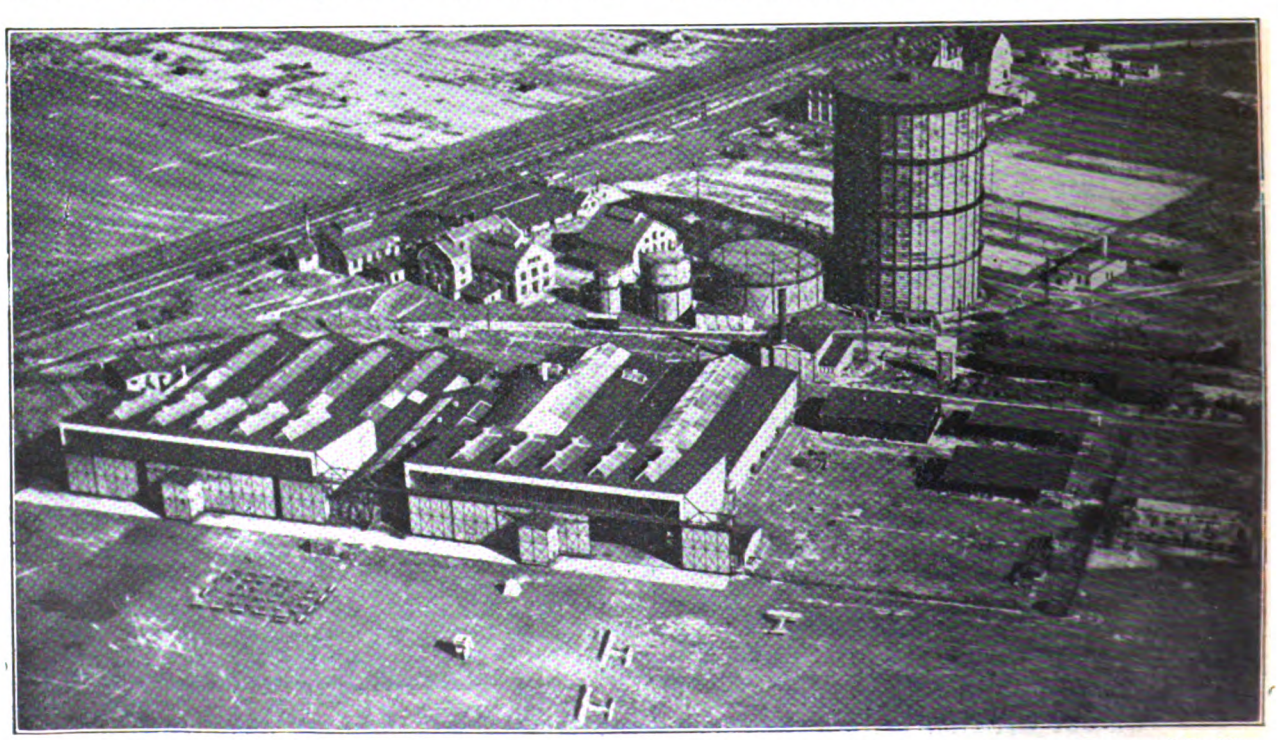
In America pilots now find that if they land on a concrete run-way their tail-skids do not act as brakes. They merely slide, and the machine runs and runs entirely out of control so that it runs off the edge of the fairway into the rough if the engine stops, and runs head-on into the sheds if the engine is kept going enough to give aerodynamic control through the rudder.

Also the concrete wears away the steel shoes on the tail-skids. And if the pilot lands with his tail up and then drops it on the concrete the shock on the tail-skid is so great that it is quite likely to break the fuselage.

The result is that practically every machine, except the lightest light aeroplanes, in the United States is now fitted with a swivelling wheel at the back, instead of a tail-skid, and has brakes on the front wheels. The result is that the machines can afford to land faster, and are therefore under better control in the air. And they can be pulled up quickly with the brakes. Also they can be manœuvred easily on the concrete or tarmac apron which is laid in front of the aerodrome buildings and sheds, or hangars.

These run-ways have another very great advantage. They enable aeroplanes to get off with a very much shorter run than they could from soft ground, or even reasonably hard grass-covered ground.

When Sq. Leader Jones-Williams and Flt. Lieut. Jenkins were getting ready for their non-stop flight to India in the Fairey Long Range Monoplane (Napier engine) they found that the get-off of the machine was very much affected by the state of the ground on any given day. So they tried



A GERMAN AIR-PARK.—The main hangar of Staaken Aerodrome, one of the three great aerodromes of Berlin.

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me experiments with a fairly heavily loaded motor-car,—nning the car up to a certain definite speed and then put-ıg it out of gear and seeing how far it would run.

Taking an ordinary tarred road as 100%, they found at good grass brought them down to about 60% and that ·t ground brought them down to about 40%. That would , inversely, just about the difference between the distance ıich an aeroplane would take to get off a concrete tarmac run-way and the distance needed to get off dinary grass or wet ground.

Therefore one strongly recommends to all who are con-rning theqmselves with the lay-out of air-parks that they ould bring into their estimates from the start the cost of ying down run-ways across the aerodromes and of having good wide apron in front of the enclosures.

Furthermore, if machines can be kept on the apron and ıe run-ways, and can be prevented from running about on ıe grass in between, the run-ways and apron can be kept ırly free from dust. And consequently when the machines ·e getting off or manœuvring with their tails to the public ıclosures they will not be so unpleasant.

Height and Temperature Effects.

In this connection one would remind the readers of these ·ticles who are thinking of organising aerodromes in Central frica, and in very hot countries, that aeroplanes land much ıster and need a much longer run to get off in such coun-·ies than they do at home.

High up, or in great heat, the air is thinner. So it gives ·ss lift to the wings, and gives less material for the air-·crew to get hold of to drag the machine along, and there ; less air to get into the cylinders, with the result that the ngine gives less power. Therefore in such countries aero-romes have to be bigger and more care has to be taken hat they are free from obstructions immediately outside heir boundaries.

At 15,000 feet the atmospheric pressure is only half of what t is at sea-level. And the pressure, and consequently the lensity of the air, varies practically in proportion all the ·ay from that down.

Heat thins the air in the same way as great height does, ınd one has been told that some of the aerodromes used by he Queensland and Northern Territories Air Services in Australia, though only a few feet above sea-level, have ın atmosphere which is equivalent to being at 5,000 feet.

Building Materials.

One of the problems which will most concern organisers of air-parks is the question of what sort of material is best to ıse for the buildings. In these days of reinforced concrete the battle between the advocates of concrete and the advocates of brick and the advocates of steel structures is very nearly as bitter as the battle between the users of steel and the users of aluminium alloys among designers of aircraft.

The concrete people refer contemptuously to tin cans. The steel structure people talk equally of mud pies.

The concrete people say that steel structures corrode and perish and are liable to be blown over and so forth. The steel people say that if any alteration has to be made their buildings can be moved, whereas nothing will shift the concrete buildings except dynamite, and that, apart from that, steel buildings are just as permanent as concrete.

For the concrete buildings one can at any rate say that they are more pleasing to the eye and certainly have a good many structural advantages. On the other hand, steel and corrugated iron buildings are probably cheaper and quicker to put up.

So far as their permanency is concerned there is the interesting historical fact that the first sheds from which consistent flying was done in England, namely the sheds put up by Mr. G. B. Cockburn and Captain Fulton and shortly afterwards by the Bristol people on Salisbury Plain are still there, and so are the sheds put up by the Drexel and McArdle School at Beaulieu. These sheds have stood for very nearly twenty years and seem to be still weatherproof. Also we must remember that those sheds were of the most elementary corrugated iron type and do not compare at all with the modern type of iron building.

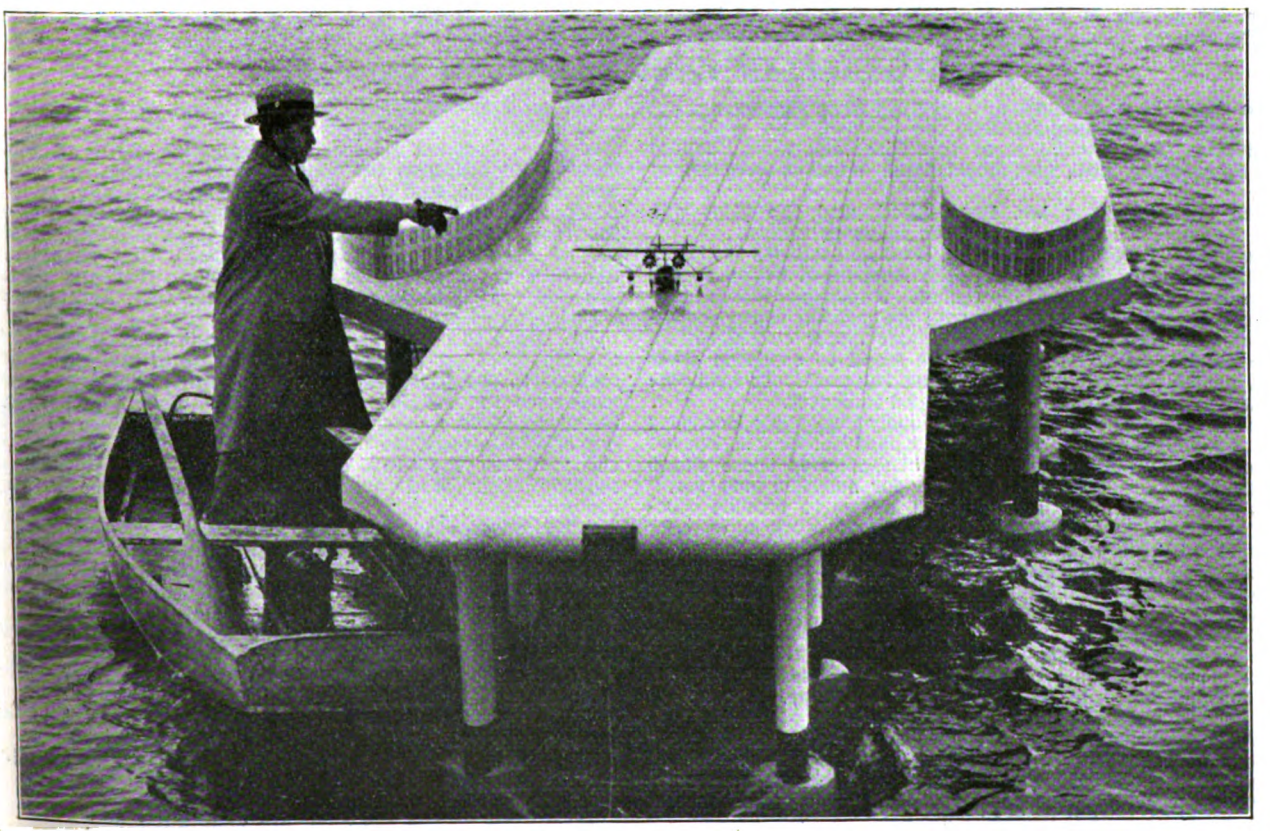
For aerodromes in the British Dominions where there are no local products, there is a great deal to be said in favour of buying sheds in this country which can be assembled on the spot with no more tools than spades to sink the uprights in the ground and spanners to tighten up the nuts which hold the pieces together.

Boulton and Pauls of Norwich, for example, have been famous for years for supplying bungalows for tropical climates, in all sizes, all nicely packed in bundles so that when they arrive on the spot the owner has nothing to do but put them up and bolt them together. More recently they have supplied quite large buildings for motor garages and such things on the same principle. And they have in fact supplied similar buildings for aeroplanes. So here is yet another alternative for builders of aerodromes.

Seaplane Stations.

Before very long people who intend to operate aircraft will have to consider the housing and handling of seaplanes as well as land machines. The Air Port of Hull for example is already faced direct with these problems.

Actually the arrangement of what have been called "sea-



A SEAGOING AERODROME.—A new type of aerodrome proposed by Mr. Armstrong of New York for use in Mid-Atlantic. The floats are sunk so deep that waves do not affect them, and the struts are so high that waves go under the platform as they do under the piles of a pier. The idea is practical and there should be many places in the British Empire where such aerodromes could be used with advantage near rocky coasts and in the middle of wide channels. Mr. Armstrong is seen here alongside a model.

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dromes" is even a more complicated problem than is the arrangement of ordinary aerodromes. The proper placing of slipways and of sheds for such aerodromes needs an immense amount of study.

The effect of local tides has to be watched, not only in relation to their effect on seaplanes coming up to the slipways but also in their effect on the slipways themselves. When a solid slipway is built out into a tideway the tide may either silt it up or under-mine it.

One has seen perfectly good harbours built for fishing boats by well-intentioned Fishery Boards which have become perfectly useless within quite a few years either through their entrances being bunged up with sand or through their structures being under-mined by currents. And in every such case of which one knows, the harbours have been built on the advice of eminent scientists who have made a special study of tides and currents, and flatly against the advice of the local fishermen who knew all the tides by heart.

Therefore builders of seaplane stations will do well to consult the local seafaring people, even at the risk of the delay caused by dealing with the Marine Mind.

Having got the advice of the seafaring people then the organisers of the station have to consider prevailing winds and their effect on aircraft getting off or into available water. Under almost any circumstances a seaplane pilot has to be very much cleverer than the pilot of a land plane. Taxying an aeroplane up to a shed in a cross-wind is child's play compared with fetching a seaplane handsomely up to a slipway across wind and tide.

A New Art.

The whole subject of laying out, organising and equipping an air port is so immense that this Special Issue of The Aeroplane can only pretend to touch on the beginning of the subject. And air ports, air-parks and aerodromes are going to be increasingly important all over the Empire during the next few years. Therefore this number of The Aeroplane is issued in the hope that it will make readers all over the World think a little about the problems which are involved in the successful development of air transport.

We must all remember that historic dictum of Colonel Paul Henderson, the organiser of the great Trans-Continental Air-Mail route between New York and San Francisco,—"The success of an air line lies on the ground."

Proper ground organisation is essential. At the present moment, although there are so many aerodromes all over the World, air transport is still rather in the position that shipping would be if we had produced our modern Atlantic liners and our modern yachts, and only had harbours for them let us say at London, Bristol, Glasgow and Belfast in the British Isles with nothing nearer overseas than Gibraltar, Cape Town, Alexandria, and perhaps Marseilles and Trieste,—with on the American side harbours only at Quebec, New York, Rio and Buenos Aires. Imagine what sea transport would be like under such circumstances and how much use it would be in developing international trade.

Or imagine what motoring would be like if we had our modern cars with one garage only at York, on the way to Edinburgh and only at Bristol on the way to Plymouth. That is very nearly the state of air transport to-day. And one did one's earliest motoring when the conditions were in fact just that, and all repairs of very unreliable motors had to be done by the road-side.

Co-operation.

Because proper ground organisation is so important to the future success of air transport, and of sporting flying and air touring as well, one would ask all readers of this paper to co-operate in helping forward the development of ground organisation.

An article in the leading American aircraft paper *Aviation* the other day suggests that the time has come for the issue of definite specifications for air ports. The writer of the article suggests that the length and the width of runways, the maximum permissible slope of these runways or any other part of the field; the rapidity of drainage; the hardness of surface; the colour of runways, as affecting the night landing, ought to be settled. The writer of that article even suggests that we should look ahead and decide what unit of pressure the surface of a runway ought to be able to stand.

That one thinks is a council of perfection. But people who use aerodromes, such as air line pilots, and private owners who tour a great deal on the Continent, can help the movement very much by writing to The Aeroplane and letting us here have suggestions about anything which in their experience would help to improve aerodromes in general.

At intervals during the coming year we hope to publish other special Air-Park Issues of The Aeroplane, dealing with various matters which have cropped up during the intervening weeks, and these issues also will be placed in the hands of the people on whom the organisation of aerodromes will depend in the future.

Naturally one hopes that what they have read in this issue will induce them to become regular readers of The Aeroplane in future. But one quite recognises that busy men such as City Engineers and Borough Surveyors cannot spare time to interest themselves in the doings of ordinary aviators, and so we shall see to it that future issues of The Aeroplane do reach the people most concerned. In the meantime the users of aircraft can make their own work easier by letting us have all the suggestions which they want passed on to the builders of aerodromes.—C. G. G.

AN AUSTRALIAN LANDING-GROUND CAMPAIGN.

On April 10 a campaign to educate local authorities on the need for landing-grounds for aircraft was begun in Australia. The instigators of this campaign were Vacuum Oil Proprietary Ltd., and Louis Coen Wireless Proprietary Ltd.

The organiser was Mr. Beau Sheil, and the pilot was Mr. F. Roberts. Their first report reads as follows:—

As the result of the campaign, landing facilities in the 80 Victorian towns and the 60 South Australian towns visited have been listed at the Department. Twelve first-class aerodromes were located and 60 towns are putting works recommended in hand, or have the matter under consideration. The balance of the towns are too small to establish their own permanent ground, but are making paddocks available on which they intend to erect a wind indicator.

In many small towns it was obviously impossible to expect the few people to establish a permanent aerodrome, but we endeavoured to induce the local authorities at these places to provide a landing-ground mainly for business purposes.

It is hopeless to expect business houses to provide aeroplanes for their commercial travellers to work a country district and find that certain towns have to be missed because of no landing-ground being available. If part of the trip had to be done by motor car, then the motor car might as well do the whole lot.

In these towns a number of good paddocks were listed and a central site chosen for the erection of the wind indicator, so that pilots could get the wind direction and land on the paddock not under crop at the time. [Note:—A paddock in Australia may cover hundreds of acres.—Ed.]

Where grounds were suitable for immediate use Councils were advised to lay down the triangle "sighting-sign" as directed by the Department. Owing to the large number of landing-grounds that are in various stages of completion, it appears to us that it would be a good idea to have, say, six standards, the ground being marked in white inside the circular or triangular sign on the ground. This should be both a guide to the condition of the ground to the pilot, and also would provide an incentive for each town to improve its ground until it is marked a first-class one.

We have submitted to the Department of Civil Aviation detailed reports and maps (in addition to a copy of the summary attached hereto) in connection with all towns visited, but owing to the limited time available for inspection, doing two, and sometimes three towns a day, we have not been able in some cases to send as much detail as we intended. However, we have notified Capt. Johnson, Inspector of Aerodromes for the Department, that should any difficulty or query arise in connection with any of the grounds, we shall be pleased to render such assistance as we can from time to time.

We found the printed invitations that were forwarded to the Mayor of each town for the purpose of inviting leading citizens to the presentation of the wind indicator, of great assistance in arousing local interest. This, together with intensive Press publicity, was of great assistance to us in our efforts to convince owners of suitable land of the potential value to the town, as well as the national value, of making their land available for an aeroplane landing-ground.

After convincing the local authorities of the absolute necessity for provision to be made for future air traffic, and pointing out that the Department of Civil Aviation were unable to provide aerodromes in all the towns, we endeavoured to interest them in the following objectives:—

(1) The establishment of an aerodrome or landing-ground for *all types* of aircraft.

(2) To have the aerodrome on Council property, or, failing this, under Council control.

(3) To adopt a policy of continual improvement to the ground selected.

(4) Where possible, to make available facilities for communication, such as telephone.

(5) To erect a wind indicator.

(6) To discourage the charging of landing fees.

Where money had to be spent on works, we were careful to recommend that application be made to the Comptroller of Civil Aviation asking for the services of a properly authorised inspector to approve of the proposed site.

A great deal was accomplished by enlisting the co-opera-

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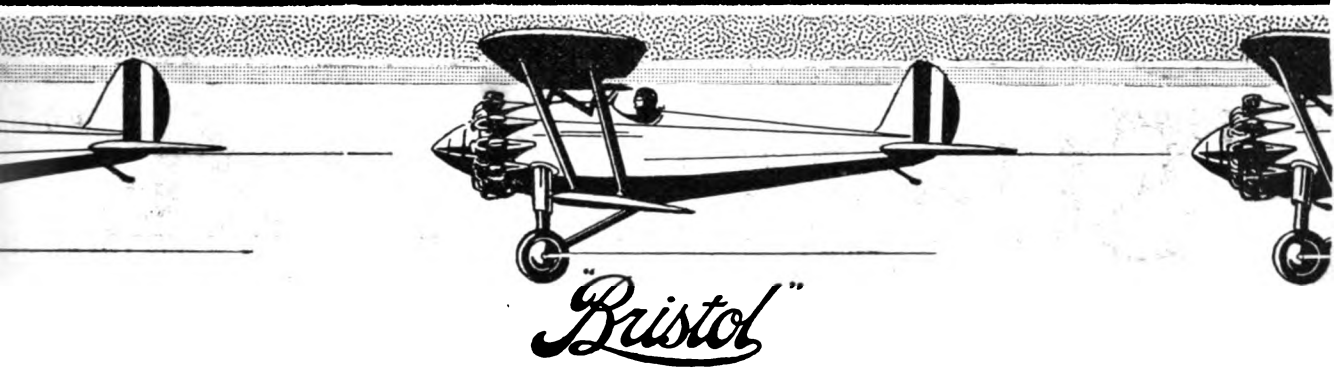

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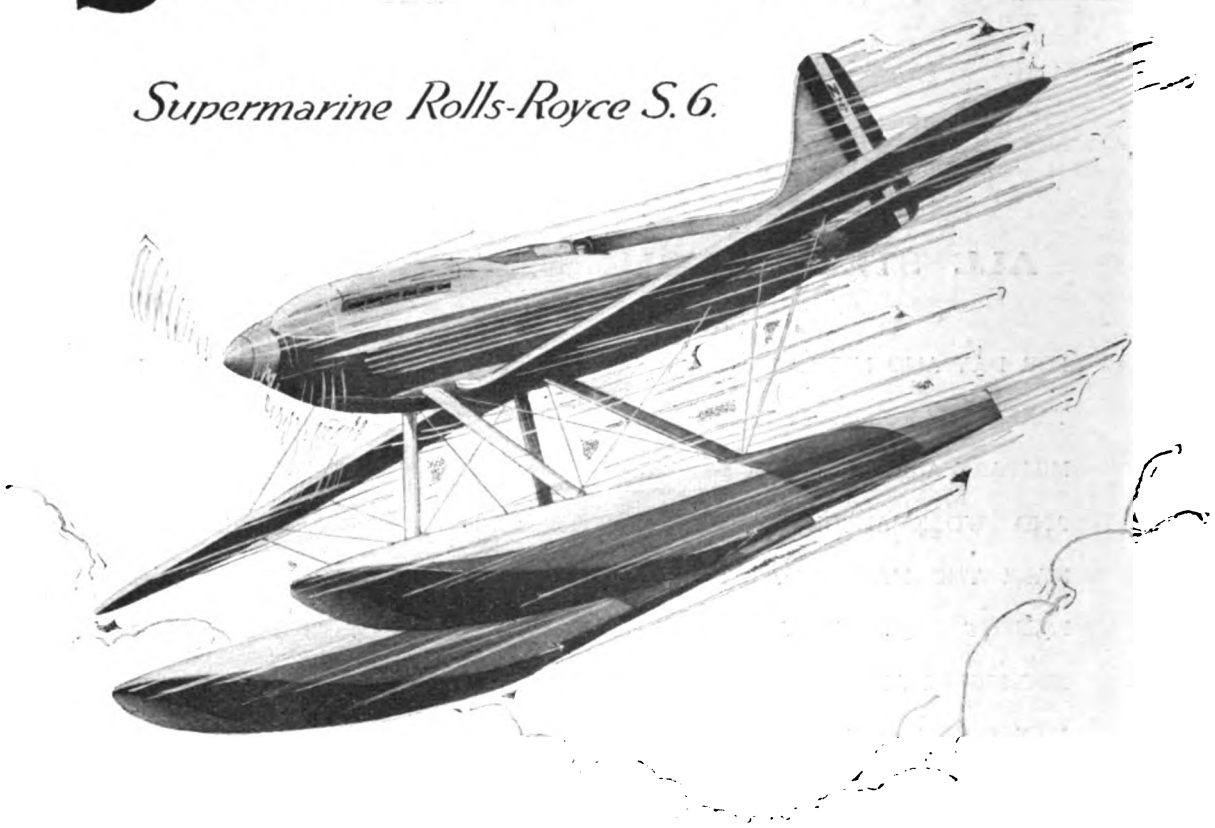
The SUPREME "SUPERMARINE"



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WORLD'S SPEED RECORD

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357·7 M.P.H.

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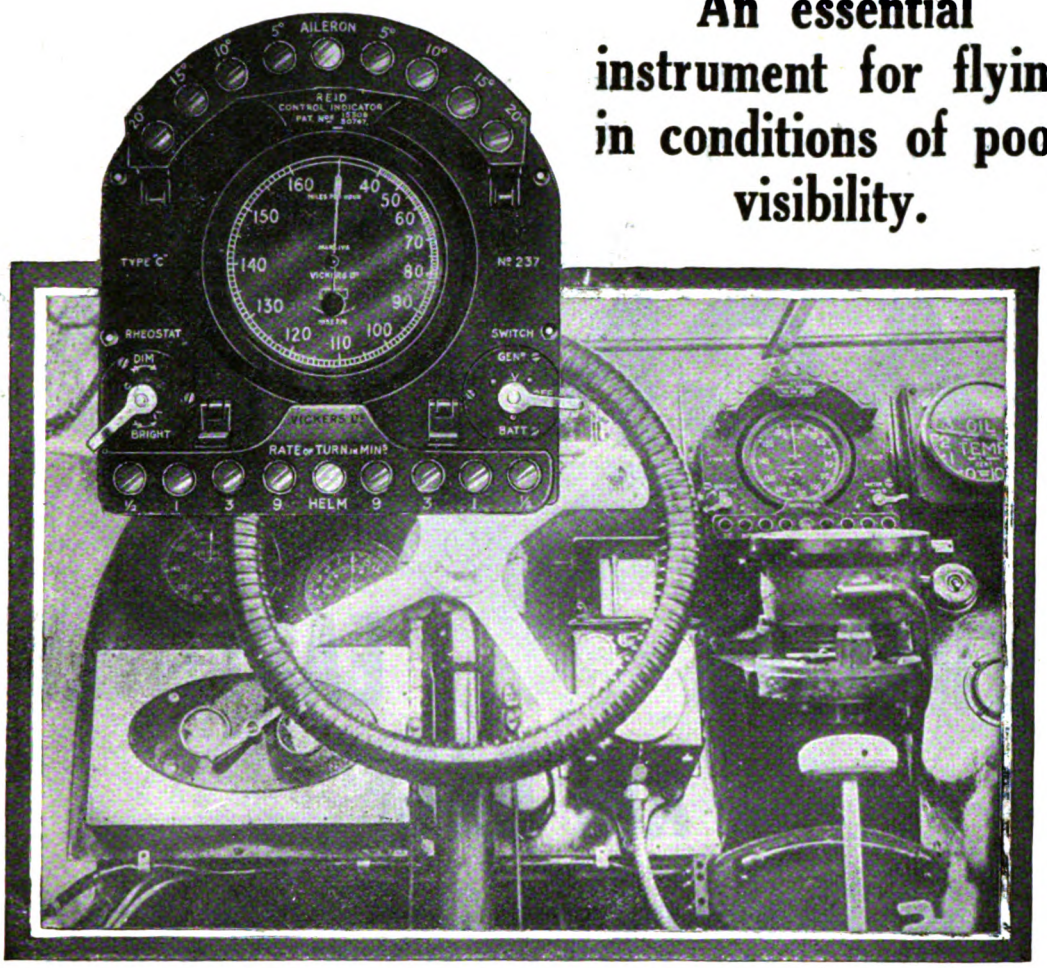

Captain C. D. Barnard, who in seven days with Her Grace The Duchess of Bedford, recently flew from England to India (Karachi) and back writes :—

"**The Reid Control Indicator was invaluable** - especially considering the fact that a great deal of **the journey was flown in clouds or in dust storms, it worked perfectly** and I should insist upon a 'Reid' being fitted to any machine if I were to contemplate a similar flight on it."

August 17th, 1929.

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Again! Again!

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tion of various influential organisations, thereby increasing the local interest and enthusiasm. This was particularly successful at Ballarat, where we were successful in establishing a landing-ground in a very short time.

The co-operation of the local Rotary Club, A.N.A. Society and the Returned Soldiers' League were obtained, and clearing work was commenced on the site selected the morning after our arrival. The President of the R.S.S.I.L.A. stated that all future relief given to distressed "diggers" would be by means of relief work on the aerodrome.

We also found that where prominence was given to the efforts of any particular town the civic pride and natural desire of other towns to "go one better" stirred local authorities into activity. The tremendous enthusiasm that steadily increased as the campaign progressed was really remarkable. In one instance over 4,000 people attended the presentation ceremony and selection of the L.G. site.

To foster this spirit publicity was fully exploited, both in the Press and broadcasting. Daily reports were broadcast every evening from leading stations, together with a list of the towns to be visited the following day.

Successful L.G. slogan competitions were also conducted in conjunction with the broadcasting stations. This did much to focus public attention on the urgent need of aerodromes.

In conclusion, we desire to record our appreciation of the invaluable help rendered to us by the country organisation of the Vacuum Oil Company, and, in South Australia, of the co-operation extended to us by the local Aero Club. The campaign has been a much greater success than even we anticipated, and we believe it has laid the foundation for the ideal of a landing-ground for every town.

MUNICIPAL RIVALRY.

The Times of Oct. 26 states that the possibility that Northern Air Lines, Limited, the company that has been operating taxi air services from the Wythenshawe temporary aerodrome, Manchester, since April this year, may transfer their headquarters to a new aerodrome at Liverpool, was indicated on Thursday by Mr. J. F. Leeming, a director of the company.

Mr. Leeming said that since April the company's machines had flown 1,000 hours, a distance of 17,000 miles, and carried 25,208 passengers without injury to a single person. Manchester, however, had not supported the enterprise at all well—only 12 per cent. of the passengers had come from that city, and quite as much work had come from Liverpool and Belfast, and a good deal more from Glasgow. Northern Air Lines, Limited, were considering very seriously the question of moving to Liverpool.

WHAT THEY SAY IN LIVERPOOL.

At a meeting of the Liverpool City Council last week a member of the Labour Party objected to the proposed aerodrome to be reconstructed at Speke, on the outskirts of the city, being placed under private control, and moved that inquiries should not be made from companies interested in flying as to the terms on which they would be prepared to run an aerodrome.

Councillor W. A. Robinson Vee said it was inconceivable that Liverpool should be behind Manchester, which had already got a municipal aerodrome, and Liverpool should not open the door to a privately run aerodrome on a Corporation estate.

Sir Thomas White, who prophesied that eventually there would be a chain of aerodromes round the city, said all they wished to do was to make inquiries from experts.

Sir Max Muspratt said he did not believe in going into an important matter with his hands tied. He would not bring forward an absurd proposition.

The Labour amendment was lost by 49 votes to 41.

MANCHESTER'S MUNICIPAL AERODROME.

Mr. Alan Goodfellow, writing in *The Manchester Guardian* of Oct. 28, on the subject of the Chat Moss Aerodrome (proposed), endorses the views expressed in THE AEROPLANE thus:—

Sir,—It is some considerable time since I voiced a solitary protest in your columns against the expenditure of too large a sum of public money on this project without due caution as to the probable returns.

Since that time the preliminary estimates of about £40,000 have, if I am correctly informed, been exceeded to an extent which few of the general public know of. Furthermore, we are now informed that Northern Air Lines Ltd., for whose immediate benefit the expenditure would have operated, are seriously contemplating a move to Liverpool.

Mr. Leeming, who is in a position to know the facts, tells us, in his own words, that "the commercial flying needs of Manchester could be supplied by one small Moth." It is to be feared that this statement is more or less true of most of the cities in England at the present day. Commercial aviation is slowly and surely expanding, but it is subject to certain definite limitations and disadvantages in this country which will not be removed until such time as aeroplanes can arrive at and depart from limited spaces, such as a flat roof, in the centre of the districts which they serve. When this time comes—and it is probably not so far distant as many people imagine—the day of such aerodromes as Chat Moss will be already past.

For the cost of the Chat Moss scheme Manchester could probably have purchased the freehold of the Avro aerodrome at Woodford, have constructed their own additional hangar and workshop accommodation, and have turned it into a first-class commercial aerodrome by the building of a new approach road connecting up with the main Bramhall-Wilmslow and Poynton road. Had this been done, they would have been assured of at least two tenants in the shape of A. V. Roe and Co. Ltd., and the Lancashire Aero Club, both of whose interests are closely linked with the city's.

It is no good crying over spilt milk. The work on Chat Moss has gone too far to be abandoned, and has at least presumably had the merit of providing some work for the unemployed. It has brought a certain amount of publicity to Manchester and has put our city definitely "on the map" so far as the future development of aviation is concerned. For the rest, there is surely still time to limit the scheme to one which will meet the reasonable commercial aviation needs of Manchester for the next five years or so, and which will be capable of expansion should such expansion prove necessary.

My fear is lest the scheme prove so expensive in its present form, with so small a return on the money expended, that the authorities may come to feel that they have been misled as to the prospects. Such a reaction of feeling would do untold harm to the development of civil aviation in this part of the country.—Yours, &c.,

ALAN GOODFELLOW.

The Lancashire Aero Club,
Manchester, Oct. 26.

FLIGHTS TO KENYA COLONY.

The Royal Aero Club state that the Aero Club of East Africa, Nairobi, notify pilots proceeding to Nairobi that the aerodrome there is usually full of grazing game, which are liable to become a danger to aircraft landing there. The Aero Club of East Africa is prepared to arrange for the game to be driven off upon receipt of a wire notifying type of aircraft and proposed date and hour of arrival. At least three hours' clear notice should be given.

THE FIRST SHOT.

THE AEROPLANE continually hammers the point of gaining colonial markets by building the type of machine required. But it is as one crying in the wilderness, and no man regardeth.

The United States are already selling machines in Canada, and now they have started in South Africa. The following *Reuter* message, dated Oct. 25, makes the position pretty clear:—

Active American participation in flying in South Africa in the near future is indicated by the announcement in the *Cape Times* that an important agreement will be concluded to-morrow between General Motors (South Africa), Limited, and Union Airways, Limited. The latter company at present runs an air mail service between Durban and Cape Town.

General Motors recently purchased a substantial interest in the Atlantic Aircraft Company, who are the American concessionaires for the building of all types of Fokker aircraft. Union Airways have ordered from General Motors a Fokker Universal six-passenger machine.

FUELS FOR AERO-ENGINES.

A lecture will be delivered to the Royal Aeronautical Society by Dr. A. E. Dunstan, President of the Institution of Petroleum Technologists, on Thursday, Nov. 7, at 6.30 p.m. at the Royal Society of Arts, John Street, Adelphi, on "Recent Developments of Fuels and Dopes for Aircraft Engines."

Dr. Dunstan is one of the leading authorities in this country on the subject and is the chief chemist of the Anglo-Persian Oil Company.

RELICS REQUIRED.

Anybody who happens to have in his or her possession any portion of the aluminium structure of the first airship brought down in this country during the War 1914-18—commonly known as the "Cuffley Zeppelin"—is invited to communicate with the Editor of THE AEROPLANE.

The material must be thoroughly authenticated. Specimens are desired both of the lattice-work girders and of the corrugated sheet material which was used in other parts of the ship. A reasonable price will be paid for such relics.

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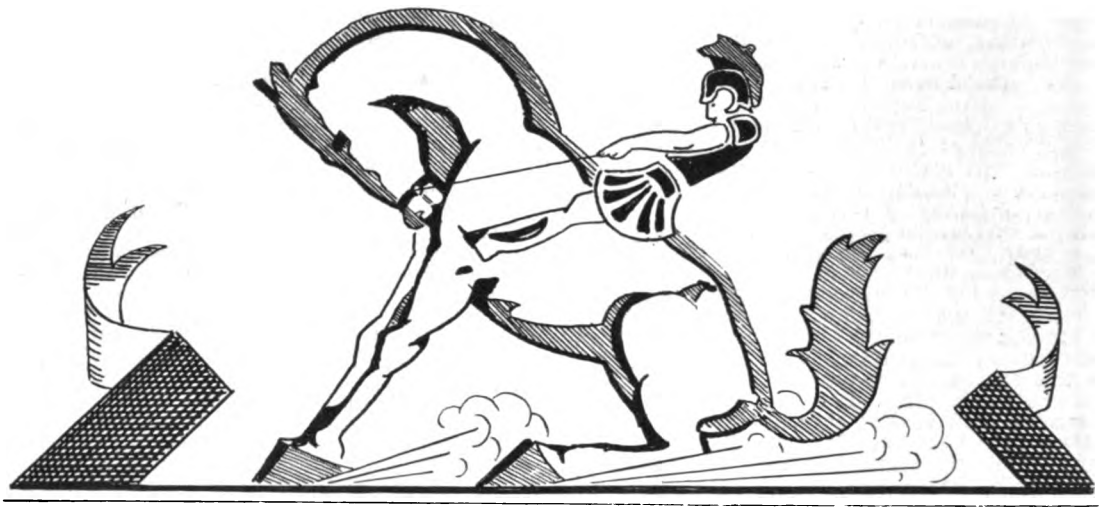

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THE ROYAL AIR FORCE.

The London Gazette.

AIR MINISTRY, *October* 22.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—The following are granted S.S. comns. as Plt. Offs. on probation, with effect from and with seniority of Oct. 11:—C. F. G. Adye, C. P. F. Alderson, I. O. Baldwin, J. N. Baxter, N. V. Bertram, B. W. E. R. Bonsey, M. Q. Candler, W. O. J. Coke, V. A. Dawson, C. C. M. Dunman, T. E. Dunville, F. P. R. Dunworth, N. Foster-Packer, H. M. Gahan, F. B. H. Hayward, N. Hill, M. V. Johnstone, N. D. Lamb, G. W. Lawson, D. MacGregor-Cheers, L. E. P. Mahon, D. E. Milson, W. S. Moody, P. E. L. A. Myers, R. W. H. Rayneau, E. G. Reed, P. A. Smith, J. F. Sutton, C. H. Williams, and S. M. Worrall. Lt. M. Cursham, R.N., is reattached to the R.A.F. as a Flg. Off., with effect from Oct. 9 and with seniority of June 16, 1924.

The following Plt. Offs. on probation are confirmed in rank (Oct. 12): J. Cherrill, R. P. Garnons-Williams, C. R. J. Hawkins, M. T. M. Hyland, B. A. Oakley, J. R. Stebbing, A. N. I. Worger-Slade. Plt. Off. H. C. Parker is promoted to the rank of Flying Officer (Sept. 17).

Wing Cdr. Sir Norman R. A. D. Leslie, Bt., C.M.G., C.B.E., is placed on the half-pay list, scale A (April 23 to July 24 inclusive); Wing Cdr. Sir Norman R. A. D. Leslie, Bt., C.M.G., C.B.E., is placed on the retired list at his own request (July 25).

Flg. Off J. A. C. Florence is transferred to the Reserve, Class A (Sept. 15). (Substituted for the notification in the *Gazette* of Sept. 17). Plt. Off. on probation C. W. Marriott resigns his S.S. comn. (Oct. 9).

STORES BRANCH.—Flg. Off. P. P. S. Rickard is granted a perm. comn. in this rank (Oct. 1).

ACCOUNTANT BRANCH.—Flg. Off. C. B. Rawlings, M.C., is transferred to the Reserve, Class C. (Oct. 22).

MEDICAL BRANCH.—The following are granted S.S. comns. as Flg. Offs. for three years on the active list, with effect from and with seniority of Oct. 1:—J. J. Corcoran, M.B., C. C. Fenton, M.B., B.S., B.Sc., C. G. Harold, M.B., A. Sheehan, M.B., D. D. Watson, M.B. E. A. Wilson, M.D., is granted a S.S. comn. as a Flg. Off. for three years on the active list, with effect from Oct. 1, and with seniority of Oct. 1, 1928.

CHAPLAINS BRANCH.—The Rev. H. Beauchamp, M.C., is granted the relative rank of Group Captain on appointment as Staff Chaplain (Roman Catholic) (Oct. 17). The Right Rev. J. Dey, D.S.O., is placed on the retired list at his own request (Oct. 17). The Rev. T. A. P. King relinquishes his S.S. comn. on account of ill-health (Oct. 28).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—The follg. Plt. Offs. on probation are confirmed in rank:—R. F. G. Lea (Sept. 3); H. Garnett (Oct. 16).

The follg. Plt. Offs. are promoted to the rank of Flg. Off.:—W. R. Walwin (Oct. 16); J. C. McE. Gibb (Oct. 19). Flg. Off. W. F. Parkinson is transferred from Class A to Class C (Sept. 30); Flg. Off. P. E. Nicholl is transferred from Class B to Class C (Sept. 12).

The follg. officers relinquish their commissions on completion of service:—Wing Cdr.: H. R. Raikes, A.F.C. (Oct. 11). Flt. Lts.: H. V. Stemmers, D.F.C. (March 10); D. C. Balfour (Oct. 1); R. E. Nicoll (Oct. 15). Flg. Offs. E. G. Richardson (April 20); H. W. Parker (Oct. 1); C. J. Watson (Oct. 1); W. J. Buchanan, D.F.C. (Oct. 5); C. W. Carleton, A.F.C. (Oct. 12). Flg. Off. J. M. Bell relinquishes his commission on completion of service, and is permitted to retain the rank of Flight Lt. (Aug. 7).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 600 City of London (Bomber) Squadron.—The follg. Plt. Offs. to be Flg. Offs.: E. A. Burton (May 25); A. B. Ferguson (June 2).

Appointments.

Week ending October 29

GENERAL DUTIES BRANCH.—Air Vice-Marshal F. R. Scarlett, C.B., D.S.O., to H.Q., R.A.F., Middle East, to command, 12/10.

Air Commodores A. M. Longmore, C.B., D.S.O., to R.A.F. Depot, Uxbridge, supernumerary, 15/10. The Hon. J. D. Boyle, C.B.E., D.S.O., to H.Q. Fighting Area, Uxbridge, to command (temporarily), 12/10. W. R. Freeman, D.S.O., M.C., to H.Q., Inland Area, Stanmore, for duty as Chief Staff Officer, 15/10. W. G. S. Mitchell, C.B.E., D.S.O., M.C., A.F.C., to Air Ministry (D. of T.), on appointment as Director of Training, 4/10.

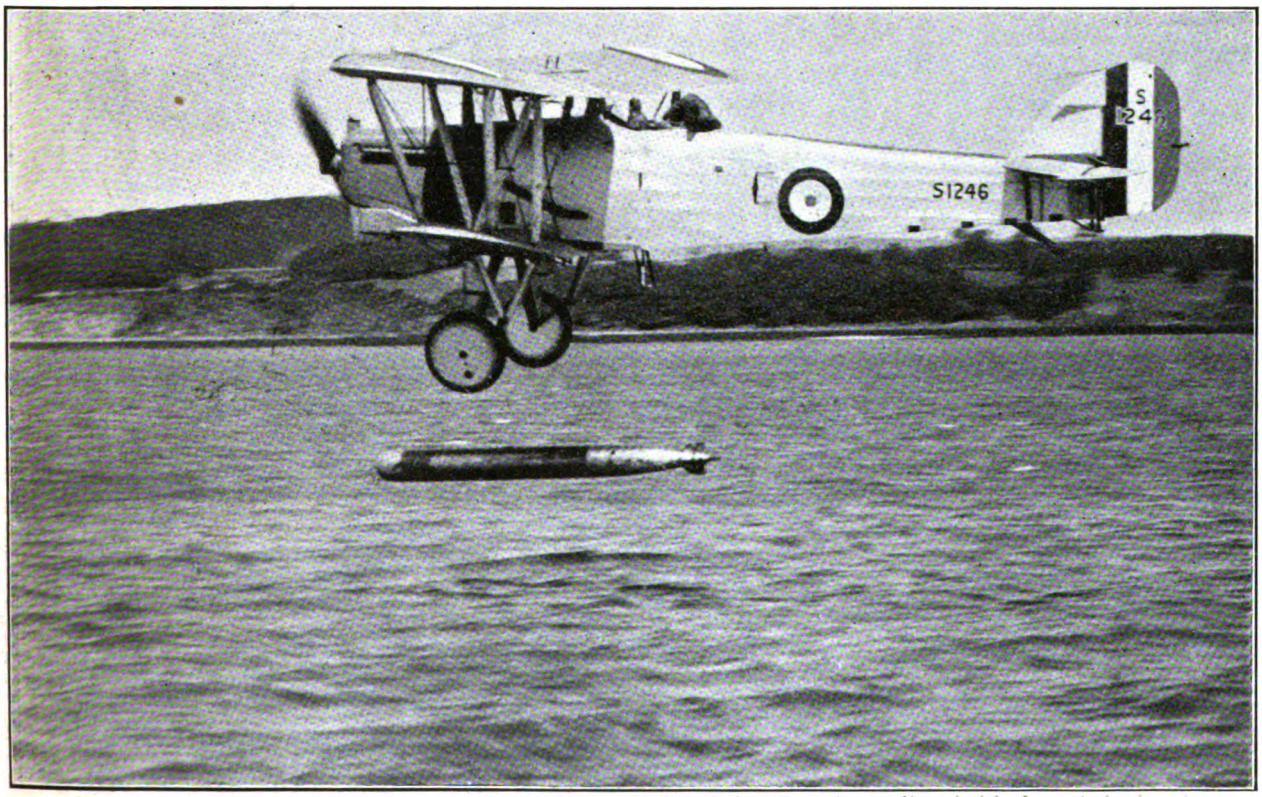
Group Captain R. E. C. Peirse, D.S.O., A.F.C., to Station H.Q. Heliopolis, to command, 25/9.

Wing Commanders A. C. Winter, O.B.E., to Aircraft Depot, India, to command, 8/10.

Squadron Leaders K. M. St. C. G. Leask, M.C., to Aircraft Depot, India, 8/10. N. S. Douglas, to H.Q., R.A.F., India, 8/10. L. N. Hollinghurst, D.F.C., to No. 1 (Indian) Group H.Q., India, 8/10. C. H. Elliott-Smith, A.F.C., to No. 55 Sqdn., 'Iraq, 8/10. R. C. Hardstaff, to Aircraft Depot, 'Iraq, 8/10. H. Stewart, to No. 84 Sqdn., 'Iraq, 8/10. E. C. Emmett, M.C., D.F.C., to Aircraft Depot, 'Iraq, 8/10. E. A. Fawcus, to Aircraft Depot, 'Iraq, 8/10. D. W. Clappen, to H.Q., 'Iraq Command, 8/10. C. S. Richardson, to H.Q., 'Iraq Command. T. E. Salt, A.F.C., to No. 1 Air Defence Group, H.Q., 1/10. R. P. M. Whitham, M.C., to H.Q., Coastal Area, 11/9.

Flight Lieutenants A. C. Bayley, to No. 1 Air Defence Group H.Q., 30/9. E. H. Richardson, to No. 33 Sqdn., Eastchurch, 3/10. G. L. Ormerod, to No. 23 Group H.Q., Grantham, 2/10. J. Lawson, to No. 58 Sqdn., Worthy Down, 1/10. W. S. Allen, to H.Q., Wessex Bombing Area, Andover, 22/9. D. D'A. A. Greig, D.F.C., A.F.C., to No. 9 Sqdn., Manston, 18/10. H. O. Long, D.S.O., to Aircraft Depot, 'Iraq, 8/10. F. W. W. Wilson, to Armoured Car Wing, 'Iraq, 8/10. D. R. Mitchell, M.B.E., to Aircraft Depot, 'Iraq, 8/10. V. M. Kenny-Leveck, M.B.E., to H.Q., 'Iraq Command, 8/10. J. W. Lissett, to No. 1 (Indian Wing) Station, India, 8/10. E. J. Ffoulkes-Jones, to No. 28 Sqdn., India, 8/10. R. Menzies, to No. 20 Sqdn., India, 8/10. A. H. H. Macdonald, to No. 27 Sqdn., India, 8/10. E. C. Delamain, M.C., to No. 27 Sqdn., India, 8/10. A. R. Jones, to H.Q., R.A.F., Transjordan and Palestine, 13/9. A. E. Lindon, M.B.E., to H.Q., R.A.F., Transjordan and Palestine, 13/9. G. H. Russell, D.F.C., to No. 30 Sqdn., 'Iraq, 1/9.

Flying Officers H. A. Evans-Evans to H.Q., R.A.F., Transjordan and Palestine, 13/9. A. R. S. Davies, to R.A.F. Depot, Uxbridge, 11/9. L. P. Moore, to No. 30 Sqdn., 'Iraq, 1/9. S. F. Cole, to R.A.F. Depot, Uxbridge, 26/8. G. W. Gay, to No. 5 Sqdn., India, 8/10. J. B. Fyfe, to No. 20 Sqdn., India, 8/10. R. C. Higgins, to Aircraft Depot, 'Iraq, 8/10. A. T. C. Hazledine, to No. 70 Sqdn., 'Iraq, 8/10. R. A. T. Stowell, to No. 84 Sqdn., 'Iraq, 8/10. C. I. Semphill, M.M., to H.Q., 'Iraq Command, 8/10. R. L. R. Atcherley, to C.F.S., Wittering, 10/10. G. J. C. Mahony to No. 603 Sqdn., Edinburgh, 9/10. P. R. Barwell



COAST DEFENCE.—A Hawker Horsley (Rolls-Royce Condor engine) of No. 36 (Torpedo-Bomber) Squadron, R.A.F., dropping a torpedo off the coast of Fifeshire, Scotland. No. 36 (Torpedo-Bomber) Squadron is stationed at Donibristle and is commanded by Sq. Ldr. A. W. Mylne.—*(R.A.F. Official photograph.)*

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to C.F.S., Wittering, 19/9. G. H. W. Selby-Lowndes, to H.Q., R.A.F., Middle East, 12/10. M. G. Philpott to No. 4 F.T.S., Middle East, 12/10. E. A. Jones to No. 47 Sqdn., Middle East, 12/10. P. Kinsey to No. 6 Sqdn., Middle East, 12/10.

Pilot Officers P. B. Rogers to No. 25 Sqdn., Hawkinge, 3/10. J. W. Hawke to No. 20 Sqdn., India, 8/10. H. J. A. Williams to No. 31 Sqdn., India, 8/10. J. A. C. Stratton to No. 26 Sqdn., India, 8/10. J. H. Manning-Fox to No. 20 Sqdn., India, 8/10. W. R. Beaman to No. 5 Sqdn., India, 8/10. H. G. Richards to No. 28 Sqdn., India, 8/10. A. N. E. Hall to Armoured Car Section, Aden, 8/10. D. A. L. Campbell to No. 208 Sqdn., Middle East, 8/10. K. R. Coates to No. 202 Sqdn., Mediterranean, 3/10. H. M. Pearson to No. 202 Sqdn., Mediterranean, 3/10.

Medical Branch.—Squadron Leaders T. C. St. C. Morton, M.D., M.R.C.P., D.P.H., D.T.M., and H., to H.Q., 'Iraq Command, 8/10. T. R. S. Thompson, M.B., to H.Q., 'Iraq Command, 8/10. T. Montgomery, M.B., D.P.H., B.A., to R.A.F. Depot, Uxbridge, 1/10.

Flight Lieutenants J. P. Hederman to No. 100 Sqdn., Bicester, 13/10. R. W. White, to H.Q., R.A.F., India, 8/10. R. L. C. Fisher, M.B., to H.Q., R.A.F., India, 8/10. A. A. Townsend, M.B., to H.Q., R.A.F., India, 8/10. W. Gamblen (Quartermaster), to H.Q., 'Iraq Command, 8/10.

Flying Officers J. Kemp, M.B., to H.Q., 'Iraq Command, 8/10. C. Crowley, M.B., to H.Q., R.A.F., Middle East, 8/10.

Stores Branch.—Wing Commander C. L. Archbold to H.Q., Aden Command, for Stores Staff duties, 8/10.

Flight Lieutenants H. Cartwright to Aircraft Depot, India, 8/10. H. E. T. Crocker, to Aircraft Depot, 'Iraq, 8/10. R. G. Sims, to Aircraft Depot, 'Iraq, 8/10. R. F. Wilson, to Supply and Transport Services, 'Iraq, 8/10.

Flying Officers J. E. R. Sowman, to Aircraft Depot, 'Iraq, 8/10. J. McCarthy, to Aircraft Depot, 'Iraq, 8/10. C. W. H. Moller, to Aircraft Depot, India, 8/10. O. D. Allerton to No. 2 (Indian Wing) Station, India, 8/10. L. L. Bray, to No. 208 Sqdn., Middle East, 12/9. P. Dennehy to Stores and Supplies Depot, Aden, 8/10.

Accountant Branch.—Squadron Leaders P. J. Farmer to H.Q., R.A.F., Mediterranean, 3/10. A. R. Thomas to H.Q., Wessex Bombing Area, Andover, 4/10.

Flight Lieutenants R. F. C. Metcalfe to H.Q., R.A.F., Cranwell, 2/10. K. R. Money, O.B.E., to R.A.F. Base, Malta, 8/10.

Flying Officers F. Rigby to No. 8 Sqdn., Aden, 8/10. A. W. Younghusband to Aircraft Depot, India, 8/10. R. W. L. Glenn to School of Army Co-operation, Old Sarum, 22/10.

Chaplains Branch.—The Revd. G. H. Piercy, M.A., to No. 203 Sqdn., 'Iraq, 8/10. The Revd. A. W. Brown, M.A., B.D., to Station H.Q., Heliopolis, 1/9. The Revd. D. F. Blackburn, to R.A.F. Depot, Uxbridge, 8/7, instead of to H.Q., R.A.F., Cranwell, as previously notified.

Fatal Accidents.

The Air Ministry regrets to announce that as the result of an accident near Baghdad to a D.H.9a machine of No. 55 (Bomber) Squadron, Hinaidi, 'Iraq, on October 24, No. 336670, Cpl. William Walmsley, an occupant of the aircraft, was killed. The pilot, Flg. Off. Esmond John Hugh Fulford Moreton, was slightly injured.

The Air Ministry regrets to announce that as the result of an accident in the Firth of Forth to a Hawker Horsley machine of No. 36 (Torpedo-Bomber) Sqdn., Donibristle, Fife, on Oct. 28, No. 370380 AC.2. Robert Henry Wilson, an occupant of the aircraft, was killed. The pilot, Flt. Lt. Alexander Harold James Howlett, was slightly injured.

Royal Communications.

H.R.H. Prince George flew to Birmingham on October 25 in a Westland Wapiti of No. 24 (Communication) Squadron, R.A.F., piloted by Sq. Ldr. D. S. Don. He returned to London by air the following day.

Peace Factors.

Replying to the toast of "The Imperial Forces," at the annual dinner of the Jersey Society in London on Oct. 14, Air Marshal Sir John Higgins said that in the endeavour to keep peace as long as possible among the nations of the World the Air Force could help more than the other Services.

The more the British Empire was linked together the less likelihood there would be of another war on the scale of that of 1914. The only way that the British Empire could be linked together was by means of air transport.

Our newest airship, R.101, was an attempt to see whether we could quicken up transport between the Empire by means of the air. No one wished to claim it as a commercial proposition. The R.100 and R.101 were the first airships which had been built on scientific safe principles, to get the airships as safe as possible and then to cut down the weight and make improvements so that they could become commercial possibilities. The other airships were fundamentally unsafe; this ship was fundamentally safe. R.101 was a step in the right direction. [To be fundamentally safe by scientific calculations and then to fail because of a mere mechanical mistake is not so good as to be fundamentally wrong but practically sound.—C. G. G.]

After this work had been completed Canada, Australia, New Zealand, South Africa, and other portions of this great Empire would be in much closer touch with the heart of the Empire, Great Britain, than ever before. This must tend to ensure a greater certainty of peace in future.

Special Assessments.

The following officers have been awarded the special assessments shown hereafter on completion of a course of *ab initio* flying training at No. 5 Flying Training School, R.A.F.

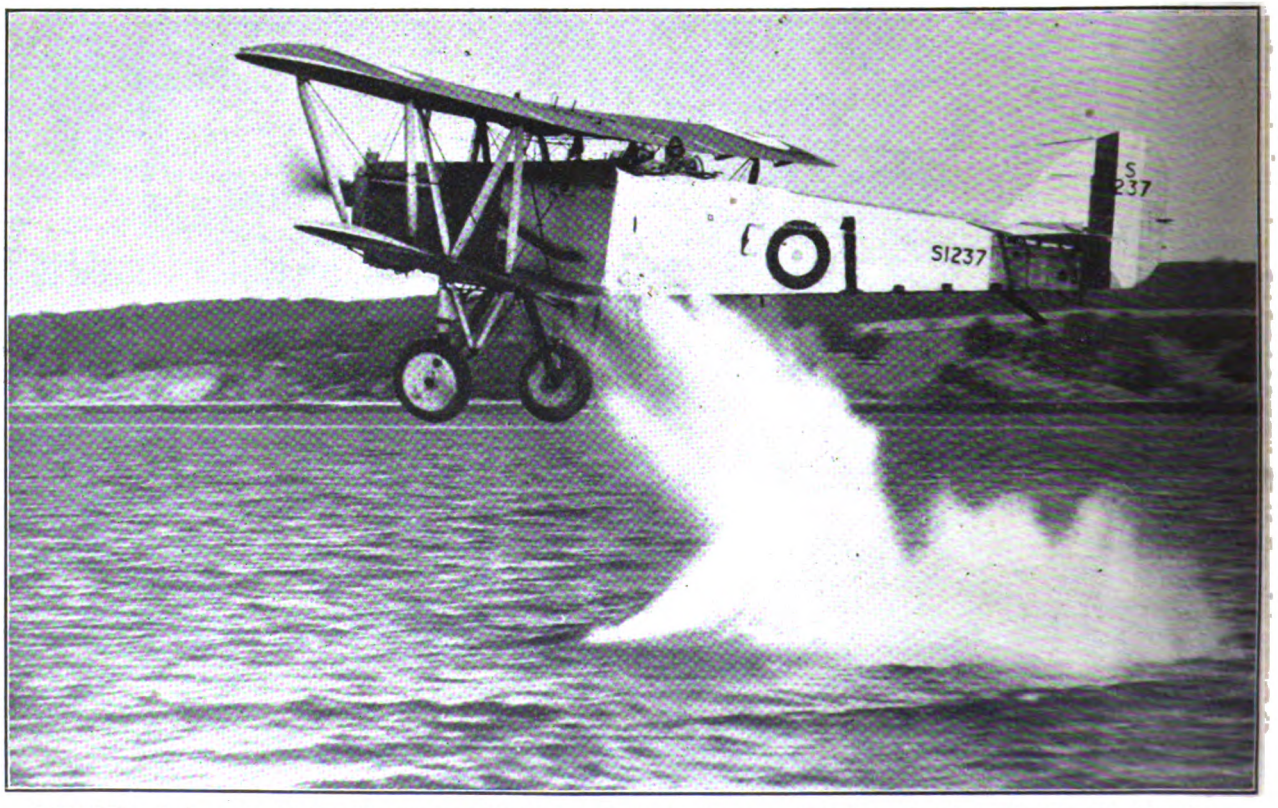
Distinguished Passes:—Flg. Off. A. J. W. Geddes and Plt. Off. H. R. Hughes-Hallett.

Notation has been made in the official records of these officers.

The S.6 at South Kensington.

The Supermarine-Rolls-Royce S.6 which won the Schneider Trophy Contest in September has been lent by the Air Ministry for exhibition at the Science Museum, South Kensington, from October 26 to December 29.

Among other famous aircraft to be seen in the National Aeronautical Collection at the Science Museum are the



SPLASH!—A torpedo hitting the water after being dropped from a Hawker Horsley of No. 36 (Bomber-Torpedo) Squadron, R.A.F. The first British torpedo-dropping aircraft was the Sopwith Cuckoo, built by the Sopwith Aviation Company, the predecessors of the Hawker Engineering Co., the makers of the Horsley.
(R.A.F. Official photograph.)

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original Wright aeroplane with which the Wright Brothers made the first controlled and sustained flight under power on December 17, 1903, and the Vickers-Vimy Rolls-Royce aeroplane which made the first direct Transatlantic flight, on June 14-15, 1919.

A Compliment.

In commenting on the military flying at the Cleveland National Air Races which have just concluded an American journal, *Air Transportation*, says:—"Army Pursuit Squadron No. 1, the Navy 'High Hat' Squadron and a number of Marine flights, as well as Col. Charles A. Lindbergh, daily thrilled spectators at the Municipal Airport. By far the most thrilling show, however, was put on by the Canadians in their new all metal one-place fighting ships. Even Lindbergh's landing out of a loop paled perceptibly alongside of the foolhardy stunting of the men from the North-country."

These comments refer to a flight of the R.C.A.F. from Camp Borden mounted on Armstrong Whitworth Siskin III single-seat fighters (Jaguar engines).

No. 33 (Bomber) Squadron.

The Officer Commanding No. 33 (Bomber) Squadron is anxious to get into touch with members of the original No. 33 Squadron, R.F.C. and R.A.F., who have any documents or photographs which would be of use in compiling a history of the Squadron. He would be grateful for any war records, photographs, accounts of exploits by individual pilots, lists of officers, locations of the Unit, with rates, etc.

Original records of operation orders, or photographs which might be worth framing, would be much valued, and would be duly acknowledged to any individual who is good enough to present them to the Squadron.

Communications should be addressed to Wing Cdr. F. P. Don, No. 33 (Bomber) Squadron, R.A.F., Eastchurch, Kent.

No. 3 Squadron Re-Union Dinner.

The tenth annual re-union of No. 3 Squadron, R.F.C., and No. 3 (Fighter) Squadron, R.A.F., will be held at the Hotel Cecil on December 6, at 19.30 hours for 20.00 hours.

Air Chief Marshal Sir John Salmond, K.C.B., C.M.G., C.V.O., D.S.O., A.D.C., will take the chair. Air Vice Marshal C. A. H. Longcroft, C.B., C.M.G., D.S.O., A.F.C., has been invited as a Guest of Honour

Tickets, 12s. 6d. each (wines extra, gratuities included), will be obtainable at the dinner.

Former members of the Squadron who wish to attend are requested to inform Flt. Lt. J. L. Airey, D.F.C. (Hon. Sec., Re-Union Dinner Club), No. 3 (Fighter) Squadron, R.A.F., Upavon, Wiltshire.

The Great Yarmouth Re-union Dinner.

The tenth annual re-union dinner of officers of the Great Yarmouth Air Station (1913-1920) was held on Oct. 26. As no details have been received the presumption is that this re-union, like so many other similar functions, is dying a natural death.

Squash Rackets.

The Royal Air Force Club beat the Cavendish Club in the First Division of the Inter-Club Squash Rackets Tournament in the Cavendish Club court on Oct. 24 by two matches to one.

H. Coverdale (R.A.F.) beat D. G. McIntyre (Cavendish) by three games to none (9—1, 9—4, 9—4). J. S. Heagerty (R.A.F.) lost to G. D'O. Sheppard (Cavendish) by three games to one (9—6, 3—9, 2—9, 2—9). P. Q. Reiss (R.A.F.) beat P. de L. Cazenove (Cavendish) by three games to none (9—0, 9—1, 9—7).

AIR CO-OPERATION IN MOROCCO.

The Paris correspondent of *The Daily Telegraph* in a message dated Oct. 18, describes air co-operation during an engagement in Morocco between the 1st Foreign Legion and a party of rebels of the Ait Hammon tribe. The message states:—

Although taken by surprise, the French force fought desperately, and the tribesmen left many dead on the field beside the booty they had taken. But they were too strong for the Legionaries. Within a few minutes they had killed fifty men, and of the remaining twenty-five only seven escaped injury.

Fortunately for these seven and for the wounded, an aeroplane had been observing their movements. But for the prompt action of the airman not a man would have escaped to tell the tale. On seeing the trap into which the party had fallen, the pilot at once flew to the nearest post of the Legion and had reinforcements hurried to the scene.

Another detachment of French troops came up in the nick of time and put the tribesmen to flight. Subsequently further measures were taken to cut off the retreat of the rebels, whose movements were impeded by the fact that they were carrying their wounded with them.

The casualty list shows that forty-two Legionaries and eight native soldiers were killed, and fourteen Legionaries and four native soldiers severely wounded. The wounded were rushed to Colomb-Bechar with the exception of two who were in such a condition that they were taken by aeroplane ambulance to the hospital at Oran.

THE ART OF FLYING.

On Oct. 24, Mr. Norman MacMillan, chief test pilot of the Fairey Aviation Co., Ltd., read his paper on "The Art of Flying Landplanes and Seaplanes" before the Royal Aeronautical Society.

The meeting was very well attended, and as at the previous meeting, late-comers found seats with difficulty.

This should have been an inter-departmental occasion. One had hoped to hear furious debate between champions of "free air" and scientist defenders of the "standard" variety. But alas, the scientists stayed away and the discussion was mostly confined to the outlook of the practical pilot.

The absence of the technicians seemed extremely unfortunate. In the end the sole object and *raison d'être of* the technician is to put a man or men in the air within a contraption that shall convey its crew in a manner previously deemed desirable. One has always felt about sciences, and especially mathematical science, that the end should never be lost amidst the intricacies of the means. All science is a means to an end and *not*, as is generally accepted to-day, a commendable end in itself.

The pity was that the pilot should have had it all his own way,—but the technician by his absence failed to help in the formation of an *entente cordiale*.

Mr. MacMillan opened his paper with a dissertation on what was meant by Art and in particular those contributory factors that together form the Art of Flying.

His creed was not to despise the ability to fly which had been acquired through long practice, but most certainly, to encourage the study of flying so that skill may be attained through mental knowledge gained by means additional to the lengthy method of storing memory through the touch of hands and feet and the judgment of eye. He advocated strongly the mental-cum-practical method of flying instruction, because of the saving in time and the undoubted reduction in danger to the individual during the early stages of solo flight (anything up to several hundred hours) that such a method involved.

Mr. MacMillan next outlined the grave distinction that exists between the practical pilot and the technician. He said it was a matter of some concern to him that the divergence should have become so wide.

He wished to emphasise the fact that to the average pilot there was no relation between the free air in which he flew and the "standard" air of the technician's convention. If the technician could make God' free air into standard air he would have gone as far to make flying safe as the meteorologist would if the latter could control the weather instead of only forecasting it. Because the mathematical air has (of necessity) reached stability, the technician is prone to consider himself, as a person, superior to the pilot who cannot order his air to behave quite as he would wish it to do.

The next part of the paper concerned itself with six slides illustrating the performance of an imaginary composite aeroplane. Captain MacMillan emphasised the fact that flight is four-dimensional (height, length, width and time), and that as a result the full capabilities of flight could not be illustrated graphically. The best that could be done was to depict the various aspects of flight by separate diagrams and then piece these together mentally.

By way of demonstrating the poor climbing capabilities of aircraft, the peculiar speed-climb diagram shown by the lecturer is interesting. Such a diagram consists of slices of a sphere with the larger diameter as max. speed in m.p.h. at sea-level and the smaller diameter as corrected speed at service ceiling. The distance between the two is climb in m.p.h. This diagram at once emphasises the fact that a machine's rate of vertical ascent is about 1/40 of its speed at sea-level. Mr. MacMillan suggested that a sea-level climb of 5,280 ft. (60 m.p.h.) would be a good goal for which designers should strive. [This suggests that two new terms are needed, namely "Rising speed" instead of "climbing speed," and "sinking speed"—or "rate of sinkage"—each being measures of vertical speeds, irrespective of air-speeds or angles of ascent or descent. The phase "climbing speed" should by rights indicate the air speed of a machine when climbing, and "best climbing speed" should indicate the proper air speed for the "best rising speed."—C. G. G.]

The next figures illustrate the difference in performance of the same machine as viewed by the technician and pilot. These two diagrams show the speed range plotted against height, one as the pilot reads from his instruments and the other as corrected for standard air. The difference is striking and one can quite understand Mr. MacMillan's wish to see the figures from the Air Speed Indicator (A.S.I.) in parentheses beside the performance figures.

The remainder of the paper is devoted to the three sections of flying, take-off, fully air-borne flight and the alighting.

If the average flight be taken as one of 30 minutes and the average time of take-off and alighting is 15 secs. each, then a pilot with a flying time of 100 hours has only about 4 hours of take-off and alighting experience to his credit even allowing for the additional time devoted to this subject in the preliminary stages. This accounts for the number of accidents near the ground to pilots comparatively young in experience.

The art of flying lies in the judgment of eye, the touch of hands and feet, and the synchronisation of all to one end. The vacillating individual should not fly if he values his life, unless he has first conquered this failing.

The horizon, which plays an important part in the pupil's lessons, is an excellent datum line about which the instructor can display the functions and values of controls when on the turn, and from which he can direct the aeroplane's attitude to the horizontal when on a glide, but it should not be carried too far into the pupil's

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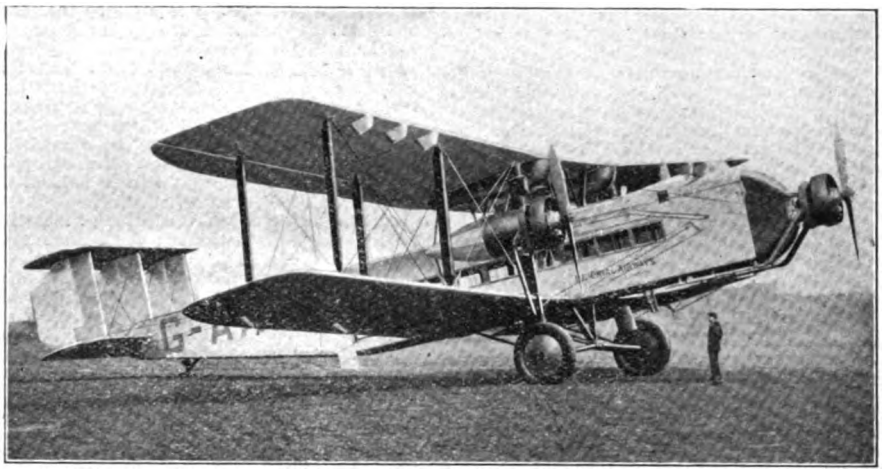

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Argosy Aircraft are fitted with three 460-510 h.p. Armstrong Siddeley Geared Jaguar engines. The normal useful load inclusive of fuel for 3½ hours is 5,000 lbs. or 20 passengers, luggage and a crew of two.

The recommended cruising speed is 95 m.p.h. at which speed the petrol consumption is 65 gallons an hour. The top speed is 120 m.p h. The tanks have a capacity of 360 gallons, which gives a maximum endurance of 5½ hours. The aeroplane takes off with full load in 200 yards and will fly easily on any two engines at a height of 2,000 feet.

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post-training flying. The horizonless aspect of flight is very important, because the glide to the landing on strange aerodromes may bring the nose of the aeroplane below a false horizon and throw the inexperienced pilot's judgment out.

Again, modern streamlines and wing sections have so diminished head-resistance and have so increased lift that sometimes the nose of the aeroplane actually rises above the horizon when in a slow glide, and if the pupil sticks to the principle of so much nose below the horizon the landing will be made too quickly.

Under the heading of take-off Mr. MacMillan gave the routine which should invariably be followed, such as noting the direction of the wind, and the position of obstructions, the position of any aircraft in the neighbourhood and the correct functioning of the controls. If the machine is new to the pilot, he should note the attitude on the ground so that he may have some idea of what the stick movement to raise the tail will be and also that he may know the exact position for a three-point landing.

The characteristics of aeroplanes vary in the take-off, but to a less degree than in the alighting. The main factors that can affect the take-off are changes of load, alteration in position of the centre of gravity, airscrew characteristics, tail-skid load, tailplane and elevator surfaces, wheel resistance, head resistance, and wing section.

Fully air-borne flight is much easier than the driving of a motor-car. Horizontal variations of atmospheric pressure affect the reading of the altimeter. One millibar is equal to 30 feet and a deep depression could cause an error of 1,000 feet in the reading of the altimeter, that was, the pilot would be flying 1,000 ft. below the indicated height.

The worst predicament in which a pilot can find himself during fully air-borne flight is a spin and the worst variety is that of the inverted spin with all the accelerations tending to heave the pilot into space.

Just as every motor-car is better when fitted with four-wheel brakes so is every aeroplane better when fitted with slots. The slot does not eliminate the spin, but makes it almost impossible to spin involuntarily, for all three controls must be applied to the maximum to produce the spin when the aeroplane is in a stalled condition.

Mr. MacMillan stated that he did not know the effect of the slot in an inverted spin. Every pilot should know how to spin and how to recover from both the inverted and normal spin so that in emergency he could act without hesitation.

Alighting should be divided into two parts, the approach and the actual alighting. Approach varies with every aerodrome and every wind. Generally speaking, overshooting is better than undershooting.

Alighting is a simple matter if the approach has been properly made, though if the approach be made too slowly, the aeroplane may tend to glide into the ground.

Landing is always done best by looking well ahead of the aeroplane. Looking close upsets the time-factor and makes landing more difficult to do consistently.

The final portion of the paper dealt with the flying of seaplanes. The term aeroplane had been used throughout the rest of the paper as what had been said applied equally to land and sea machines.

Any pilot who can fly an aeroplane can fly a seaplane in the air. The seaplane is more clumsy, the speed range is usually less and its manœuvrability somewhat poorer. [Barring Schneider Trophy Entries?—Ed.] The real difference between the types lies in the handling on the water. Experience of yachts and motor-boats helps.

The seaplane is at a disadvantage on the water as it has no keel and is therefore subject to drift and list. The low-wing monoplane is the best machine for handling on the water. [Yet with the exception of the Short Mussel, and there is only one of it, there is not a single craft of this kind, barring racers, in the country to-day.—Ed.]

The take-off of a seaplane is quite different from that of a land-plane. The nose of the seaplane must be held well up when the throttle is first opened so that the water breaks as far aft as possible. Between 15 and 20 knots the seaplane passes from the partly displacement-supported condition to that of hydro-planing. At this point there is frequently a change of stick-position and if the thrust horsepower be low, the crossing of the "hump" needs great skill.

Acceleration is rapid when once hydro-planing begins, though towards the end of the run resistance builds up again and the available thrust becomes important. The pilot can do a great deal to help take-off by forcing the floats to adopt the angle of minimum resistance.

In rough weather the skilled seaplane pilot carefully watches the run of the sea and chooses the moment to open his throttle. It pays in rough water to get the seaplane into the air with minimum run but the machine must not be thrown clear of the water before it has reached flying speed, as it will fall back, stalled, into the trough of a sea and suffer serious damage.

On smooth water there is no difference between the alighting of a seaplane and a land machine, except that it is more difficult to judge height over water than over land. In rough weather the seaplane has to be landed on a surface that would appal the average land-plane pilot. The seaplane has to come down with a minimum forward speed and touch ever so slowly on the crest of a wave. Misjudgment may cause the seaplane to fall into the trough where it will be swept by the next wave. Alighting too early sends the seaplane high into the air to fall heavily in a stalled condition in the turmoil of the sea.

THE DISCUSSION.

COL. THE MASTER OF SEMPILL, Chairman of the Royal Aeronautical Society, said that this was the first lecture in the 65 years' existence of the Society on The Art of Flying. He referred to Mr. MacMillan's experiences in the Bay of Bengal when he was adrift on a seaplane for six days, and for the last 52 hours of those six days was clinging to the floats.

He hoped to hear something of the Art of Flying from the lighter-than-air pilots and auto-giro pilots. He referred to the fact that long enough experience as a pilot was a qualification for membership of the Society. Col. Sempill also mentioned the references to the Art of Flying in Dr. Johnson's "Raselas" of 1750. Finally he called upon Lt.-Col. Moore-Brabazon, who is, officially, the first British subject to fly over British soil, to open the discussion. This flight of Col. Moore-Brabazon's was made on May 2, 1909.

COL. MOORE-BRABAZON said that twenty years separated his experiences of flying from those of the present day and though in his second childhood he proposed to take to a Moth instead of an armchair, he did not feel that he could say anything of value about the Art of Flying. He thought that the lecturer had fought the battle of the practical aviator very efficiently and that in Mr. MacMillan could be seen the happy marriage of science and practice.

FLG. OFF. R. L. ATCHERLEY said that he had nothing to contribute. [Which recalls Wilbur Wright's remark that the parrot is the bird that talks most and flies least.—Ed.]

SQ. LDR. RAE said that this was the first lecture that he had attended and he thought it would be a good thing if the designer did take advice from the pilot.

AIR COMMODORE WEIR thought that the great snag in flying was the amount of technique required by the pilot. He mentioned that he had just returned from the United States and said that over there the majority of the machines were high-wing monoplanes with high wing-loadings which required to be landed fast and this entailed a number of accidents. In reply to questions from the Chairman referring to the Guggenheim Safety Competition, he said that there were some 23 entries and at the time of his visit to the field there were only two machines there, the Brunner-Winkle, which had already failed, and the Handley Page. Mr. Harry Guggenheim, in conversation, said that he thought that a total of 8 or 12 would materialise out of the original entry.

FLT. LT. JENKINS, who thought that there should be more technician-pilots, said that technicians could more easily be pilots than pilots technicians. He thought that aerobatics were very important and regretted that so little had been said about this subject in the paper. Did Mr. MacMillan mean that Service pilots should have more technical training? He referred to the importance of adjusting the tailplane for landing as well as take-off. He quoted a case to stress the danger of false horizon and disputed the lecturer's remarks about the behaviour of the high-lift wing when landing.

FLT. LT. J. S. CHICK did not agree that it was a good thing to fly without a horizon and thought that it was a bad thing to fly without instruments.

FLT. LT. BROWN, who had written a paper on deck-landing and had been told that it contained too many technical terms, said he thought the question of how far to look ahead was very important for deck-landing. He also thought that one should not fly by instruments and that pilots should be more technical.

SQ. LDR. ENGLAND said that they shortly hoped to have information on the effect of slots in an inverted spin.

SQ. LDR. PROBYN said one could easily learn to fly in 6 hours from any given aerodrome but that the fun started when the beginner tried to land elsewhere. He wanted to know what happened when you were flying into the wind and suddenly passed in the lee of some building, did you accelerate?

MR. MACMILLAN, replying, said that the inertia of the machine would prevent its sudden acceleration. He mentioned two experiences of his own. One, a queer patch in the sky at 16,000 feet which he had been unable to penetrate though the machine he was flying had a service ceiling of 19,000 feet; the other was a cyclone in the Persian Gulf when by flying along the top of a cliff he had been able to add 30 m.p.h. to his speed.

He regretted the divergence of outlook between the pilot and technician but all the same he knew the designer should design the machine. He agreed that flying required too much technique. He hoped to see an increase in the number of flying technicians. He thought that the average flying school did not teach enough theory, though the pilots were anxious to know more. With regard to what could be done by flying blind, he quoted the successful experiments and achievements of Lt. Doolittle, U.S.A., who had recently succeeded in taking off, flying to-and-fro, and landing, solely by instruments in a hooded cockpit.

A TRIP TO SPAIN.

On Oct. 23 the *Graf Zeppelin* left Friedrichshafen for Spain with the Spanish Ambassador in Berlin, Señor Espinosa de los Monteros, on board.

Later in the day the airship flew over the city and the International Exhibition grounds for more than an hour.

The *Graf Zeppelin* arrived back at its base on Oct. 24 after a cruise of 31 hours.

There is no doubt that the quiet way this airship goes off on these trips is influencing public opinion very considerably.

CIVIL AIR ACCIDENTS IN FRANCE.

The Times Paris correspondent states that the French Air Ministry have now published an account of three serious accidents which occurred in August and September last. This is the result of the promise of M. Laurent Eynac on his appointment as Air Minister that prompt inquiries should be held into the causes of air accidents and that wherever possible the results would be published.

As a result of the inquiries on which these reports are based, flying in one type of machine has been stopped until the structure of this type has been specially tested.

The movements of aircraft on the ground at aerodromes are to be controlled by a system of signals. A competition for apparatus giving audible warning of the loss of flying speed is also being arranged.

With regard to the last item THE AEROPLANE of May 29, 1929, had a descriptive article on a syren device produced by Mr. Wynn, which would appear to meet the case,—and there are always the Bramson anti-stall gear and the Handley Page slots for those who want to fly with less risk.

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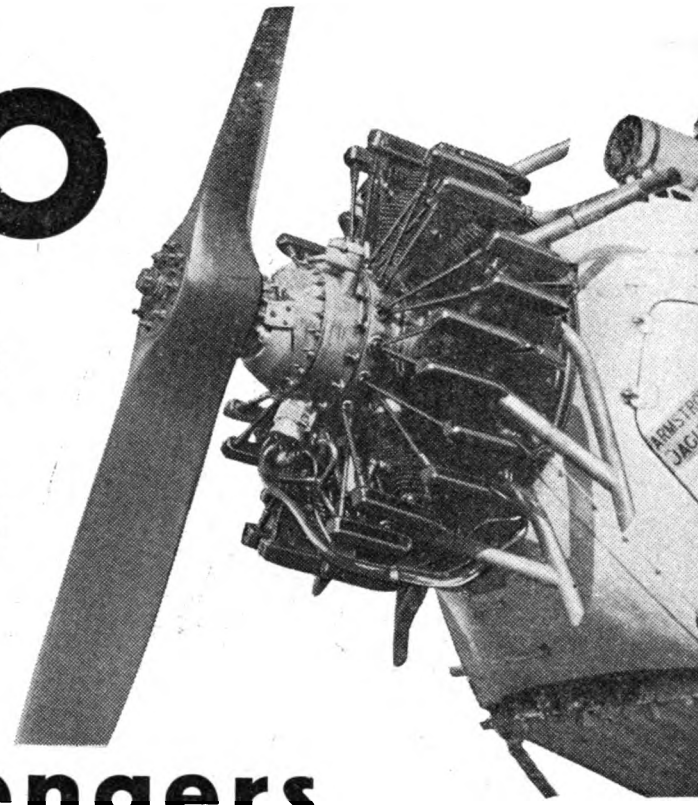

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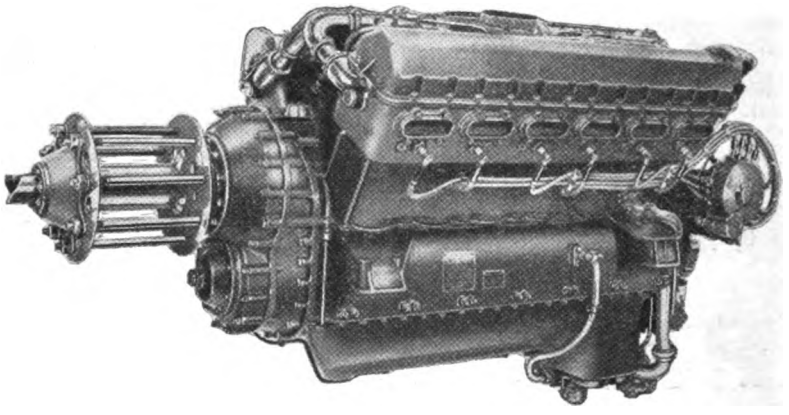

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THE AIR-PARK SUPPLEMENT

THE SELECTION OF A MUNICIPAL AERODROME.

BY SIR ALAN J. COBHAM, K.B.E., A.F.C.

During my recent tour of the British Isles, when I visited some hundred centres, I have been amazed to find how little the average man-in-the-street knows about flying. It has been my lot to address some four or five score meetings of city and town councils and civic authorities and on all occasions I have found it necessary to explain the simple fact that an aircraft takes off and lands head into wind.

In endeavouring to show them how urgent is the national necessity for an aerodrome for every town and village throughout the British Isles, I have discovered that the average civic official has not the faintest conception of the facilities aircraft require.

After many a successful meeting, I have been approached by enthusiastic converts to the cause of flying who tell me they have the very site on their farm or near their garden, and after some questioning I find that this potential municipal airport is anything from 5 to 15 acres in extent.

When I tried to explain to one gentleman that 15 acres was not enough, he argued that aeroplanes could land on the decks of ships which are not even half an acre in extent, therefore surely 15 acres would be more than enough. Of course, on the face of it, this needs a little explaining away to the ordinary layman, in view of the fact that I have advocated aerodromes of 100-150 acres.

Another great trouble I invariably meet is the local flying expert. I am approached by the Borough Surveyor and the Town Clerk, who inform me that they have a very fine site in mind. They are sure that it is quite satisfactory, because Mr. Jones says so.

I politely enquire who Mr. Jones is. "Oh, don't you know Mr. Jones?" they say. "Oh, he is a great flying man round here. He bought a Moth last week, you know, and he says the ground is very good."

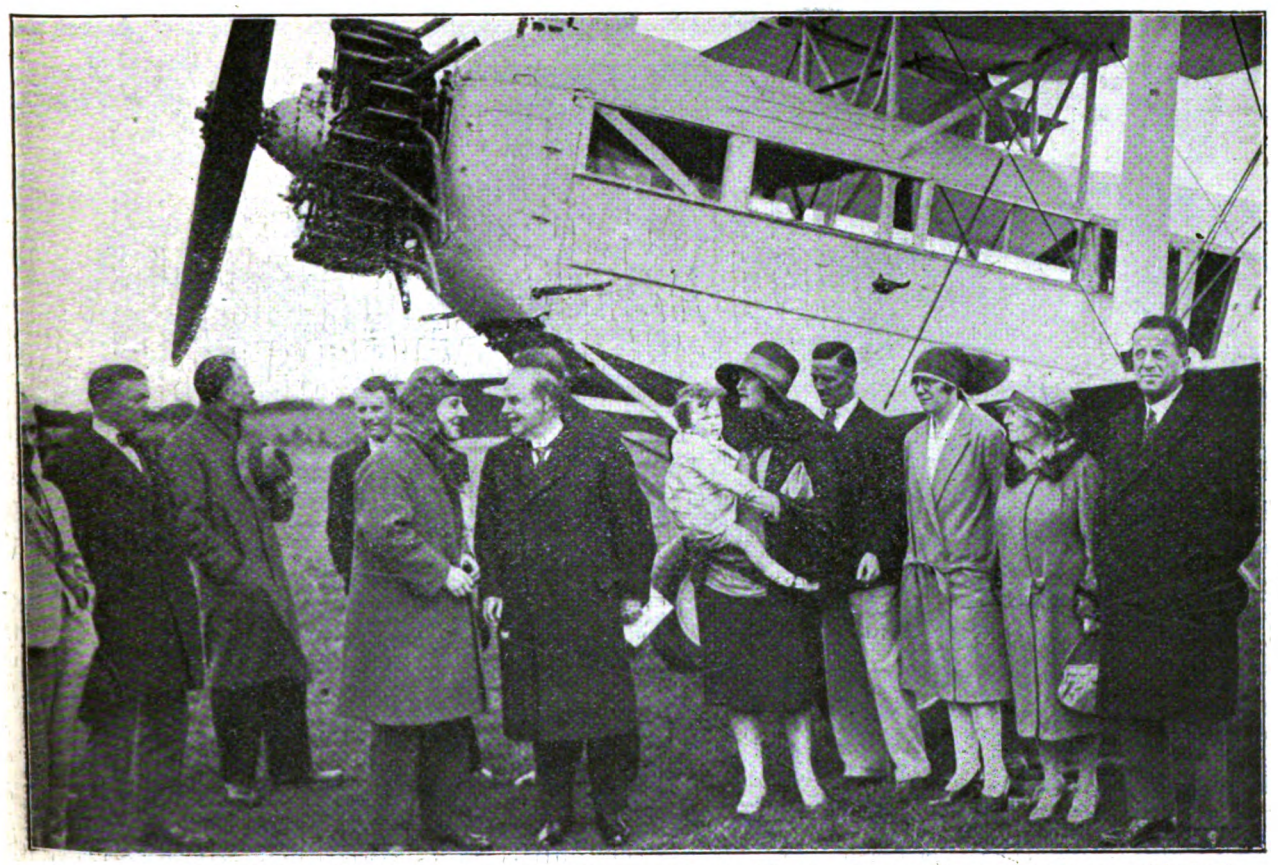
Mr. Jones, it transpires, has done about five hours' solo and has just become a private owner. Therefore, he immediately becomes a technical aerodrome consultant, of course. In such cases, I have only to explain that if Mr. Brown buys an Austin Seven, he does not automatically become a road engineer, and they see it. This simile has been very effective in counteracting the activities of the local aviation expert.

Although I have not been flying as long as a good many people, but only, shall we say, 11 years, continually, day in, day out, throughout the year, I have never come into such close contact with atmospheric conditions in relation to the lift of a machine, and the horse-power needed for get-off and flying, as I have in my tour of the British Isles this Summer.

I have been flying, on an average, 5½ hours a day every day since the beginning of May and in practically every case I have discovered that the worst period in the day for flying, from a performance point of view, has been in the morning or the early afternoon. As the day progresses, the lift of the machine improves and by the evening, especially during the Summer months, I have been cruising about in the air on 100 revs. less than I required in the early part of the day.

Again, there have been the trying conditions of heat. There have been days when the air has been good to rise on, others when it has been quite "dead." In fact, I have come to the conclusion that for the demonstration and testing of aircraft, from the point of view of getting excellent figures for publicity, the most essential thing to do (assuming you have a good aerodrome, especially from the approaches point of view) is to choose the right type and the right time of day. The local climatic conditions are a very important factor indeed in the selection of a future municipal aerodrome site.

As an instance, the officials of one town were very keen and they had already selected the site they wanted ex-



THE START OF THE CAMPAIGN.—Sir Alan Cobham and Sir Charles Wakefield at Stag Lane, with Lady Cobham and son,—and Air Vice-Marshal Sir Sefton Brancker (on the extreme right),—with the De Havilland Giant-Moth (Jaguar engine), "The Youth of Britain," behind.

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tended and developed for a municipal airport. However, on the day I arrived a west wind happened to be blowing, and on consulting the local wind-chart, I found that the percentage of west winds was quite high.

Away to the south of the proposed site was a low hill with a bank of trees on top. This could not be easily avoided in a southerly take-off. In practice I discovered that it was almost impossible to get out of the down-currents. In fact the take-off was a most terrifying procedure. All one's climb was destroyed by the down-current. I am convinced that many fatal accidents in the past have been caused through no fault of the pilot other than that he had never considered the possibility of down-currents totally destroying his climb and stalling his machine.

An aerodrome site might be selected with one of these conditions, and, although it might be used for 12 months or years, and although all the experts might test it out, on one day the wind might come in this particular direction and these particular atmospheric conditions prevail, and some poor individual, who had every faith in the experts' selection of the site, might take-off, possibly with a slightly overloaded machine, and the down-currents would overcome him.

It will therefore be seen that a most careful study must be made of every possible approach, and every possible take-off, round an aerodrome, and every possible local climatic condition in relation to these.

I have always made a very keen study of the down-current question and when summing up my experiences of various currents over Europe, I always advise folk to avoid the down-currents on the leeward side of a hill or mountain. To my mind, there have been many more unsolved accidents caused by violent down-currents taking a machine out of control than is usually recognised.

In the selection of an aerodrome site for a town many points have to be considered. First of all there are the local weather conditions in relation to fog, low cloud, and smoke-drift. These should all be considered separately.

In hundreds of cases I have found that the lay mind does not realise the difference between ground-fog and low cloud. Invariably the man who lives on a hill which is subject to low cloud thinks it is ground fog, and many who live on low-lying ground liable to ground fog are convinced that the clouds come down on top of the ground. Again, although there may not actually be cloud on top of some high ground, very often it is hanging about only 50 ft. above the surface.

From my own experience of flying in the British Isles, I am quite convinced that the one condition that stops flying more than any other is low cloud coming right onto the ground. Ground fog is invariably of a very temporary nature. It may be bad in the morning but it usually clears up in the day very quickly. I have often heard folk say that on the hills they are bathed in sunshine while down in the valley everything is buried in fog. This may have been early in the morning for a brief period and it is only a few days in the year that this happens whereas the hill-tops are very often buried in low cloud.

CONSULTATION.—The Mayor of Colchester (Councillor John Russell) discussing an aerodrome site with Sir Alan Cobham.

I mention these points because in the majority of cases it is better to choose the low-level site for an aerodrome than the high-level one, unless, of course, owing to local conditions, it is extremely liable to ground fog. The best way to get about the British Isles by air in bad weather is to hug the valleys and the lower contours.

I can remember in 1922, when we ran a bi-weekly service from Stag Lane to Manchester, we always tried to go on a straight compass course which took us over the south-west corner of the Peak district. We found that only on ten per cent. of our trips were we able to keep to that course for the entire distance. Although we might go straight over

MUNICIPAL ENLIGHTENMENT.—Councillors of the City of Perth after a flight with Sir Alan Cobham.

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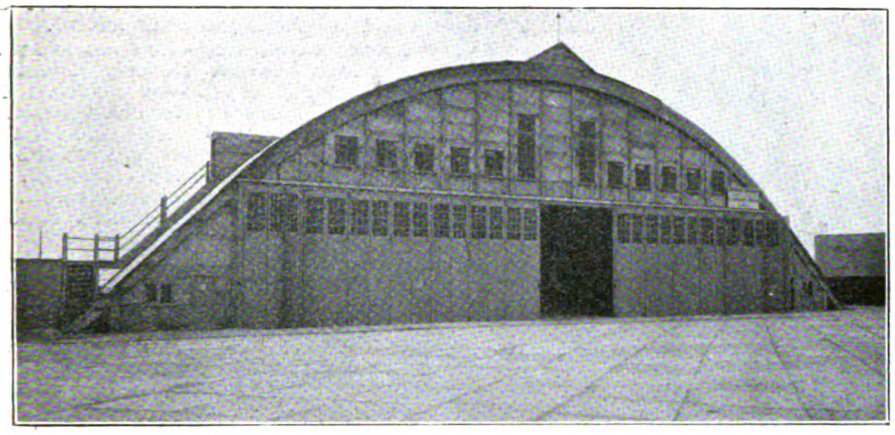

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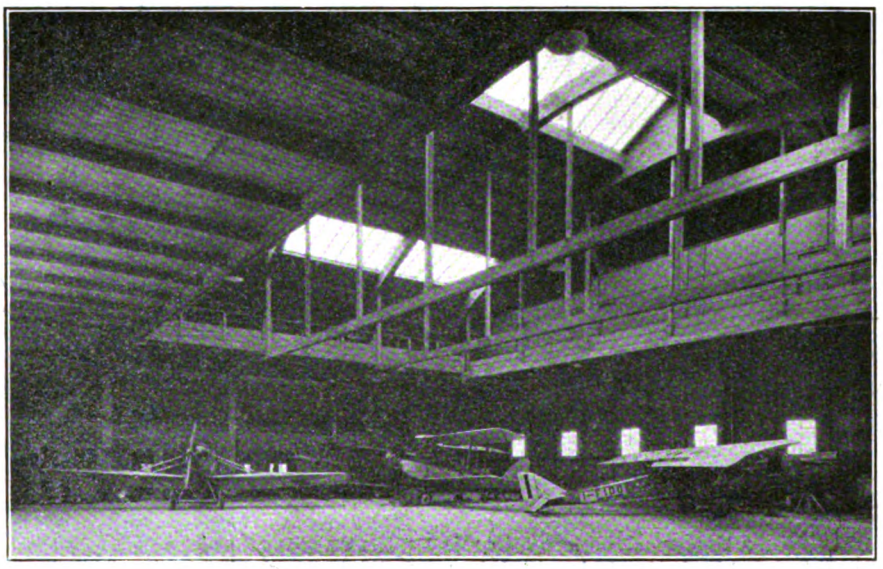

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FEMININE INFLUENCE.—The Lord Mayor of Portsmouth and his daughter,—after an aerial survey of their city with Sir Alan Cobham.

the Chilterns into the Midlands, beyond we always ran into cloud banks and had to fly due west, come out over the Potteries and Stafford and then creep up the L.N.W. Railway over Crewe to Manchester.

I have discovered during my tour of the British Isles that one really needs a big machine of the air-liner type to get the right perception of what is required for an aerodrome. I tested out on a Moth all my landing grounds before actually beginning the tour, and even so I made blunders regarding the possibilities or otherwise of landing grounds for my air-liner.

One needs a heavily-loaded machine to test out the qualities of an aerodrome, and once or twice or three times is not enough to fly round and test out the approaches and general conditions. Very often, after flying round the district for twenty times, I have found a new possible aerodrome site which for some reason I had hitherto missed.

The responsibilities of selecting an aerodrome site cannot be over-rated, because apart from the initial liability incurred for purchase, clearing and development, there is that responsibility which is attached to its future development. One might select a site quite suitable for use for the next five years, after which it might be discovered that owing to certain town-planning schemes having gone ahead, certain approaches had been irrevocably destroyed, or extension needed for the increase of air traffic was impossible on account of new developments on the boundaries.

One must not look five years ahead, or 10 years ahead, but 50 years ahead. The whole thing to remember is that it is not only the initial outlay that matters, but once a site is purchased money is continually going to be spent on it, there will be all kinds of improvements and developments, until eventually there is a very large sum of money invested in the aerodrome. Then the time will come when it will be impossible to consider altering the site on account of the tremendous sums of money involved.

Therefore, imagine the disaster that would come about if a site had been chosen wrongly and all the time another and better site existed and could have been selected had the job been done properly.

Other details that must be borne in mind when selecting the best site are whether promising sites are liable to floods in winter, or to subsidence (such as in mining areas); whether they can be drained easily, whether the soil is very light, causing continual dust, etc.

Gradients should be most carefully avoided, firstly because an uphill take-off is very bad for a heavily-loaded machine, in view of the fact that not only must the machine run uphill, but there are almost certain to be down-currents; secondly, because a machine landing down-hill could not pull up, as our present aircraft are not fitted with wheel brakes.

It is essential, in the selection of a municipal airport, to secure an option on all surrounding property, otherwise the approaches can be utterly destroyed and the whole aerodrome ruined by the erection of obstructions round the boundaries, such as high-tension cables, tall buildings, factory chimneys, wireless masts, etc. That is why a municipality must contemplate an aerodrome 150 acres in extent, or even larger still, so that aircraft can take-off, turn and operate entirely in its own area. Or at least, a municipality must contemplate purchasing areas round the aerodrome to protect the boundaries. Municipalities do not seem to realise that flying space is as much a part of the aerodrome as wheel space, and is just as important.

The ordinary layman would very often not even see a good aerodrome site from the air. He only visualises an open space, and hedges, ditches, trees, a roadway, immediately destroy the open space in his imagination. The expert sees through all these and visualises the area when hedges have been removed, ditches filled in, trees cut down, roadways diverted, slightly marshy areas drained, small undulations levelled, small buildings or huts razed. It is only by looking at the question in this light that good aerodromes can be found close to towns.

The opinion seems to be very widely held that an aerodrome must be near a railway station. Why this should be I have never been able to fathom. I cannot think what good the railway station is going to do. All passengers and goods could easily be brought to the aerodrome by road transport. In any case, a railway embankment bordered by telegraph wires is a very bad boundary for an aerodrome. Before anything else, the main essential is to find a good site, regardless of all else. It will then be well worth while to construct a special road to the aerodrome.

The municipal aerodrome question must be attended to immediately, it is an urgent and vital national necessity. Apart from this, a municipality will be able to purchase an aerodrome site to-day at a very reasonable figure, whereas in 10 years' time, when every town without an aerodrome will be definitely out of the running, they will have to pay fifteen or twenty times as much as they would pay now.

MUNICIPAL PROGRESS IN BELFAST.

The General Purposes Committee of the Belfast Corporation are to recommend the City Council to seek powers to contribute a sum not exceeding £200 a year for 15 years towards the rent of land owned by the Harbour Board which is to be developed as an aerial base by National Flying Services, Limited.

TEACHING THE YOUNG IDEA.—Sir Alan Cobham and some of the Youth of England.

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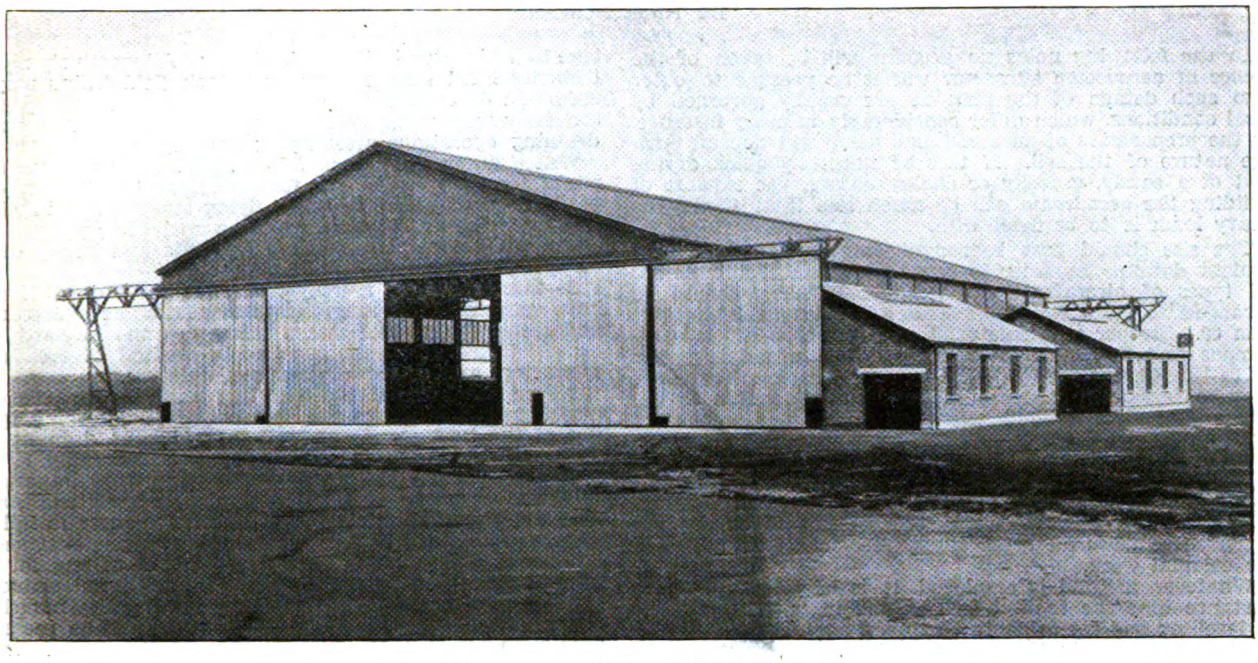

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AIR-PARK PLANNING & CONSTRUCTION.

By Nigel Norman.

In the following notes no account will be taken of the choice of aerodrome sites, nor will it be possible to enter into such details of the plan as are usually governed by local conditions, which differ considerably in every instance. In the preparation of an aerodrome much will depend upon the nature of the soil. If this be naturally quick drying and of a sandy, gravelly or chalky nature, the expense of building the aerodrome will be much less than if clay or heavy loam is to be dealt with.

The site should first be roughly surveyed from a convenient datum. In order to provide a surface suitable for all types of aircraft, the scheme of levelling should be arranged to allow no slopes with a gradient steeper than 1 in 60. Steeper gradients exist on many well-known aerodromes and the majority of aircraft can negotiate slopes up to 1 in 40, but such slopes have a noticeable effect which may be serious in the case of fast-landing machines.

The method of levelling will depend upon the amount of work to be done, but it is safe to say that it will almost always pay to employ mechanical implements. A great deal of work can be accomplished by plough, cultivator, and "ground-hog" or scraper operated by a standard Fordson tractor. In some cases, it may be necessary to employ the much more powerful types of "grader" such as are used for colonial work.

Whatever method is employed, it is of the utmost importance that the top-soil be removed in the early stages of levelling and set aside, to be spread again to a depth of at least 4 inches in the final operation. The texture and wearing quality of the surface will be seriously affected if this precaution be omitted.

Climate is a most important factor in aerodrome construction. In England we are fortunate in being able to grow without difficulty a carpet of thick grass which will last the year round and this fact will no doubt save us for many years from the necessity for building expensive concrete run-days.

In America these are appearing on many fields. On others of a particularly dusty nature the rather messy expedient of kneading several applications of asphaltic oil into the soil has been tried successfully. But there is no doubt that had it been possible to grow English turf, these costly measures would have been much less frequently used.

On the other hand, this grass-growing climate is apt to give us long spells of wet weather, as well as sudden downpours of water, and for this reason the drainage of an English aerodrome must be perfect. In soils other than chalk or sand a system of land-drains will be necessary, varying with local conditions. In this connection, slopes of the order before-mentioned are very helpful.

Before deciding upon the drainage lay-out as much information as possible should be obtained from local farmers. But it is well to remember that agricultural drainage is not likely to suffice on a heavily used aerodrome. Flying drains must be better than farming drains.

A skeleton of main drains will probably be needed. These may well be open-jointed pot drains set in clinker and not less than 3 ft. below the surface. In heavy soils the method known as "mole-draining" may be used with great advantage to lead water to the main drains. Alternatively narrow trenches filled with clinker, or 2 inch field-drains may be used. In draining it may be cheaper to be extravagant in the early stages than to skimp the work and later continue draining operations after flying has begun.

Where an aerodrome is to be sown, Autumn sowing is preferable to Spring. The former allows the growth of a good root-mat before Summer flying starts. Parsimony in seeding is the falsest economy, for a mistaken policy at this stage may lead to unsatisfactory results and heavy outlay for years to come.

Certain seed firms, notably James Hunter Ltd. of Chester, have specialised for many years in aerodrome construction and seeding, and are always ready to come forward with expert advice and assistance as to method of treatment, manuring, and choice of grass-seed mixture.

Clover should be included in the mixture, because once established, it improves the appearance and wearing qualities of the turf, stands up well to periods of drought and increases the value of the grazing considerably.

The variety of grass seeds available and their importance for different purposes is not generally appreciated. As an example, therefore, it may be of interest to quote in full two specifications recently drawn up. The first was designed to produce a close-growing hard-wearing turf, calling for the minimum of cutting. The second and more elaborate mixture was specified with two purposes in view, namely to provide a good hard-wearing sole of grass and at the same time offer rich grazing for cattle or sheep during the greater part of the year.

Aerodrome Seed Specification "A."

40 lbs.	Dwarf Perennial Ryegrass.
20 lbs.	Sheeps' Fescue.
10 lbs.	Wavy Mountain Hair Grass (especially for highly elevated sites).
8 lbs.	Smooth-stalked Meadow Grass.
2 lbs.	Wild White Clover (Genuine Old Pasture).
80 *lbs. per statute acre.*	

Aerodrome Seed Specification "B."

2 lbs.	Tall Oat Grass.
14 lbs.	Cocksfoot.
1½ lbs.	Sheeps' Fescue.
1 lbs.	Tall Fescue (Genuine Rhenish).
8 lbs.	Italian Ryegrass.
28 lbs.	Perennial Ryegrass.
1 lbs.	Rough stalked Meadow Grass.
½ lbs.	Birdsfoot Trefoil (Indigenous).
1 lbs.	Trefoil.
1 lbs.	Kidney Vetch.
11 lbs.	Timothy.
2 lbs.	Alsike Clover.
4 lbs.	English Broad Red Clover.
2½ lbs.	Late-flowering Red Clover.
1 lbs.	White Dutch Clover..
1½ lbs.	Wild White Clover (Genuine Old Pasture).
80 *lbs. per statute acre.*	

PRIMÆVAL CHAOS.—The Conspirators at Work. Messrs. Muntz (left) and Norman (right) beginning the laying-out of the Heston Air-Park.

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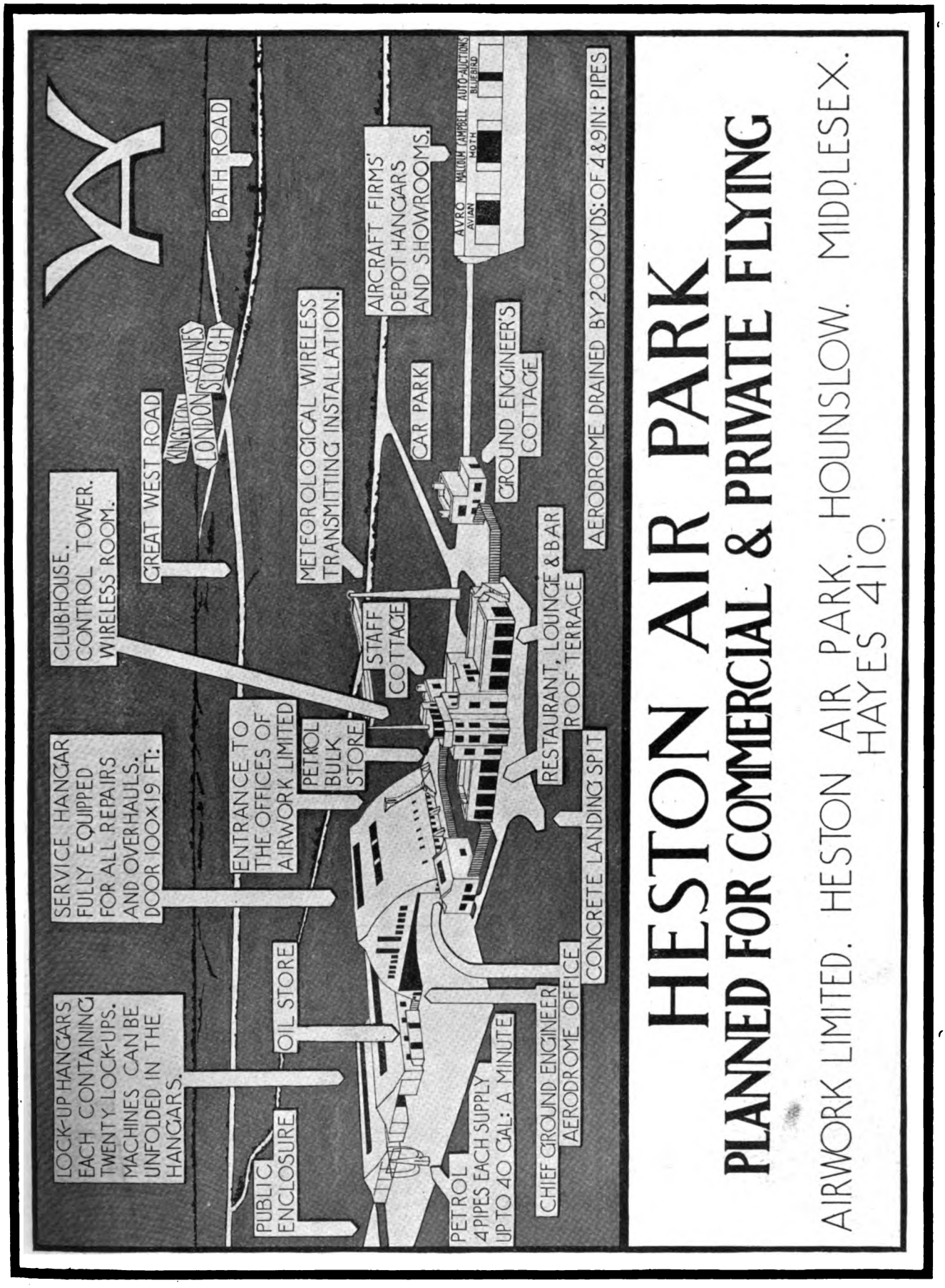

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The seedings are calculated at the rate of 80 lbs. per statute acre. Half this quantity of seeds will serve, however, if time is not the essence of the contract.

Where a large aerodrome, on which sheep are permissible, is to be sown it might be worth while to use mixture "A" on the 50 acres usually used for landing and taxying, and mixture "B" on the distant or marginal areas. This would have the effect of attracting stock to the outer grazing, which would be more palatable than the harder wiry grasses on the landing space.

The layman in any case should remember that a good result is not obtained by just "sowing grass." What he plants will always be with him and he should approach the selection of his seeding in the same attitude of mind as if he were choosing trees for an orchard.

Aerodrome Town-Planning.

In the lay-out of the buildings the town-plan of the area is usually a controlling factor. From this, present and future approaches can be decided and the ultimate distribution of activities around the landing area arrived at. A space convenient of access and commanding a pleasant prospect may be set aside for social development in connection with club, restaurant or hotel. Near this will be the private owners' garages and service station. This area should if possible be to the south of the aerodrome, so that spectators may be able to watch the flying undazzled by the southern sky.

For the same reason, the control station may also conveniently be on this side of the aerodrome. Where the aerodrome is to be generally used, as in the case of municipally owned aerodromes, areas should also be set aside for the accommodation of commercial air-transport undertakings, for the use of manufacturers and for the more extensive repair facilities and air-docks which will one day be needed.

Between these areas, lanes of unobstructed approach should be allowed for, forming flight-ways into and out of the aerodrome. These flight-ways will ultimately control the position of the run-ways when the time comes for their construction.

In the first development it may be unnecessary to bring into use the whole of the acreage ultimately available as landing area, and the plan of the aerodrome may with advantage be designed to take in successive areas as activity increases.

In the arrangement of the buildings themselves the objects to be sought are ease of operation and compactness. A well-thought-out lay-out may save hundreds a year in wages by bringing work into quick relation with staff; and at the same time the resulting convenience to customers will attract increased business.

Compactness is also essential, for the financial value of an aerodrome is ultimately the value of its perimeter, and the more economically this is disposed the more space is available for development without encroaching on the landing area or ringing the ground with obstructions.

Generally speaking, 'planes should drink near where owners drink; repairs should be made where faults are found; housing should be close to arriving.

It has already been suggested that the buildings designed for social activities should be sited if possible to face the northern sky. Probably a direction just west of north is the ideal, allowing them to catch the last western glow of summer evenings.

In many aerodromes the error has been made of placing these buildings in the same line as the hangars. It is preferable to set them well forward of this line so that spectators may feel themselves close to the flying and not hemmed back by a screen of stationary machines and an army of mechanics.

Architecture.

A definite style of architecture appears already to be growing up for aerodrome buildings, affording flat roof-terraces, observation towers and full-length windows. It is time that such work engaged the attention of our greatest architects, for no foreground sets off a building better than the green plain of an aerodrome, and the construction of a new air port or park offers great scope for a fine conception.

Essential features such as control tower, wireless masts, fuel points, oil stores, compass base and "tarmac" should all be brought into the scheme as well as hangars, workshops and other buildings. Where the ground is clear there is no excuse for haphazard arrangement.

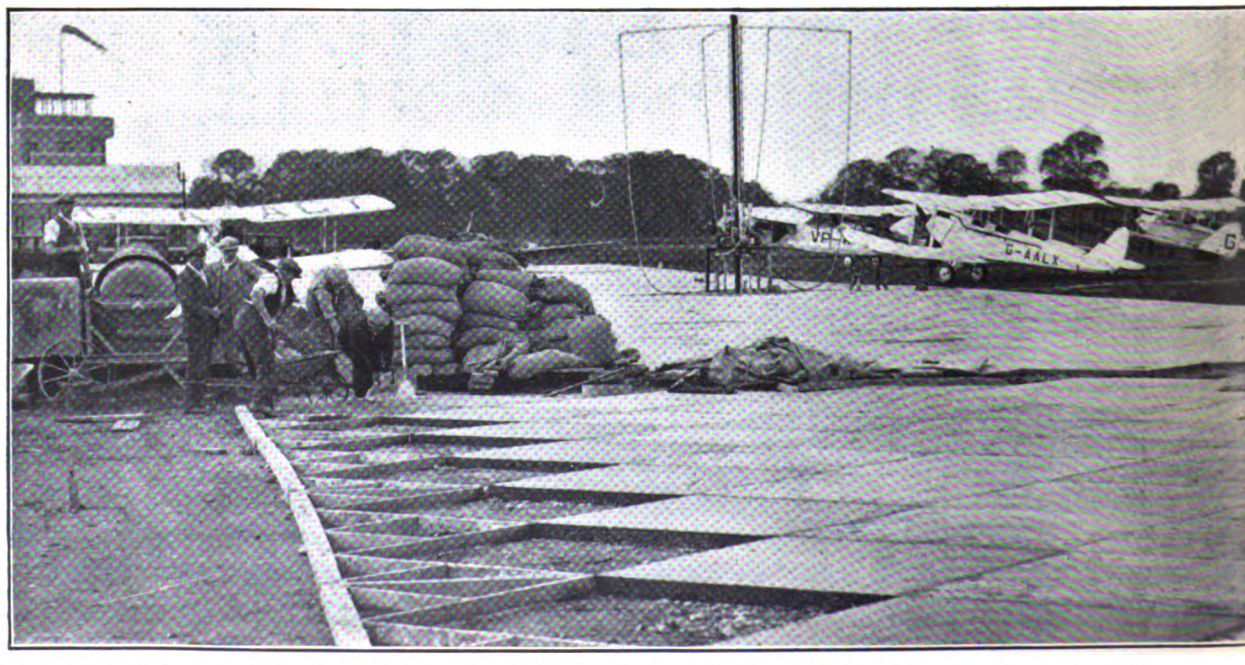
The design of the commercial buildings and hangars will depend much upon the class of traffic to be handled. Where large buildings of a permanent nature are concerned, reinforced concrete construction will have many advantages. The buildings themselves will be not so much hangars as composite structures containing offices, workshops and passenger accommodation, as well as housing space for aircraft.

At the present moment, a design is being considered by a certain firm for a building of this nature which in one block shall comprise all the buildings required as the nucleus of an air-park or municipal air port. To provide hangar-space, lock-ups, service workshops, aircraft showrooms, offices, control rooms and a certain amount of hotel accommodation, the plan must necessarily be somewhat elaborate, but it is thought that the advantages of compactness, concentration of the necessary services and elasticity of design for future expansion will more than justify the complication of the design.

Such a building would certainly be an imposing erection, would attract the public from the first, and would no doubt rapidly become a centre of entertainment and commercial activity.

It is unlikely that huge hangars capable of holding the largest commercial craft will be required at other than manufacturers' aerodromes. For large machines, moorings will be provided where they can ride securely, as it were, at anchor. Only for periodical overhaul will they be flown to air docks where complete cover is available.

Where such hangars are being constructed abroad, however, the virtues of reinforced concrete have been appreciated. In one instance, a shed of 180 feet clear span has been made entirely of concrete, the thickness at the highest point in the roof of parabolic design being less than three inches.



IN THE MAKING.—Laying the concrete apron in front of the hangars at the Heston Air-Park.
—("Aeroplane" photograph.)

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For small hangars, and buildings of a more temporary nature, steel frame construction with a covering of asbestos sheets, Robertson protected metal, or galvanised iron, is probably best. Already certain designs of sheds suitable for small and medium-sized aircraft are becoming standardised. That adopted by National Flying Services is a particularly convenient and at the same time inexpensive type.

The more or less uniform size of modern light aircraft has led to the construction at Heston of a special form of hangar which has proved very successful in use. This comprises 20 separate lockup garages, each with a sliding door, arranged in two rows, with a covered area between in which machines can be unfolded or worked upon under cover. This central space can be used as emergency housing room and will take machines up to 40 ft. span.

The latest form of this hangar contains 14 light 'plane lock-ups and two lock-ups 40 ft. by 30 ft. suitable for use as workshops or for larger non-folding private machines. Such a building might well prove suitable as the first to be constructed on a provincial or club aerodrome, where accommodation for large aircraft is not required immediately.

In all hangars the door design is of great importance. Doors easily movable by one man and giving the full clear opening are a great advantage and will soon repay their extra cost over that of a cheaper and less convenient type. The design manufactured by The Educational Supply Association Limited (Esavian) may be quoted as particularly convenient in use.

Aprons.

In all aerodrome layouts, the character of the whole place will be much more affected by the nature of the apron or tarmac. *An extensive apron is the first labour-saving device to be added to a landing field,* and during a large part of the year the convenience and comfort of those using it will depend greatly upon its area and surface.

Various materials are available. At Royal Air Force aerodromes asphalt tarmac is chiefly used and has proved satisfactory. At Croydon, an expensive pavement of Victoria Stone has been adopted. This is said to have a low coefficient of friction, so that machines are inclined to slide very easily over it, which is not entirely an advantage.

On many of the finest aerodromes abroad concrete has been used and this appears very satisfactory in use. The concrete aprons recently laid down at Heston Air-Park have been constructed by a special process of casting *in situ* in 5 ft. squares, which makes the cost of construction less than that of ordinary tarmac.

These squares are separated from each other by small interstices, which provide room for expansion caused by temperature, and also allow for some movement caused by sinking, before further cracks develop. In case of fracture of any squares, it is a cheap and simple matter to break them out and cast in new ones. So far this apron has proved entirely satisfactory, but final judgment cannot be passed upon it until it has seen a winter's heavy use.

Fuelling Plant.

The method of fuelling to be adopted is an important point to be considered in connection with the layout of large aerodromes. Bulk storage for several grades of fuel will be required, and fuelling points must be arranged conveniently to supply the small quantities required by light aircraft or the larger demands of big commercial machines.

In laying out the fuel system it is well to arrange for the storage tanks to be some distance from the fuel points, and adjacent to a good road where fuel lorries can drive up without obstructing flying and service operations.

For light planes the overhead swing-arm has proved the most satisfactory fitting. Several swing-arms may be grouped together at one point and this is advisable where customers may have preference for one grade of petrol or another.

For larger machines experience here and abroad has shown that a fuel point in the aerodrome itself, with concealed hose-drums giving a radius of 50 feet or more, is a suitable arrangement.

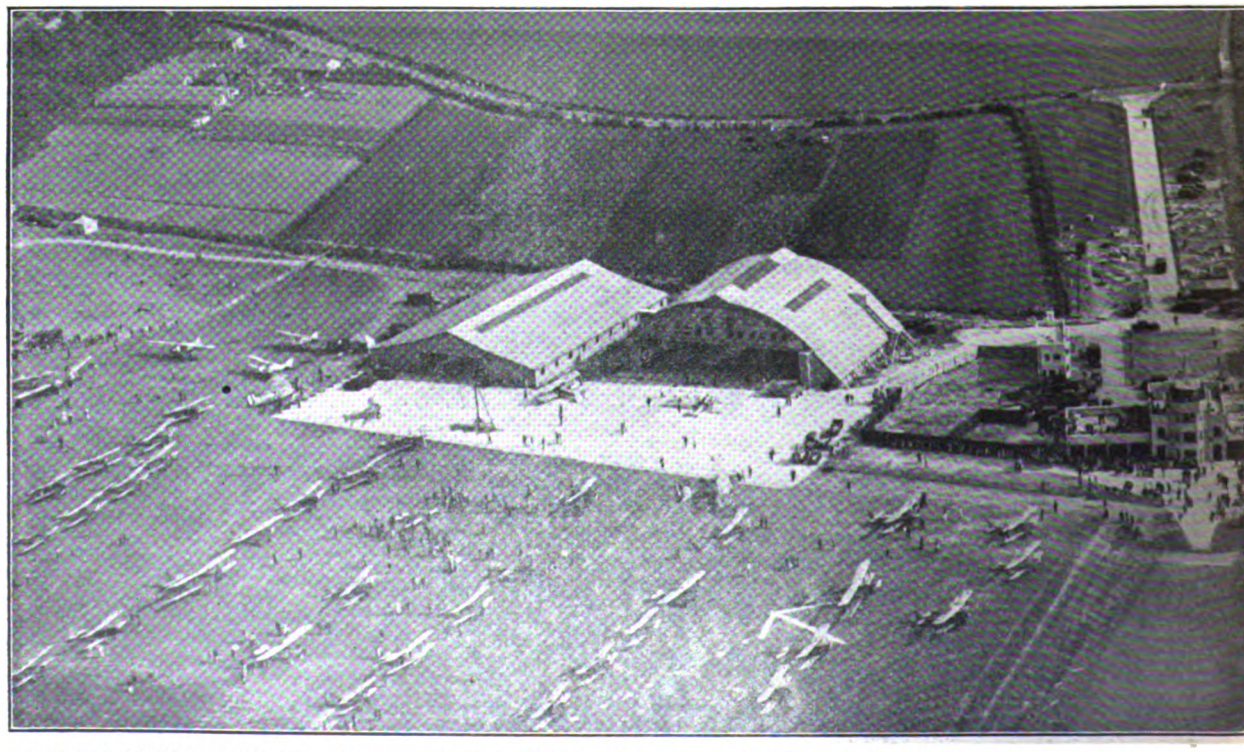
In Germany, a special type of fuel lorry fitted with pump delivery is being tried and offers a convenient alternative.

Where the through-put of fuel is likely to be at all large the extra cost of a pressure system is justified. A type of meter is available capable of measuring with commercial accuracy the flow of petrol, and this makes possible a one-man system such as that recently installed at Heston on the Bywater system. Here pressure is maintained automatically by water-head.

It is only necessary to set the meters to the amount required to be delivered, place the hose nozzle in the tank and pull the trigger. A rate of flow up to 40 gallons a minute is available and the system can live up to the standard set for it, that is, "one man, one 'plane, one minute."

In the foregoing notes, an effort has been made to stress the practical side of aerodrome-planning, and the romantic aspect of this subject has perforce been suppressed, although this is really its most attractive feature. One day it will be as exact and steorotyped a science as bridge-building. But to-day, to those whom it interests, it is a fascinating game.

At any moment our air traffic problems will be upon us. We must prepare for 300 m.p.h. commercial torpedoes, and whirling air-anemones that can ascend and descend like flue brushes. We must take off mechanically, and land electrically, in daylight, dark or fog. Our wide air-parks may give way to wind-screened air harbours perched on railway-station roofs. But the present is thrilling enough. Our enthusiasm is not damped by visions of the poster-plastered platforms and crowded compartments of Europe's future Overground.



AN AIR-PARK IN BEING.—Heston,—Left to Right, the corrugated-iron lock-ups, the ferro-concrete main hangar, and the Social Focus. The main Bath Road is just out of sight in the background.
("Aerofilms" photograph.)

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LAYING OUT AN AERODROME.

BY A. C. A. JACKAMAN.

In discussing the subject of the design of hangars and the lay-out of the surrounding aerodrome buildings, it should be remembered that the civil aerodrome of the future, while affording the accommodation of a terminal station, must be properly equipped with work-shops, offices, petrol supplies and other essentials. Also, it is imperative that it should form a social centre for the private owners of the surrounding district, and in each case should be to aviation what Brooklands is to motoring.

One of the most unpleasant experiences in civilian flying, by which is meant travelling by air from place to place on either business or pleasure, is to arrive at an aerodrome which is devoid of the ordinary comforts of a village inn. A glaring instance of this kind is Lympne Aerodrome, where many an owner-pilot lands to declare Customs, but is unable to obtain refreshment after what may have been in winter-time a cold, tiring and lengthy trip from the Continent.

As aerodromes in the future will be used by the general public when travelling either by the regular air-liners or in their own private machines, they must necessarily provide

(a) Ample accommodation for machines of all sizes and classes.

(b) A club house or hotel where the traveller can obtain refreshments, both hot and cold, and also be able to while away any waiting time in comfortable lounges and waiting rooms of attractive design, from which a good view of the aerodrome itself can be obtained.

(c) The usual petrol, oil and repair services.

The average aerodrome at present in existence in this country consists, largely on account of the War 1914-18, of half-a-dozen or so very ugly hangars, the main openings of which are usually closed by doors of such inefficient design that it takes a squad of men to open or close them when required. In addition to this, these doors are generally such a poor fit that even when they are closed they do not afford effective protection from the weather. They give one the feeling at the end of a long day's flying that although inside the supposed shelter of the hangar, one is still so cold, wet and miserable, that one never wants to see an aerodrome again. This is not the way to encourage the British Public to fly, or to regard flying as a perfectly ordinary means of getting about the country with very much greater speed and in greater comfort than any motor car or train can offer them at the present moment.

There exists at present a growing tendency to erect steel-framed hangars covered with corrugated iron which, in addition to their unsightly appearance are exceedingly expensive in upkeep. Whilst realising that flying as a general method of transport is still very much in its infancy, and for that very reason the necessary funds will not, as yet, be forthcoming to erect elaborate aerodromes on the edge of every city, town and village, surely from the very start due consideration should be given to the points raised.

Even though there may be during the next few months comparatively very few passengers arriving at municipal aerodromes, or aerodromes owned by private companies, it is imperative that these few passengers should be made comfortable, and should have every service and convenience that they require, thereby encouraging others to follow in their footsteps. Above all, let us avoid the unattractive desolation often found in the earlier Railway Termini, with their ugly waiting-rooms, which are cold, draughty, unattractive, and very badly furnished, and have the general air of rather frightening one out onto the platform than of inviting one to go inside and sit down while waiting for the train.

So many new projects are spoiled at the outset, or at any rate are hampered to a very great extent, by the proprietors "making do" with some temporary building which usually remains as an eyesore for many years.

In dealing with this point in regard to aerodromes, it is not proposed to enter into a long discourse on the design of aerodrome hotels and club-houses, as they all, of course, require approximately the same accommodation either on a larger or a smaller scale, depending upon whether they are serving a large or a small town. As far as their architectural features and the internal details of lay-out go, these can safely be left in most cases to the skill of a competent architect and surveyor.

After all, the size of the dining-room and the number of lounges required must of necessity be ordained by local conditions and can in no way affect the successful running of an airport, unless, of course, they are on much too small a scale, and get their particular aerodrome a bad name for having insufficient accommodation.

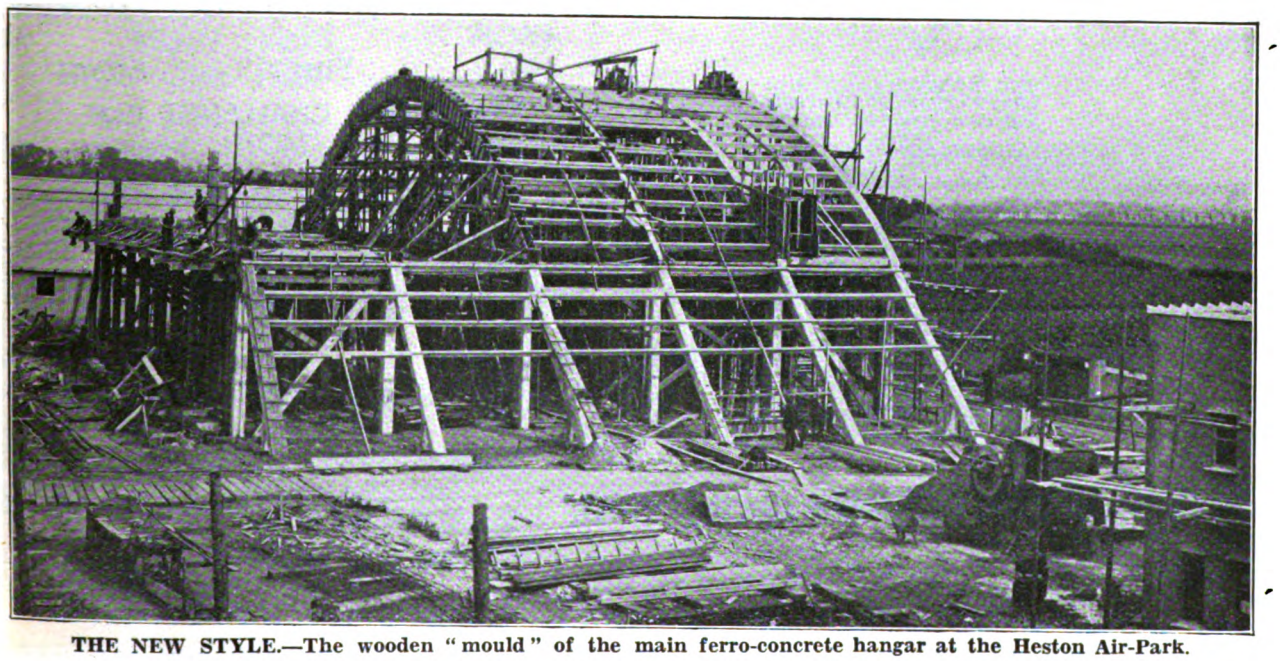
MAIN BUILDINGS.

Let us turn to the main building of the aerodrome, upon the successful design and most efficient placing of which depends the success or failure of the whole venture. In referring to hangars, it has been remarked by a prominent Air Ministry official that the present hangars erected on the many aerodromes in the country, and, indeed, at most aerodromes in the World, are nothing more or less than large rabbit-hutches, usually of ill-considered design, most of them constructed during the War by inexperienced workmen and regardless of cost to the tax-payer either in their construction or in view of their future upkeep.

Attractive buildings of a pleasing appearance will always draw a crowd,—and experience shows that usually where a crowd collects round an aerodrome, sooner or later most of its members become enthusiastic pilots and passengers.

It is possible to produce a very attractive-looking hangar for a quite normal outlay, and at the same time one which will have under its roof most of the necessary aerodrome offices and only one central heating system, and what is more, a hangar upon which not one penny will be spent in upkeep.

It is obvious, of course, from the above statement that this hangar must be designed in reinforced concrete, so that if the work is carried out properly the first cost should be quite definitely the last. For some mysterious reason reinforced concrete is not as popular in this country for constructional purposes as it is, for instance, in France, Germany, or Italy.



THE NEW STYLE.—The wooden "mould" of the main ferro-concrete hangar at the Heston Air-Park.

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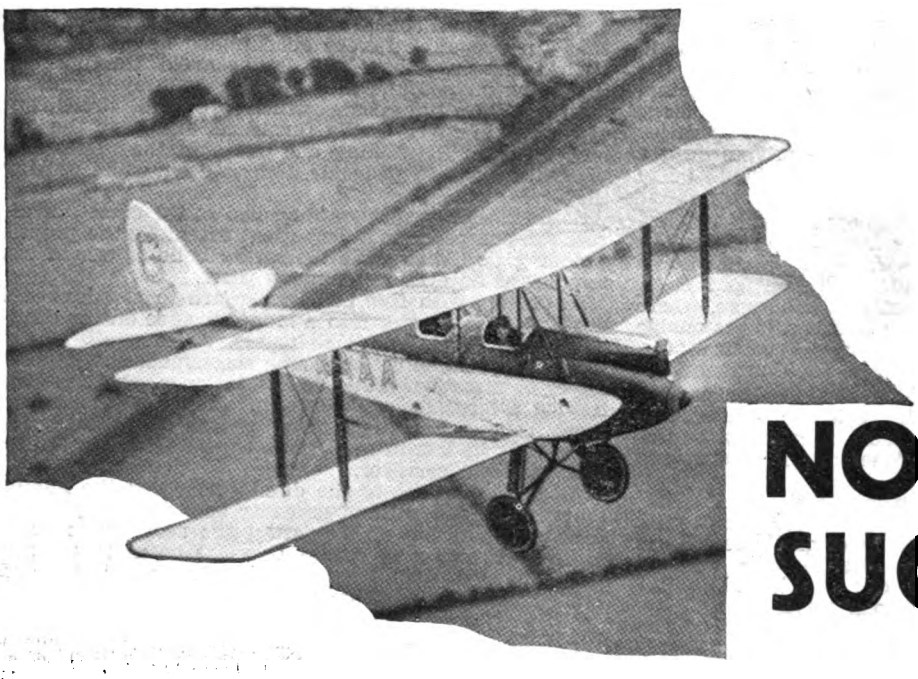

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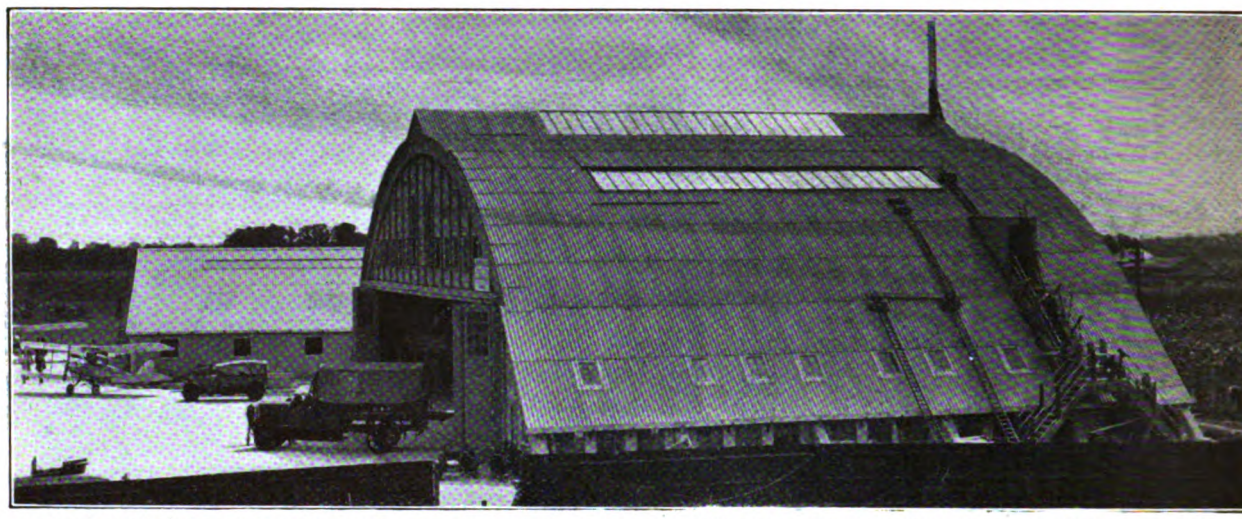


THE FINISHED ARTICLE.—The Ferro-Concrete Hangar,—side view showing the external stairway to the entrance to the offices.

Many failures in reinforced concrete are entirely due to want of experience by those who are responsible for design and erection, and unfortunately in England many small builders seem to think that reinforced concrete is anyone's hobby.

The reinforced concrete hangar erected at Heston, for example, was designed in competition with a steel hangar of very light design. The only condition stipulated was that, whether the hangar was designed in reinforced concrete or steel, the main opening was to be 100 ft. clear between the supporting columns.

The usual steel design, with brick filling-in between the stanchions and with corrugated iron or asbestos roof, was not much cheaper than the concrete hangar eventually erected, and the painting of a steel hangar of the same size would cost at least £70 every few years. In this respect a larger hangar would be disproportionately more expensive.

In addition to giving the same storage accommodation for aircraft, this concrete hangar has six offices suspended from the roof at the southern end. An office floor is provided at the northern end, also suspended from the roof, which is to be used as a store space and can be eventually turned into more office accommodation if required at a later date.

In addition to this, along one side of the hangar, outside the supporting columns, there is provided a chief instructor's office, lavatory accommodation, also a workshop, and a machine shop, each 14 ft. by 20 ft.

The latter is fed by means of a travelling 30-cwt. Morris block, which will lift aeroplane-engines from their respective machines and convey them to the machine shops for any necessary repairs.

On the other side is a paint-shop with stores, and a dope-shop capable of taking two or three complete fuselages when they require to be painted, as well as a boiler-house and chief engineer's office.

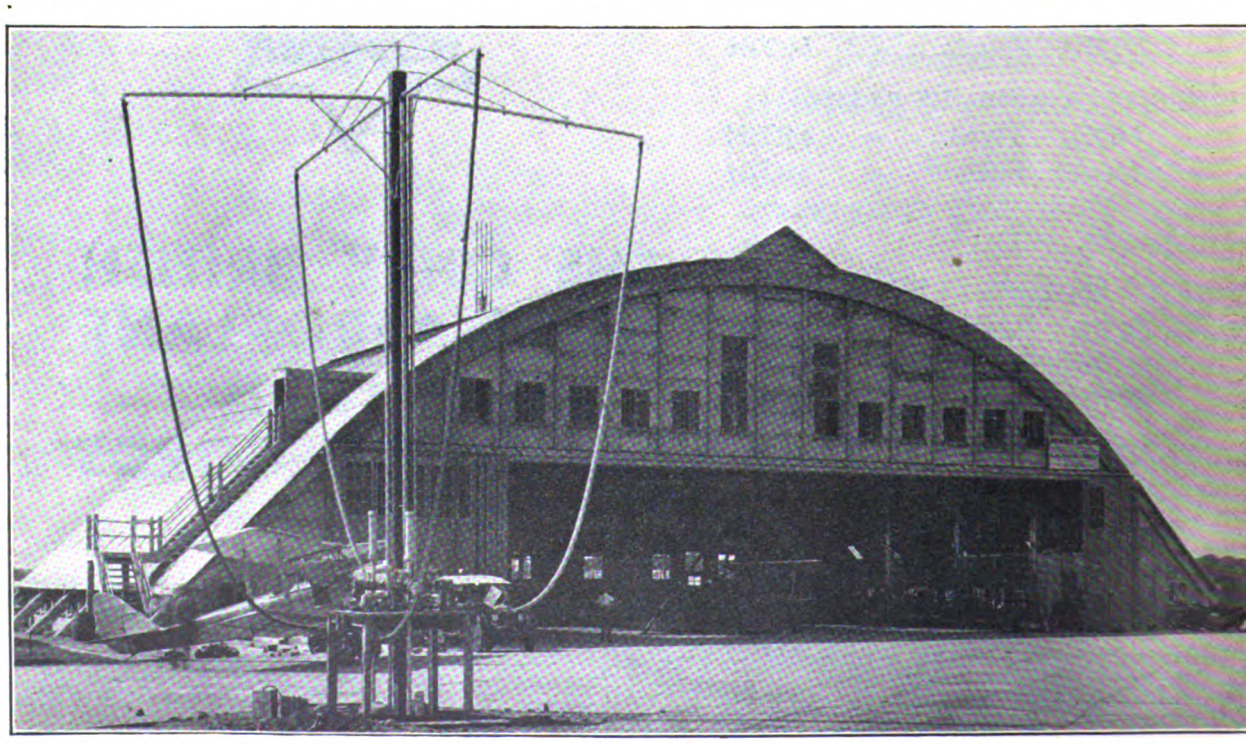
None of these extras could possibly have been included in a steel design without great extra cost. In addition to all these conveniences the first cost of such a hangar is absolutely the last. There is no upkeep or painting to be paid for in future years, it is proof against fire, and a constant temperature is maintained inside the building all the year around.

For the municipal aerodrome which is just starting and upon which it is not desired to spend large sums of money immediately or on future upkeep, the reinforced concrete hangar which includes all the offices mentioned above seems to be the ideal building. Such a building looks graceful and adds to the appearance of any aerodrome.

Contrary to what one would expect to find, bearing in mind the fact that there are offices suspended from the roof at either end of the hangar, the building is extraordinarily well lighted, and it is quite possible for a mechanic to dismantle or re-assemble the smallest parts of an aeroplane engine in the hangar, even on a comparatively dull day.

With reference to the different types of hangars designed in reinforced concrete, experience seems to show that spans up to 150 ft. are best designed as tied arches, and that for hangars of larger spans a better design would probably be a parabolic arch springing off abutment slabs from below ground-level.

Moreover, the larger the hangar the more does reinforced concrete come into its own, particularly from the point of



THE FINISHED ARTICLE.—The Ferro-Concrete Hangar, with petrol-pump gallows in the foreground.

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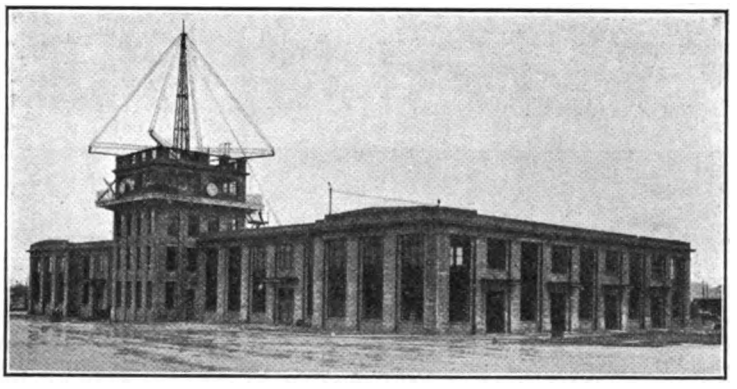

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view of cost. In very large spans of say 300 ft., such as one meets in the reinforced concrete airship hangars at Orly, near Paris (which, incidentally, are among the most graceful examples in existence of reinforced concrete applied to the design of buildings), the cost compares more than favourably with steel design. Needless to say, a steel hangar of that size would cost many hundreds of pounds periodically for painting.

A reinforced concrete hangar of about 100 ft. span works out at about slightly under 3d. per foot cube, including the reinforced concrete suspended office floors provided at either end.

Hangars to accommodate very large aircraft of over 130 ft. span, such as the new four-engined Handley Page air-liners, can also be made to look attractive.

An accompanying drawing shows a proposed design of hangar with three open spans of 135 ft. This hangar is composed of three main girders bridging the 135 ft. spans on the front or open side of the shed.

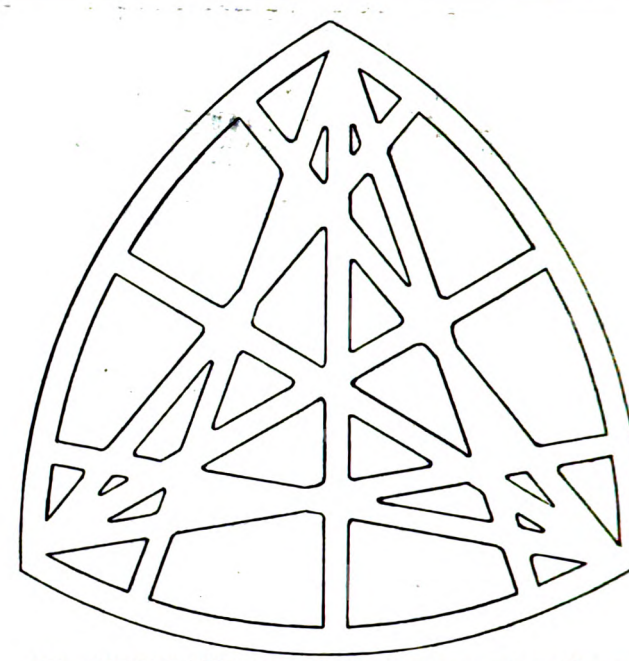
Running transversely across the shed are secondary reinforced concrete girders of 100 ft. span, which carry the roof covering and are supported at one end by the main girders, and at the other by columns incorporated in the back walls of the shed. The roof can be constructed either of reinforced concrete or corrugated asbestos sheeting.

Different aerodromes, as aforementioned, would require different accommodation and different hangars according to local requirements. While on this point, it should be pointed out that there is a growing tendency for aircraft to be of greater wing-span, and therefore what may represent a saving to-day by building the hangar of minimum span for present-day requirements, say 100 ft., may mean that in the near future their use will be restricted, as they will be unable to accommodate the air-liners then in service. Most large passenger-carrying machines are to-day of about 110 ft. span, and there are very few less than 90 ft.

Looking still further ahead, it is quite within the bounds of possibility that double-decker hangars, like those at the new Littorio Aerodrome at Rome, may become the usual type of building for this purpose, offering the obvious saving of space on the aerodrome for double the accommodation.

Turning to the question of hangar doors.—The number of the different types of these is legion, but experience shows that for small doors up to about 25 ft. high the most effective kind, and also the most simple to operate, would seem to be the folding door of a concertina type, worked by means of a simple winding gear easily operated by one man. This type of door when properly made and erected, really is exceedingly efficient. For large sizes one can use the "Round the Corner" type of door, which is very popular for aerodromes in America.

This consists of a number of sets of doors loosely hinged together, about four or five in each batch, according to the size of the hangar. Each of these sets is pushed in turn to the side of the hangar, where they are deflected by means of an ingenious device after the style of the points on a railway, round to a number of curved parallel tracks, so that they are stored neatly out of the way, and shoulder to shoulder along the side of the hangar, as shown in the photograph.

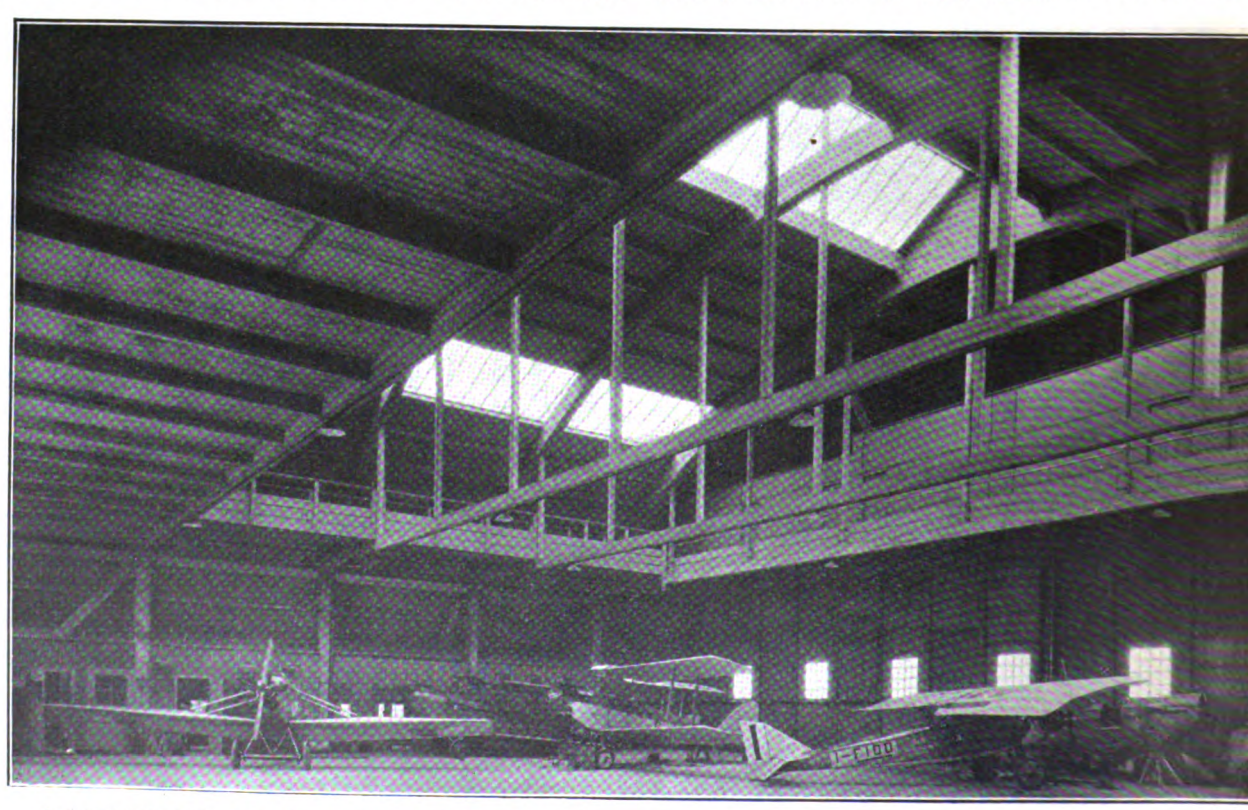


AN AERODROME LAY-OUT.—Runways as used on American aerodromes.

Thirdly, there is, of course, the usual sliding door, which stands out on either side of the hangar when opened, and these, when properly designed, should be perfectly satisfactory and quite easy to operate. In very large doors of this type it will probably be necessary to use some form of electric power for opening and closing.

Lay-Out.

Finally, with regard to aerodrome lay-out.—It is quite necessary that the aerodrome buildings should be close together for convenience, and so placed that they are facing directly across, i.e. at right angles to the path of the



AN INTERIOR.—The Ferro-Concrete Hangar at the Heston Air-Park. The offices are in the gallery on the right and the workshops through the doors on the left.

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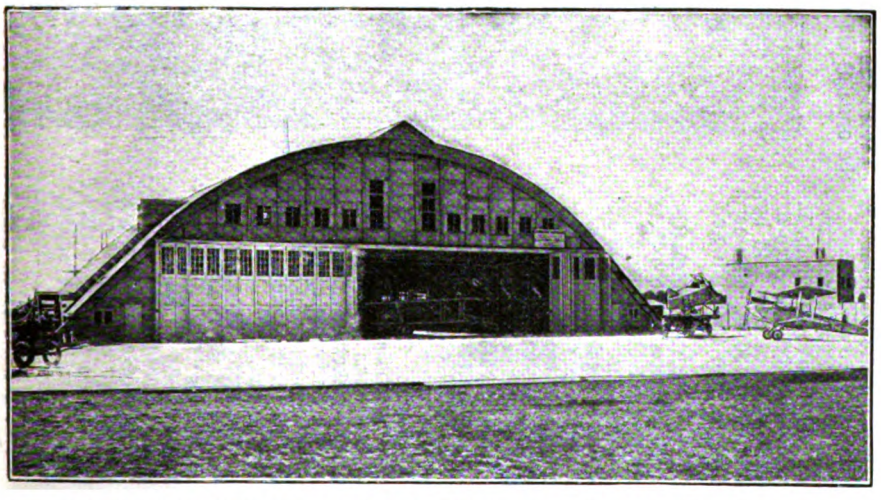

Associated Architects: Murrell & Pigot, F.F.R.I.B.A. and L. M. Austin, A.R.I.B.A.

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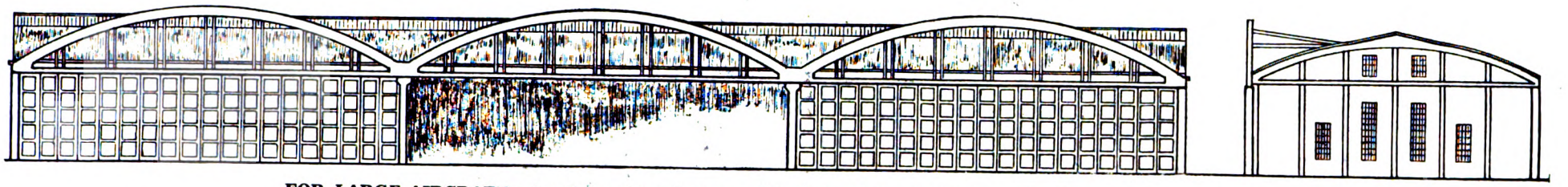


FOR LARGE AIRCRAFT.—A scheme for a hangar with three spans of 135 ft. each,—Front and end elevation.

machine which would be taking-off or landing into the prevailing wind in the district. This ensures that at any rate during the larger part of the year machines would land and take-off in full view of the Club House and hangars, and with no high buildings to climb over on leaving the ground,—thereby minimising all risk of serious accident should the engine or engines cut out when the aeroplane is only a few feet up.

While on the subject of obstructions around the aerodrome over which the aircraft on leaving would have to climb, it should be remembered that any tall object on the edge of the aerodrome diminishes the effective use of the field by six times the height of the object, i.e. a 30 ft. chimney diminishes the useful area of the aerodrome for taking-off in that direction by 180 ft.

Many accidents have occurred through inefficiently drained aerodromes, though there are instances where it is impossible to do this properly, such as Renfrew Aerodrome, near Glasgow, where the aerodrome surface is actually lower than the level of the river running alongside. The day must come when either tarmac or concrete, or some other substance, will replace the present grass surface. Before this can be realised, however, all aeroplanes will have to be fitted with tail-wheels and front-wheel brakes, instead of the usual tail-skid of to-day. [NOTE:—Might not the reverse be the procedure? Concrete surfaces would compel makers to fit tail-wheels, because the hard concrete would wear out or break skids, and probably damage the fuselages. And machines without brakes would run too far.—C. G. G.]

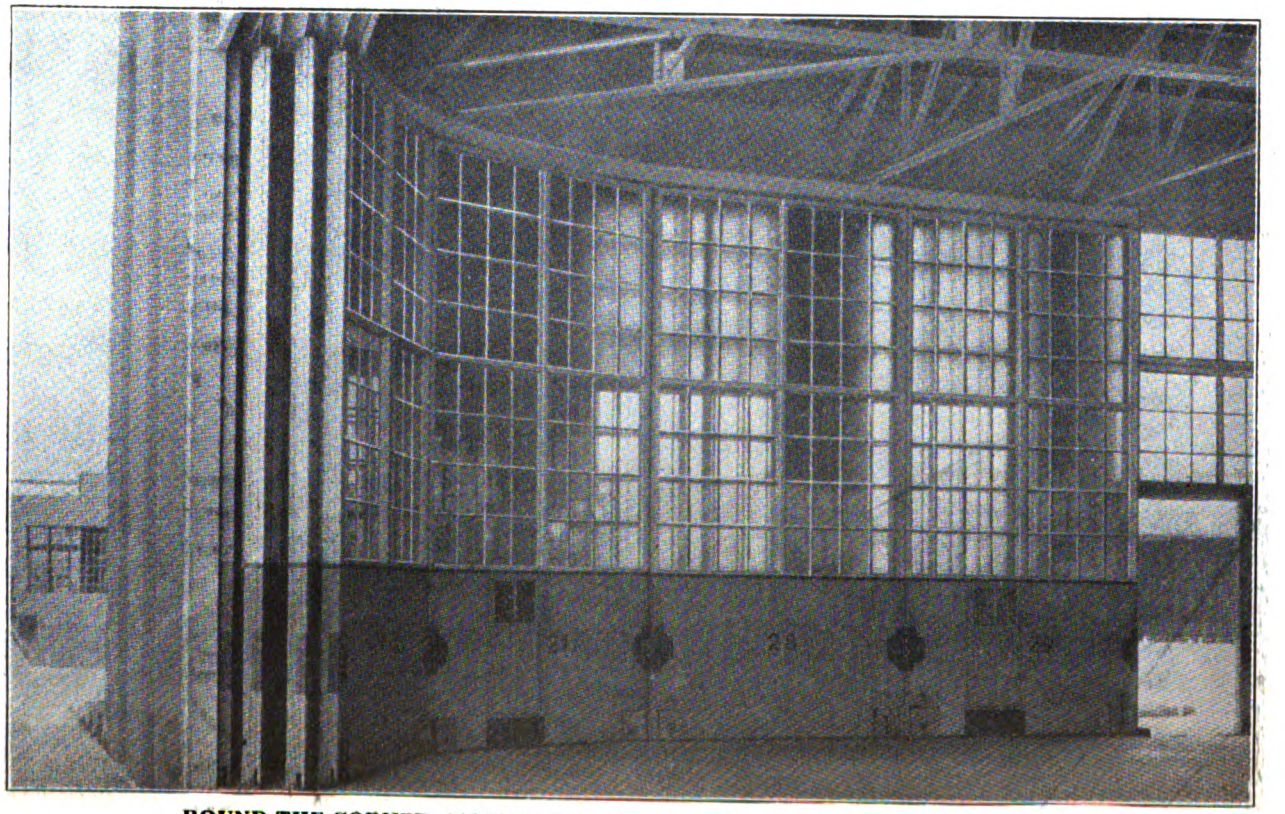
To avoid the expense of covering the whole of the aerodrome surface with concrete, the Americans have devised the scheme shown in the accompanying sketch. Concrete runways are provided in almost every conceivable direction, so that the machine can always land head-to-wind, or as nearly so as would not matter, and yet only about a half of the aerodrome surface is actually covered.

Until, however, surfacing of aerodromes becomes an accomplished fact, the most important point when equipping a new aerodrome is undoubtedly efficient surface drainage.

It would be wanting in forethought to finish an article of this description without referring to what is bound to become one of the most important types of air-port in the future, namely, the "Seadrome," or perhaps one should say the Aerodrome and Seadrome combined. Something of this type is now under consideration at Hull, where the actual aerodrome itself was opened recently by H.R.H. Prince George.

The seadrome must, of course, be in a harbour, or some naturally sheltered portion of the coast, and as far as the actual constructional side of the seadrome goes, there is nothing much more in it than reinforced concrete slipways leading up to the hangars on the shore. Incidentally here, more than anywhere, should the reinforced concrete hangar come into its own, owing to its being entirely impervious to the chemical action of the damp salty atmosphere.

With the ideal aerodrome of this type the hangar would be open at either end, one end leading to the sea for flying-boats, and the other onto the ordinary aerodrome where land-planes would be waiting to convey the passengers from over-sea to their several destinations. With a lay-out that enabled the hangars to be placed side by side and open at both ends, they could be used for both the land and sea-planes, and the consequent cost of erecting separate hangars for the different types of aircraft would therefore be avoided.



ROUND-THE-CORNER DOORS.—The type used at various American aerodromes.

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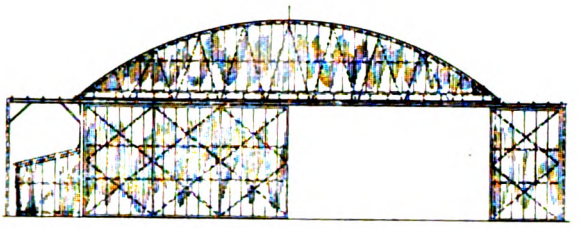

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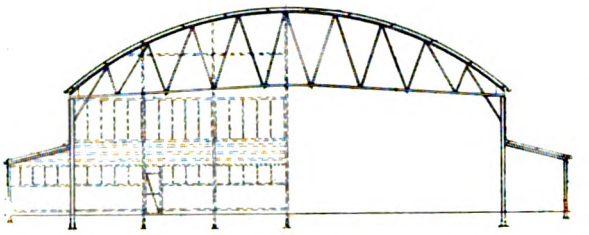

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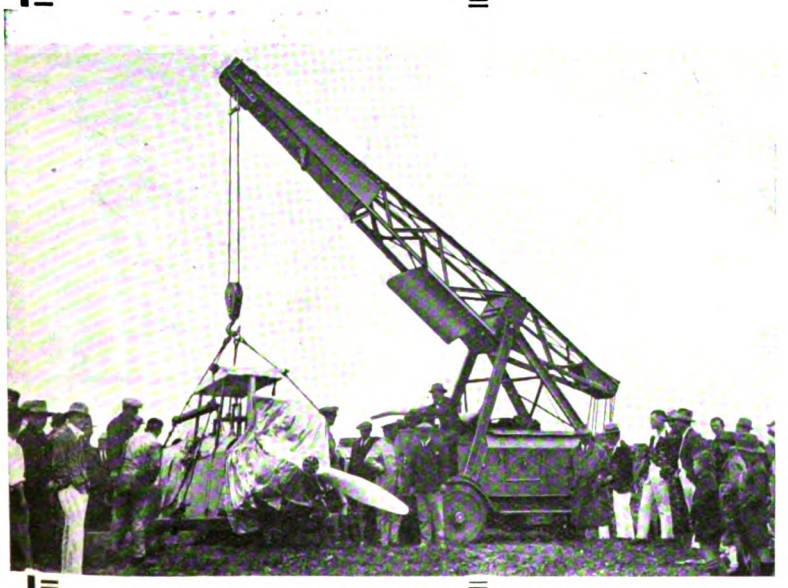

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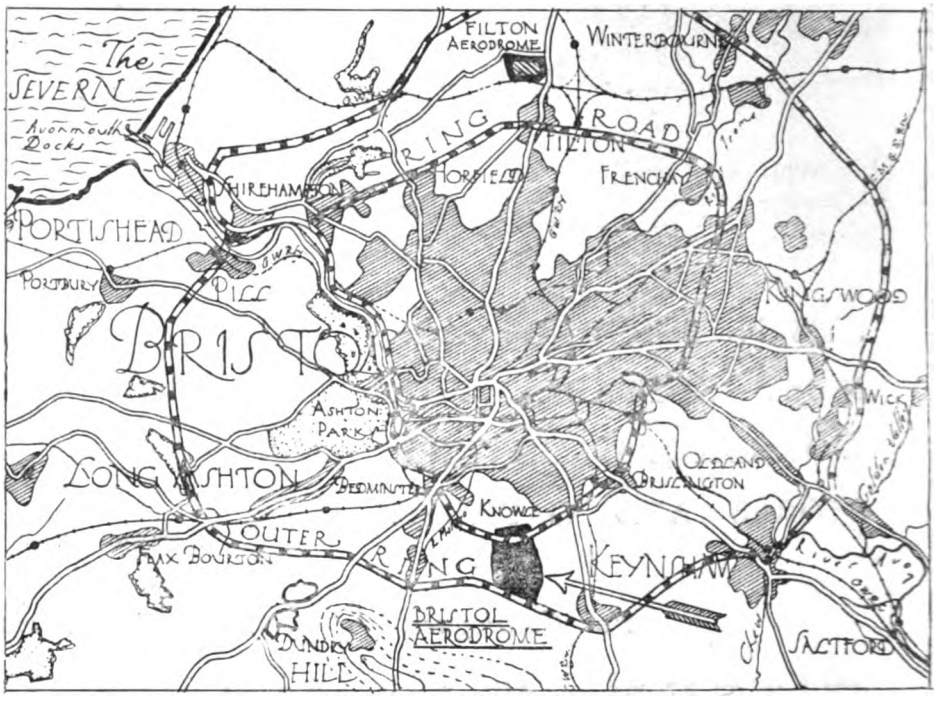
BRISTOL—THE AIR-PORT OF THE WEST.

By B. F. Brueton, A.R.I.B.A. (Illustrations by courtesy of the City Engineer, Mr. L. S. McKenzie.)



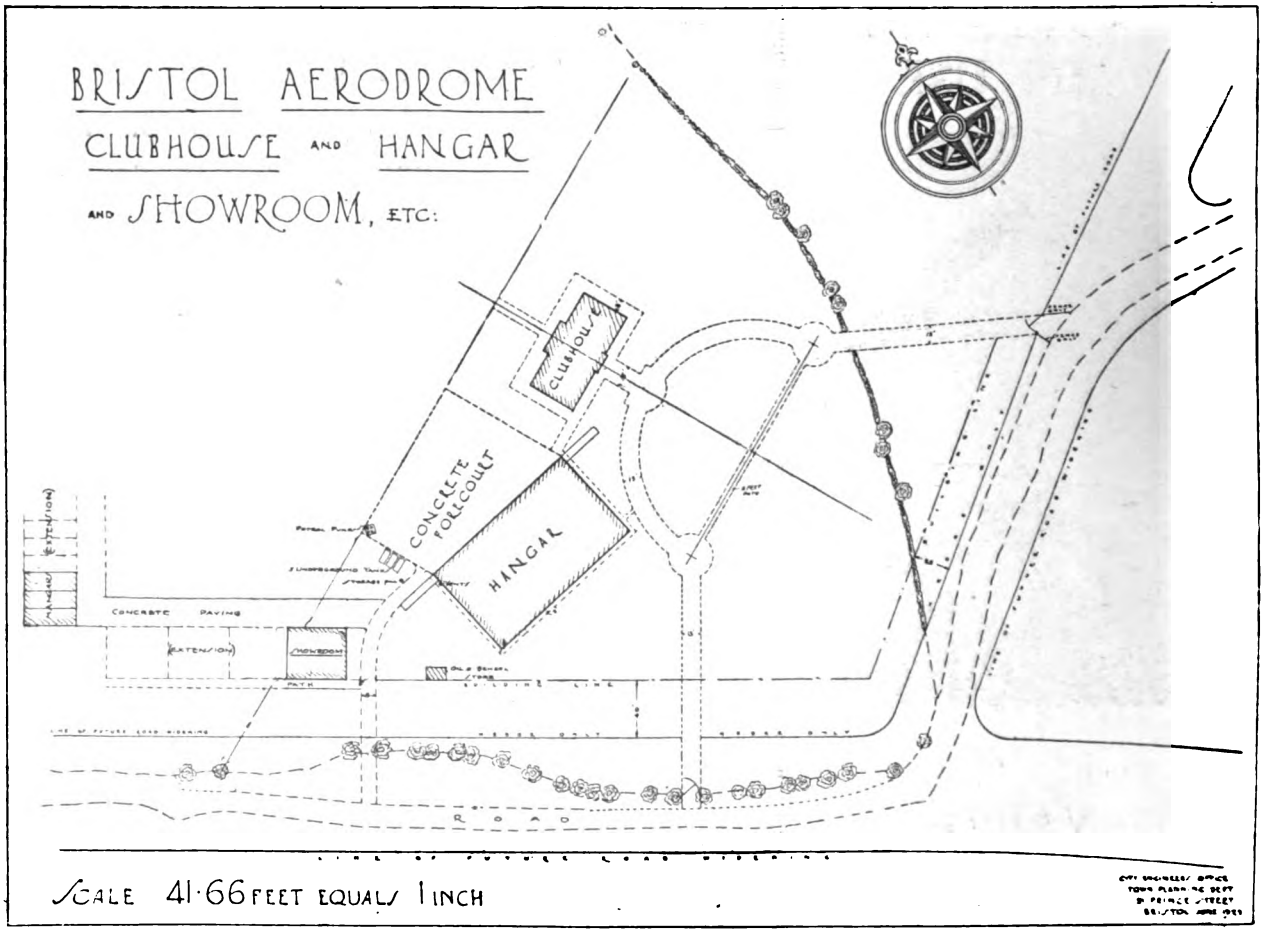
The Spirit of Adventure, which made Bristol famous in the Middle Ages—when her merchants planned and her sturdy sailor sons dared mighty ventures and voyages (one of which resulted in the discovery of America by Sebastian Cabot)—is still very much alive in Bristol to-day. She has her extensive docks at Avonmouth fully equipped to deal with all classes of water-borne traffic. And it is the ambition of the modern Merchant Venturers to see her take that place as the Air Port of the West for which her geographical position so eminently suits her. To this end the Corporation has acquired a magnificent site and is erecting a hangar, club-house and other buildings as the first items in an ambitious programme.

The new Air Port lies on the clear side of the City, the site is level and is only two miles from Temple Meads Station (as the 'plane flies). At present the distance by road from aerodrome to station is 4 miles, but this will be reduced to 3 miles by the construction of a new road referred to later. These figures will serve to show that Bristol will be singularly fortunate in the matter of terminal travel.

The Air Port covers 290 acres. It includes a landing-ground of about 180 acres, the natural levels of which are extraordinarily good and the work of preparation is well advanced. There will be about 20 acres set apart for the air-station buildings, hangars, etc. And the remainder (about 90 acres) will be available as sites for service and repair shops, showrooms, and (it is hoped) aircraft factories.

At present there is road access only on the South, the side remote from the City. The site is, however, situated between the routes of two Ring Roads planned in the Town-Planning Scheme. The existing road is to be widened and incorporated into the outer Ring Road, and a new road (intersecting the site on the North) will form part of the inner Ring Road. This new road will probably be put in hand as an unemployment relief scheme.

The site is thus very happily situated as regards road



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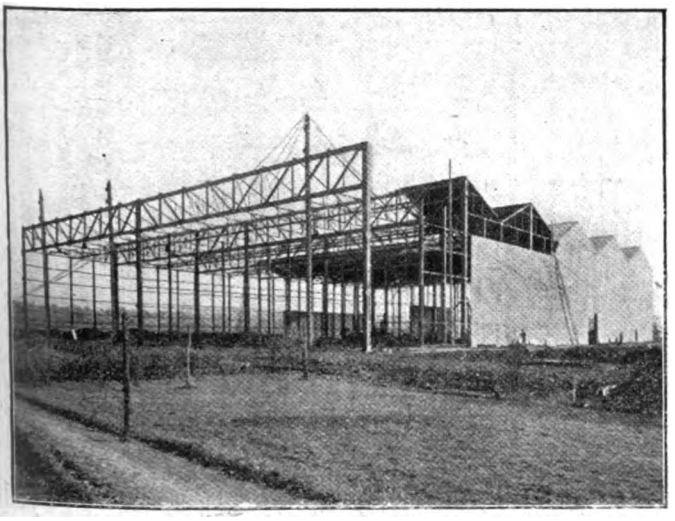

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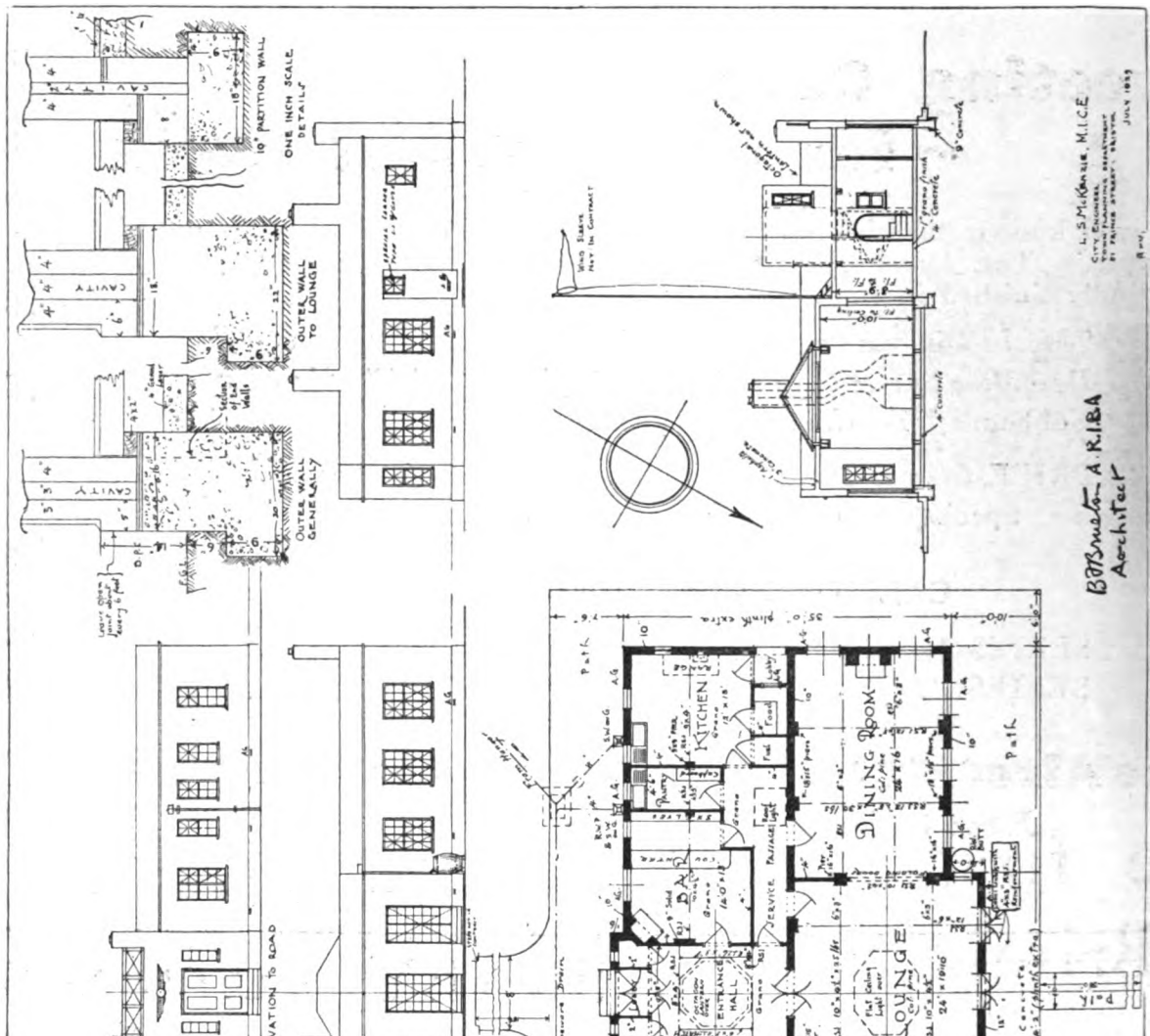
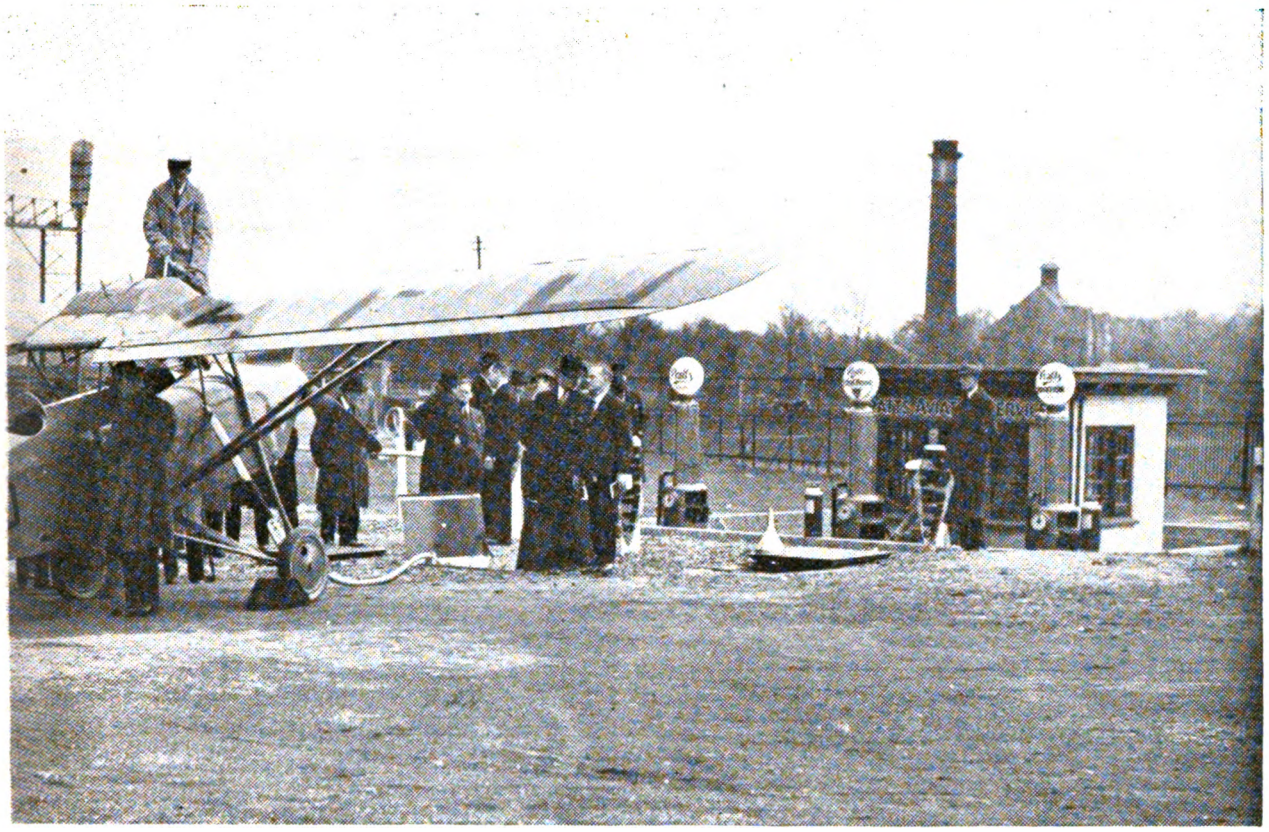


access as these two ring roads will tap all the arteries converging on the City.

The air-station proper is planned to be approached from the Inner Ring Road. Here will be a spacious square or *place* and a short avenue leading to the station buildings. It is hoped that the complete scheme will include waiting-rooms, Cafe-restaurant, headquarters and meteorological and wireless control, etc., together with hangars to accommodate every type of aircraft. Flanking the station approach road will be sites for show-rooms. And it is intended to reserve a site for an hotel.

Stretching away on either side of this centre are sites, fringing the landing ground, which will be (it is expected) quickly snapped up by the principal aircraft-manufacturing aircraft-operating, and engineering firms, and those dealing in accessories and specialised products of the industry. In this connection it may be well to say that the Corporation are now prepared to offer sites on very reasonable terms in order to expedite the establishment of the Air Port.

A site of 3 acres has been leased to the Bristol and Wessex Light Aeroplane Club, who are to act on behalf of the Cor-



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poration as managers of the Air Port during its infancy. Here the Corporation are erecting the first hangar, a Club-house, a Show-room and private lock-up hangars, to form a nucleus for the first stage of development.

The hangar, 120 ft. by 60 ft., has workshops, offices, and messroom, etc., attached. The Club-house (now nearing completion) comprises Lounge, Dining-room, Bar, Changing-rooms, and service quarters. There is a flat roof from which members may view the flying. The Club hopes to lay out tennis-courts, lawns and gardens, and to make the spot an attractive social centre.

Construction of the first Show-room and block of private lock-up hangars has been authorised and will be begun shortly. These buildings will be let on reasonable terms by the Corporation, who wish to attract business and encourage the growth of the new venture

It is hoped to obtain a licence for some portion of the site as a landing-ground early in the New Year, and it is intended to arrange a formal opening and Air Pageant in the coming Spring.

A SIGN OF THE TIMES.

The following letter in the *Daily Express* shows how air-minded the populace is becoming.

Air Ports for the Future.

Sir,—I suggest it is time to grasp the command of the air by immediately laying out air ports at each of our sea-ports. No time should be lost, otherwise suitable landing grounds will be encumbered with private houses and second-class roads.

This plan would be a tremendous relief to unemployment, and a gain to national prestige

KENNETH W. RAINBOW.

East Flexford, Guildford.

TO KEEP OUT THE WEATHER.

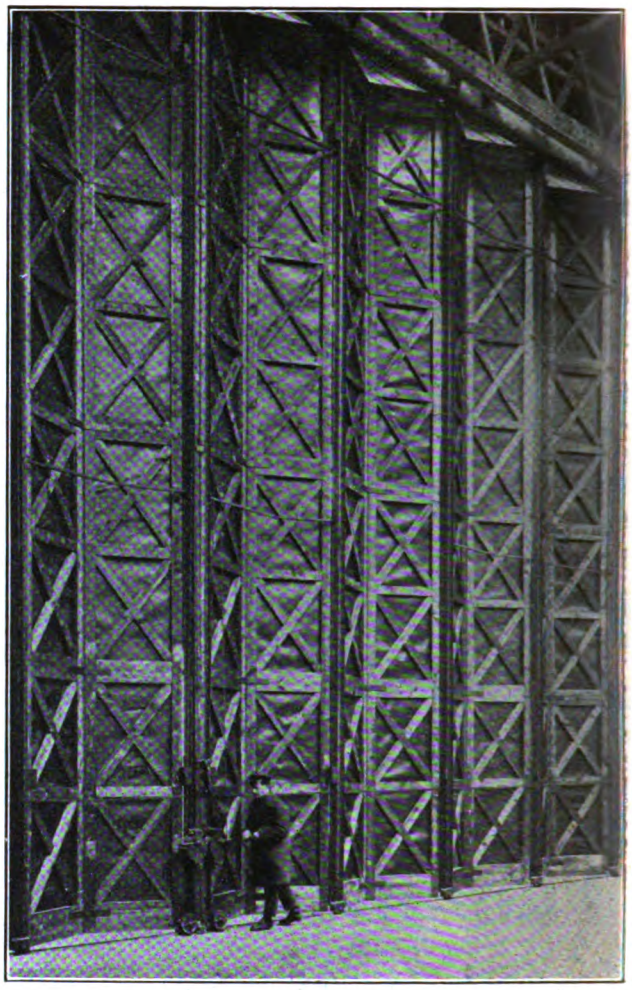
Hangar doors are a bit of a problem. They have to cover such a big area that they are apt to be awkward to handle and to take up a lot of space when open. They have to be robust to withstand big wind pressures, and yet they must be easily handled.

The Esavian door, produced by the Educational Supply Association, Ltd., appears to combine adequate strength with simplified handling. These doors were widely used during the War 1914-18, and over ten miles of them were erected. From which one may infer that these doors are based on a well-tried principle and have had plenty of time to prove their worth.

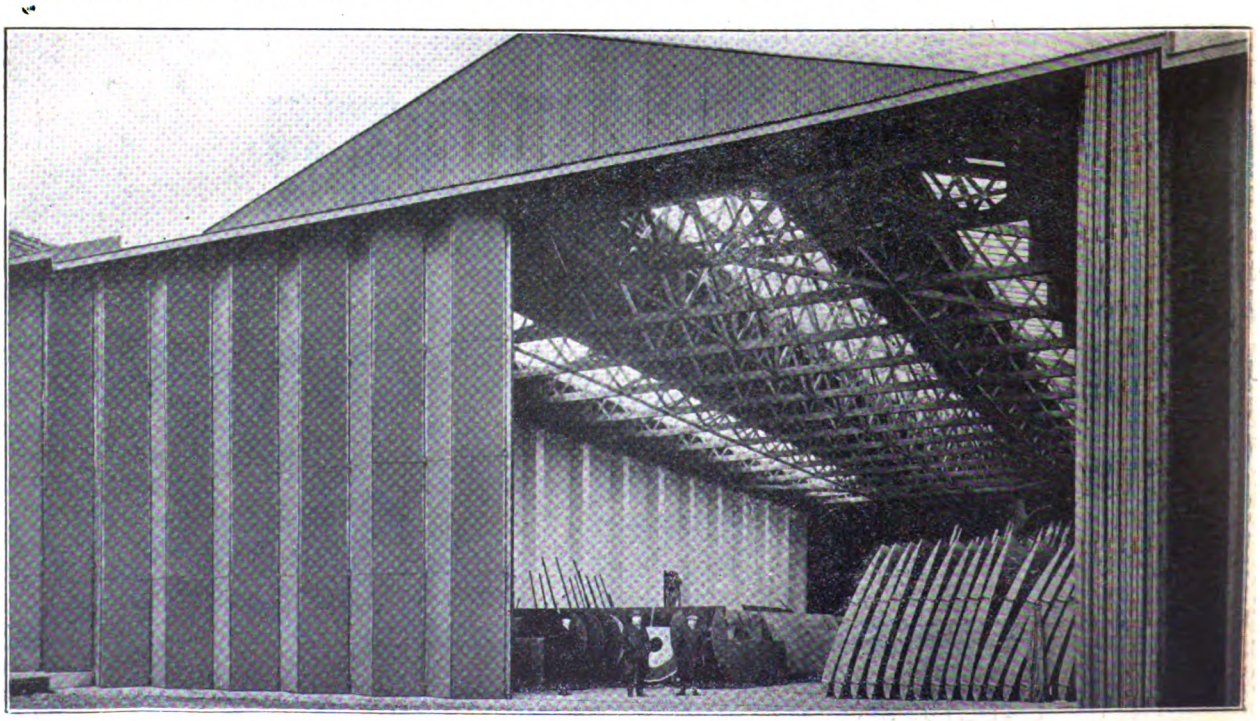
They are to be seen at the new Air Parks, such as Hanworth. At Heston they are quite a feature of the place, and are easily visible on any picture of Airwork's new concrete hangar. Many have been in use for a long time on the Air Ministry aerodromes.

The principle underlying the construction of these doors is the familiar one of folding a large area in small panels, like the panels of a camera bellows.

Each door has a number of strongly constructed uprights sliding in runners along the top and bottom of the hangar opening. To each upright are attached two leaves, which are hinged in turn to corresponding leaves attached to the uprights on either side. When the uprights are run together these panels fold outwards exactly as when one shuts a camera. These doors are operated by means of a small winch attached to the doors.



A ONE-MAN JOB.—Working the Esavian doors at Hounslow.



ESAVIAN DOORS.—The doors of the big R.F.C. sheds at Hounslow during the War 1914-18.

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AIR PORT STRUCTURES.

STANDARD HANGARS.—The double and single types of sheds built by E. D. Winn and Co. Ltd. at Hanworth.

As everybody knows now, National Flying Services, Ltd., have a programme for the creation of aerodromes all over the country, and as part of this policy they will naturally have to erect hangars and club houses.

This structural policy has been standardised, and the firm has fixed on two types of hangar, double and single, together with a bungalow club house.

E. D. Winn and Co., Ltd., whose name has become familiar by frequent repetition around the hoardings of new buildings, are undertaking the building side of the N.F.S. programme. One noticed the other day that this concern are also building the new Ice Rink at Golders Green.

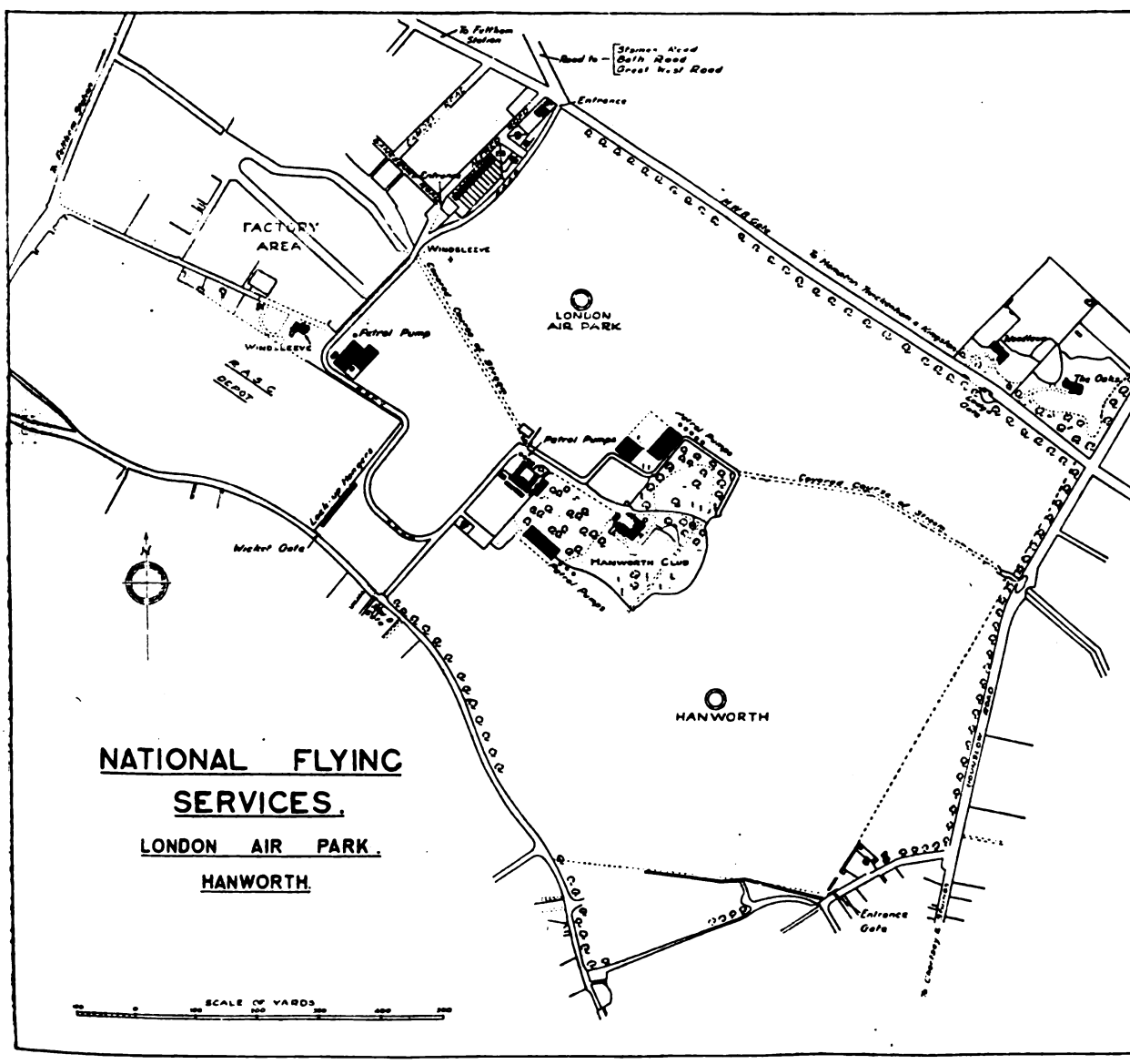
This firm, who are to be congratulated on their foresight in entering into the aeronautical field, have already been quite active. At Hanworth they have modernised the inside of the Club building. They have built two hangars, one of the single and one of the double type. They have also built the workshops where all the repair and replacement work from all the N.F.S. Air Parks will be done.

The usual method of construction employed by this firm is the well-proven one of having steel-girder structural work with a special tile for the roofing and a suitable material for the walls and ends.

In this particular case, an interesting form of sheeting is being used. This consists of a kind of corrugated sandwich, the two sheets of metal enclosing a special insulating material. The outsides of this sheeting are also protected by a coating which renders them impervious to most kinds of attack.

The floors are made either of a material referred to as Mastic, or, in the case of the workshop, are laid with concrete.

As one may imagine from this outline of the method of construction employed, the steelwork forms a very important side of the business. All the steelwork for the buildings built by Winns' for N.F.S. has been supplied through the London and Wales Steel Construction Co., Ltd., of Greville Street, E.C.1.



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REPAIR SHOPS.—The main work-shops built by E. D. Winn and Co. Ltd. at Hanworth.

E. D. Winn & Co., Ltd., are also responsible for the N.F.S. buildings at Hull, the opening of which was reported in The Aeroplane of October 16.

NISSEN AERODROME STRUCTURES.

The name Nissen conjures up memories of some of the most comfortable of the various types of temporary living quarters that aggressive man was called upon to live in during nineteen-hundred-and-war-time.

Nissen huts were the invention of Lieut.-Col. P. N. Nissen, D.S.O., and were at once recognisable by their semi-circular cross-section. Their structure consisted essentially of a series of arched steel ribs, spaced at uniform distances apart and interconnected by either steel or timber longitudinals to which the exterior covering, generally of corrugated iron, was attached. An interior lining of any suitable material could be attached if required.

The ends were closed by timber or metal frames, with doors or windows, and additional lighting was provided by glazing sections of the outer covering.

The advantages of this sort of structure are many. In the first place the simpleness of erection, the interchangeability of a small number of standard parts, the expandability and demountability are highly important features.

Secondly the shape of the structure eliminated the use of rain pipes and guttering on single spans.

Thirdly the inner lining prevents condensation and helps to provide an equable temperature.

Since the War, 1914-18, Nissen Buildings, Ltd., of Rye House, Hoddesdon, Hertfordshire, has developed the Nissen system of construction to suit it to all possible uses. One of these uses is of direct interest to all aircraft users in that the company now produces standard sections for aircraft hangars. In addition, their standard buildings are eminently suitable for aerodrome use for general living quarters, stores, workshops, offices, club accommodation, etc.

The general construction of the standard buildings has already been briefly described and the present patented system is to all intents and purposes the same.

The arched steel ribs, of "T" or "H" section, are made to a series of standard spans, ranging from 16 ft. to 50 ft. The form of arch gives a rigid construction capable of bearing heavy loads. These arches, placed at 6 ft. centres, are interconnected by timber or steel purlins.

The standard roofing material is galvanised corrugated steel, the sheets of which are curved to the exact radius of the respective spans. The inner lining, which can be of light-gauge corrugated sheet, asbestos cement sheet, fibreboard, plaster, or metallic lathing, or match-boarding, is secured to the inner flanges of the arched ribs. Apart from insulating the building against extremes of heat and cold, the inner lining improves the appearance and makes the structure eminently suitable for furnishing as living quarters, etc.

The end gables can be varied as regards framing, covering material, type of doors, windows, etc., and internal partitions can be introduced to suit the type of building required.

Special roof or side-lighting may be provided by substituting wood or steel glazing bars and glass for certain sections of the standard outer covering.

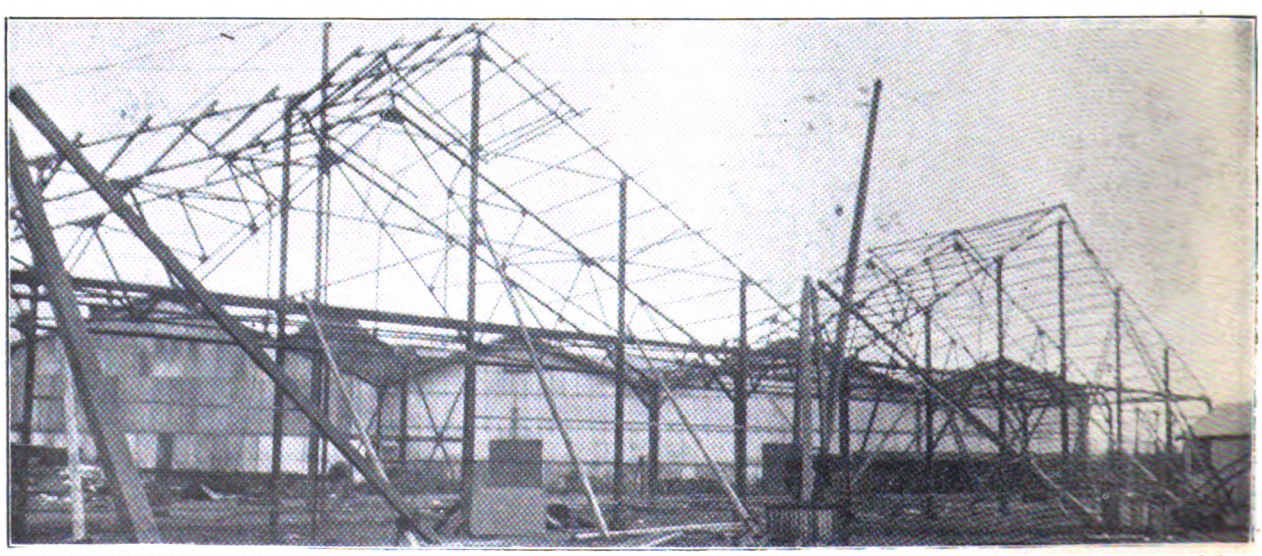
The foundations for the buildings need only be of a light and inexpensive character, but the Nissen building is not merely a temporary structure, though it can be made so if desired.

Owing to their lightness, to the employment of standard sections, to the compact way in which the sections may be packed for shipment and to the ease with which the buildings may be erected by unskilled labour, Nissen buildings are being supplied in considerable numbers for erection overseas, and are particularly serviceable in countries where ants and other insects would quickly destroy structural woodwork.

A series of wind-pressure tests on the semi-circular section Nissen buildings have been made by the National Physical Laboratory at Teddington. It was found that the buildings were almost as stable under all test conditions as in still air. Such a condition is almost impossible in any square-sided building where elaborate precautions are, or should be, taken to prevent collapse during severe storms.

A special design of aeroplane hangar has been developed which departs from the standard Nissen form of structure. It was designed however with the same consideration of interchangeability, ease of erection and cheapness that characterise the standard type of building.

Owing to the difficulty of getting adequate height near the sides of a semi-circular section building together with the unnecessary height that is provided at the centre of a big span building of that form, side walls have been intro-



A PORTABLE HANGAR.—Built by Boulton and Paul Ltd. The skeleton is here seen erected at Norwich before packing for shipment to Borneo.

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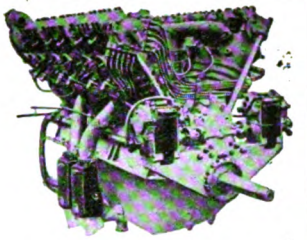
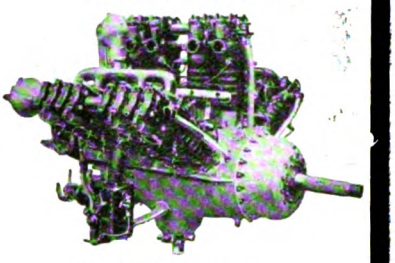
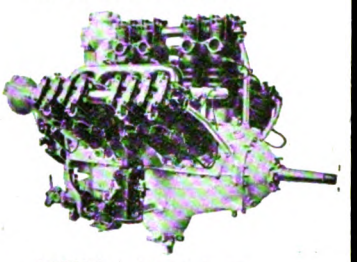


400/410 h.p. 12 Cyl. in V.



450/500 h.p. 12 Cyl. in W.
Direct Drive or Geared.



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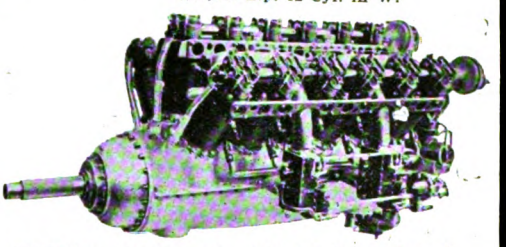
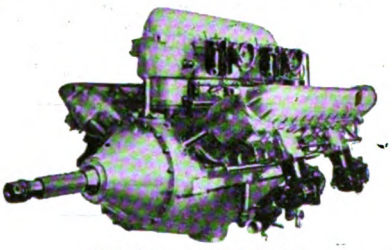


650/750 h.p 18 Cyl. in W. Direct Drive or Geared.

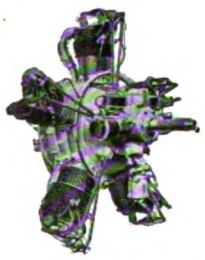
MOTEURS D'AVIATION

LORRAINE

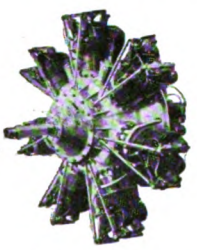
AERO ENGINES.



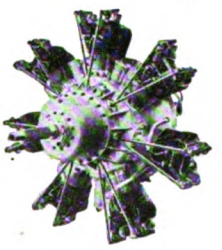
600/700 h.p. 12 Cyl in W.
Direct Drive or Geared.



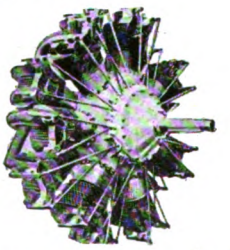
100/120 h.p. 5 Cyl. Radial.



240/270 h.p 7 Cyl. Radial.



240/270 h.p. Geared.



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A PORTABLE HANGAR.—The Boulton and Paul Hangar erected in Borneo.

duced, together with a flattened roof span. By this means a hangar 70 ft. x 65 ft. has been produced with a maximum height of only 19 ft.

On the front end are mounted a series of doors running on overhead guide-channels. These channels are extended beyond the side walls so as to leave an unobstructed opening for the full 70 ft. width of the building.

Around the three remaining sides are lean-to annexes giving room for offices, workshops, stores, etc., with access to the main building but not interfering with the main floor space.

A number of these hangars have already been erected and are giving excellent service.

The company claims that their buildings are the cheapest all-steel structures of their kind obtainable in this country.

All bodies or institutions which are contemplating the erection of aerodrome buildings of any kind are strongly recommended to consider the advantages offered by the patented Nissen construction.

AN AIR PORT NECESSITY.

Some time ago Ransomes and Rapier Ltd., of Ipswich, produced a Petrol-Electric Mobile Crane which has proved itself exceptionally well adapted for use in connection with aircraft. Approximately thirty of these machines have been supplied to the R.A.F. for use in aircraft depots, and others have been supplied to users in over twenty-eight different countries, where they are all giving excellent service.

The crane is a self-contained unit mounted on two wheels on a fixed axle forward and two castor-wheels aft. The two castor-wheels are mounted close together and act as the driving and steering wheels of the crane.

The power-unit of the crane is a petrol engine of motor-car type which is directly coupled to a specially-designed variable-speed electric generator. This generator supplies power to four separate motors, two of which operate the travel, and one each the hoist and derrick motions.

A simple method of varying the speed of the main generator assures that no current need be generated in excess of what actually is needed to drive whichever motors may be in use at any given moment.

The crane is made in four sizes, to lift 1, 2, 3½, 5 and 6 tons respectively. Owing to the articulation of the castor-axle the load is always equally borne on the two driving-wheels and consequently the torque exerted is correctly shared by the two travel motors,—each of which drives one wheel. This articulation of the castor also enables it to adjust itself to uneven ground.

For complete operation of the crane there are only a steering wheel, an accelerator pedal, a brake pedal, and three control levers, one each for the derrick, hoist and travel.

By manipulation of the steering-wheel the castor-wheels can be turned through a right angle in either direction. By this means the crane can be made to travel either straight ahead, or in a curve of any radius, or to rotate about the midpoint of its front axle.

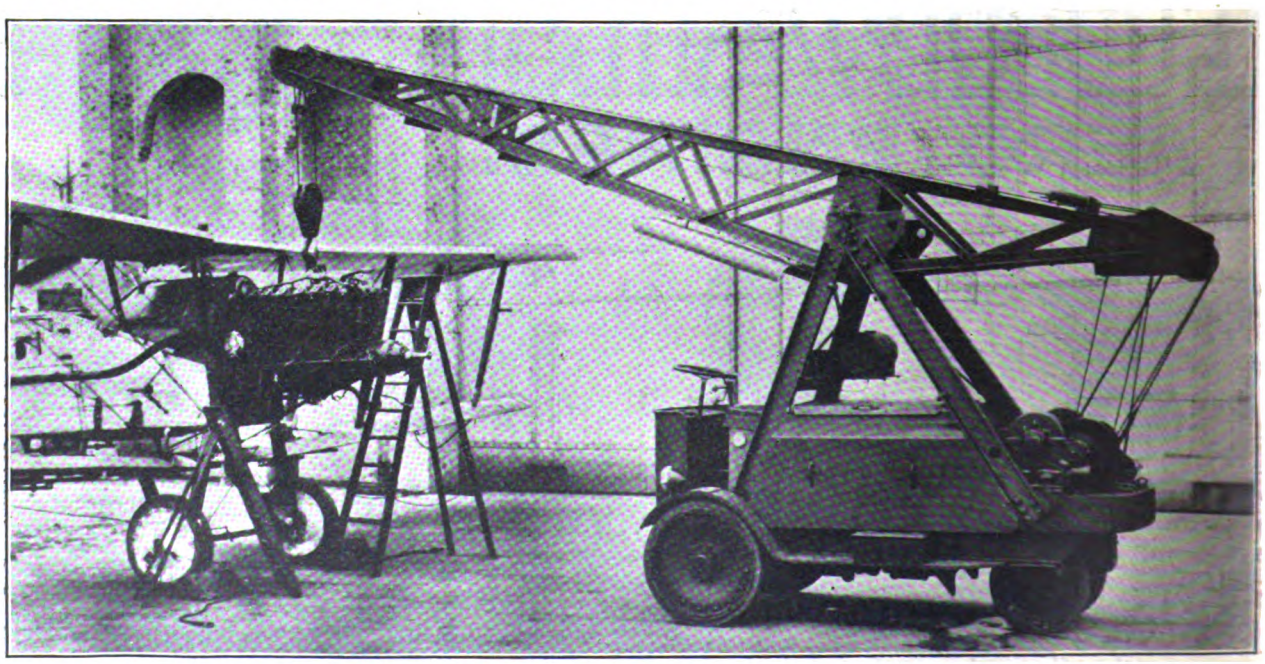
A specially bent crane jib has been developed for aircraft work which facilitates the lifting or placing of engines in multi-engined aircraft, where the engines are very close to the under-side of the upper planes. This design of jib requires the minimum of head-room for the lift.

The crane-jib, in addition to the normal hook-gear, can be fitted with a self-dumping grab or bucket and the wheels may be replaced by two caterpillar tracks.

These modifications make the crane eminently suitable for general building operations levelling land, etc.

A special folding platform or tray may also be supplied for attachment to the front of the unit. Where a crane is required to pass into, or out of, a building with a low doorway the load may be lowered onto the platform, the jib lowered to a horizontal position, and the crane together with its load may pass into, or out of, the shed. Once through the doorway the load may be transferred to the hook.

Full particulars of these cranes can be obtained from the manufacturers, Ransomes and Rapier Ltd., Waterside Works Ipswich, or 32, Victoria Street, London.



A FRIEND IN NEED.—The Ransome and Rapier Petrol-Electric Crane, removing an engine from a Bristol Fighter.

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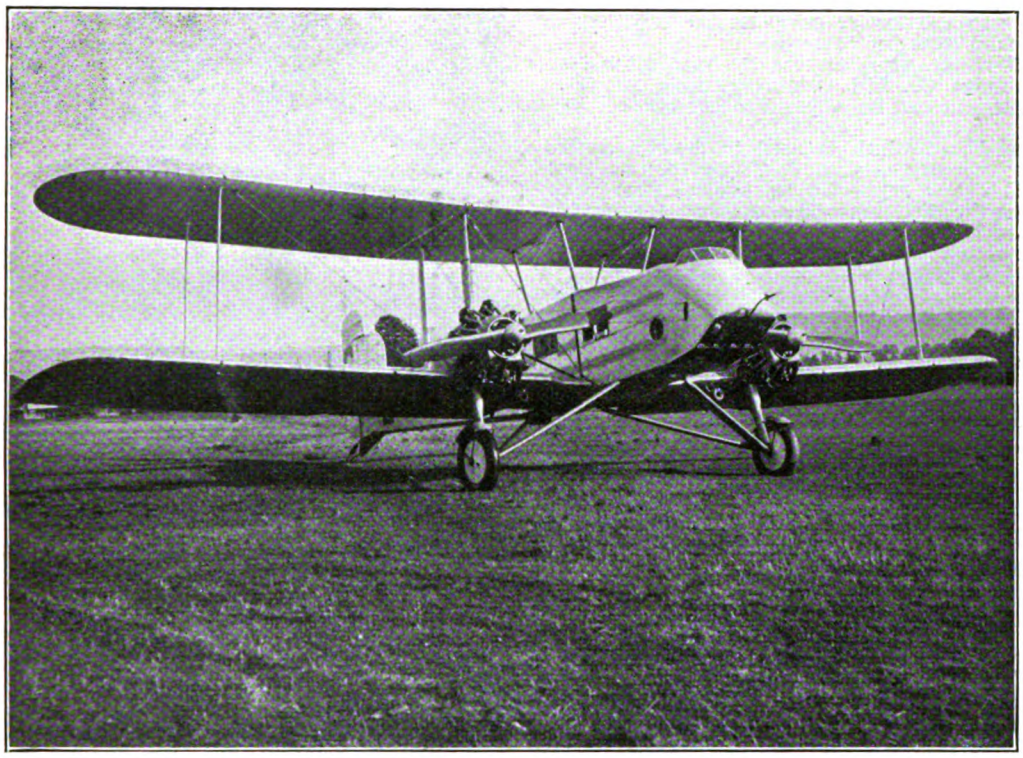
GLOSTER

The Pioneers of Steel Aircraft.



GLOSTER SURVEY MACHINE

All-Metal Construction.

"The Survey biplane is in complete skeleton form and is an absorbingly interesting example of Gloster metal construction."—"*The Aeroplane.*"

"The companion machine to this was built for the Aircraft Operating Co., Ltd., and is already flying. Altogether it is quite one of the most interesting aircraft in the Show, and is a credit to its constructors in every way."—"*The Aeroplane.*"

"Altogether this is a very fine exhibit, thoroughly expressive of the best type of British aircraft construction and progress."—"*The Aeroplane.*"

"Hitherto all the extensive work has been carried out with aircraft built for other purposes and modified to take cameras, but the Aircraft Operating Company, whose accumulated experience covers aerial reconnaissance of some 52,000 square miles in Northern Rhodesia, a survey of the Zambezi River for the Northern Rhodesian Government, and an air survey in Iraq, soon found that no existing aircraft met certain requirements. They therefore drew up a specification of the ideal survey machine and entrusted the construction to the Gloster Aircraft Company, of Cheltenham. . . . . the combination of the specialised knowledge of the one firm as air survey operators and of the other as constructors in all-metal aircraft, has had most successful results."—"*The Times.*"

GLOSTER AIRCRAFT CO., LTD.,

SUNNINGEND, CHELTENHAM.
GLOSTER WORKS AND AERODROME,
BROCKWORTH, GLOS.

THE STEEL WING Co., Ltd.

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THE DRAINAGE OF AIR-PARKS.

A question of paramount importance in the construction of aerodromes and air-parks is that of adequate drainage. Flying grounds are by necessity flat. Also, because of the necessity for having good approaches, they are very often in the midst of flat and level country. Such conditions do not make for good natural drainage.

A spell of wet weather is sure to make the surface soft, even if the water does not collect in pools. Our barbarous habit of using tail-skids does the rest, for these tail-skids plough furrows for the next machine to fall into. To remove these furrows the surface is rolled, and this procedure after a while results in a puddled condition of the surface that prevents the water from draining away.

In The Aeroplane for Feb. 8, 1928, there was a description of the methods employed to drain the aerodrome of the De Havilland Co. at Stag Lane. These operations were very successful, and the former quagmire-like condition of parts of the ground have been removed.

Mr. Charles Herridge, who has recently formed the Herridge Land Drainage Co. Ltd., was responsible for these operations, and the means he employs to achieve his ends are interesting.

A small petrol-driven winch is used to draw a special coulter or cutter across the ground. These coulters have an arrow-shaped cutter supported by two vertical arms whose edges face the direction of attack, thus offering the minimum resistance. About a foot above the cutting edge is a heavy plank to which the arms are attached. When the front end of the plank is fastened to a rope from the petrol-driven winch and hauled across the ground the cutting edge sinks in and down until the plank is hard against the surface and so ploughs a trench about a foot deep.

With such a tool alone the debris just falls back into the trench, so another tool is employed which consists of a wedge-shaped wooden structure towed immediately behind the cutter. This elevator, as it may be called, is the same width as the cutter, and therefore rides easily along the trench.

The underside of the wedge runs along the bottom of the trench, and the other rises from behind the cutting edge to well above the trench. Thus the debris is forced up the elevator to above the top of the excavation, and is then made to fall to one side or the other by an arrangement of deflectors.

In heavy clay and employing two men (one at the winch and one at the excavator) a 500-yard cut to take 6-in. drain-pipes, and 2 ft. deep, can be made in an eight-hour day.

For the subsidiary drains an ingenious tool known as a "mole drainer" is employed. This consists of a pointed iron cylinder of 3-in. diameter carried on a vertical arm with a cutting edge in the direction of movement. This arm, which is adjustable for depth, is fixed in a plank which has two wheels at its aft end. When this plank is towed along, the pointed cylinder bores a tunnel under the ground with a narrow slot to the surface made by the arm.

Mr. Herridge tells us that he now has an improved form of this tool which strips the turf in front of the tool and then replaces it so that no trace is left on the surface by its passage.

Mr. Herridge drained part of Kenley aerodrome for the Air Ministry, and tells us that he has now been called in for the Bristol Corporation Air-Park. He has even received inquiries from so far afield as the Littorio Air Port at Rome and that at Bangkok in Siam.

HERRIDGE DRAINING.—The system of draining described in the opposite column.

AIDS TO DRAINAGE.

One of the encouraging signs to be noticed everywhere is the way far-sighted business people are beginning to put irons in the aviation fire. Rumours have been afoot since the Aero Show as to the intentions of some of the big motor firms.

Moxons Ltd., who are a firm of general engineers, have been devoting a part of their great resources to the production of drainage equipment for some time. They have also done quite an amount of drainage work themselves.

To cope with really heavy drainage work, this firm have produced an amazingly powerful winch, mounted on a tractor and driven by the engine of the tractor. By using a combination of gear-boxes a terrific range of gears is obtained which permits of a big range in the class of work employed.

For pulling stumps, this winch can be anchored to the ground by special attachments at the rear and mid-parts of the chassis. The steel cable from the winch is then

THE MOXON DRAINING OUTFIT.—The motor-winch, two coulters, the elevator and the pipe-chute.

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FLYING BOAT

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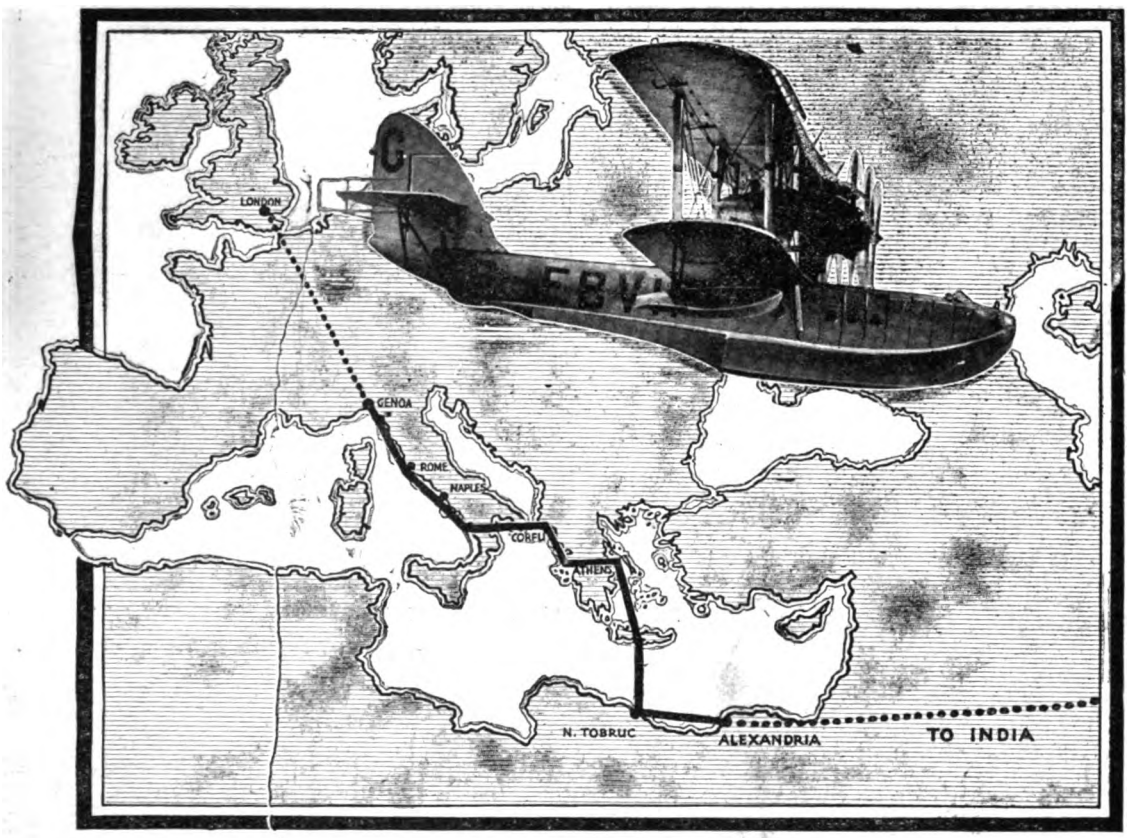
"Makes a new flying link of Empire"



IMPERIAL AIRWAYS CHOSE THIS BOAT

for the longest commercially operated Sea Route in the World, 1700 Miles

15 PASSENGERS
TOTAL PAYLOAD 4860 lbs

CRUISING SPEED 100 M.P.H.
RANGE 6½ HOURS NO PETROL IN HULL.

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hitched onto a tree-stump and the engine started. The clutch is let in, the rope tightens, and up comes the stump.

By placing the winch some way from the line of stumps the apparatus can be used to demolish a hedge in a very short space of time with only one setting-up. At the end of the job the ground-anchors are undone and hitched up to the tractor, which can be driven off to the next site.

A neat arrangement has been perfected whereby the pipes can be laid automatically by a chute behind the elevator. The chute is kept filled by a boy dropping in pipes every now and then.

This trench-making apparatus does everything from the excavating to the pipe-laying. One can only suggest that means are found to fill in the trench over the pipes. This would make the whole operation more or less automatic.

Moxons Ltd., besides building this winch, design and build all forms and types of draining tools. They specialise in the production of implements for dealing with very hard ground and for making really deep cuts. They have recently drained a number of aerodromes over the country.

INTELLIGENT ANTICIPATION.

In these days of fast cargo vessels, goods sent to Australia and New Zealand from this country often reach their destination before the necessary documents have reached the consignee. Such documents are sent by mail steamer, which has, unlike the cargo boat, a number of ports of call.

To obviate this delay the merchants engaged in the Australian and New Zealand trade have requested the ship-owners to issue a special bill of lading for transmission by Air Mail, and this has been done. The bill is about one-quarter of the usual size and is printed on thin paper, so that it can be sent as cheaply as possible by Air Mail.

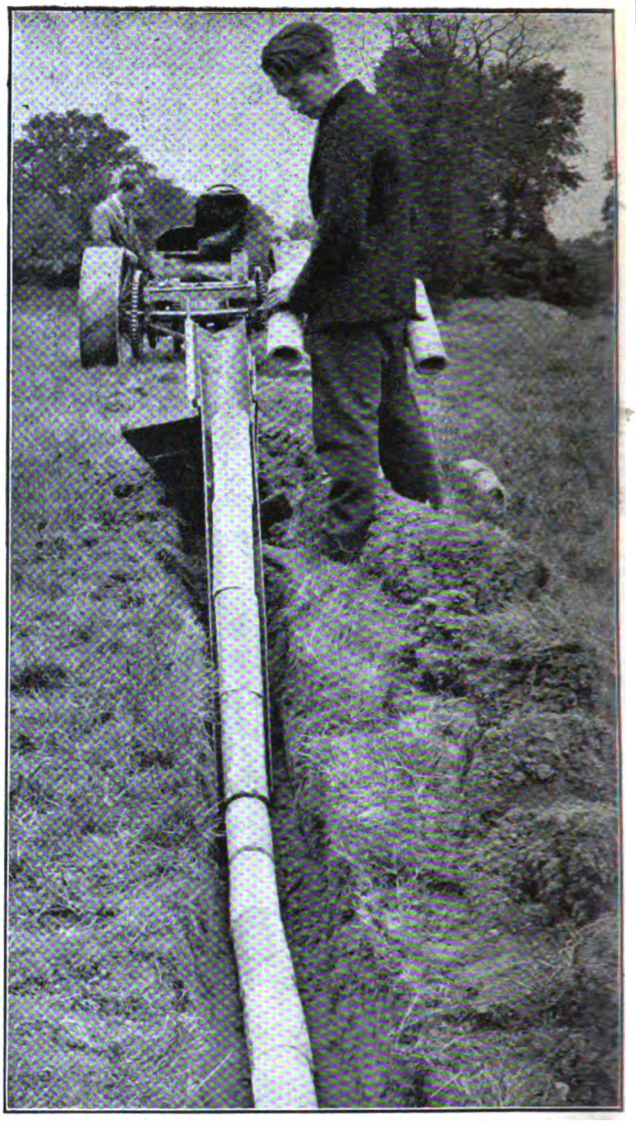
Besides illustrating the shrewdness of the merchants, this is further evidence of the value of Air Mail possibilities.

THE INSPECTION AND TESTING OF AERO ENGINES.

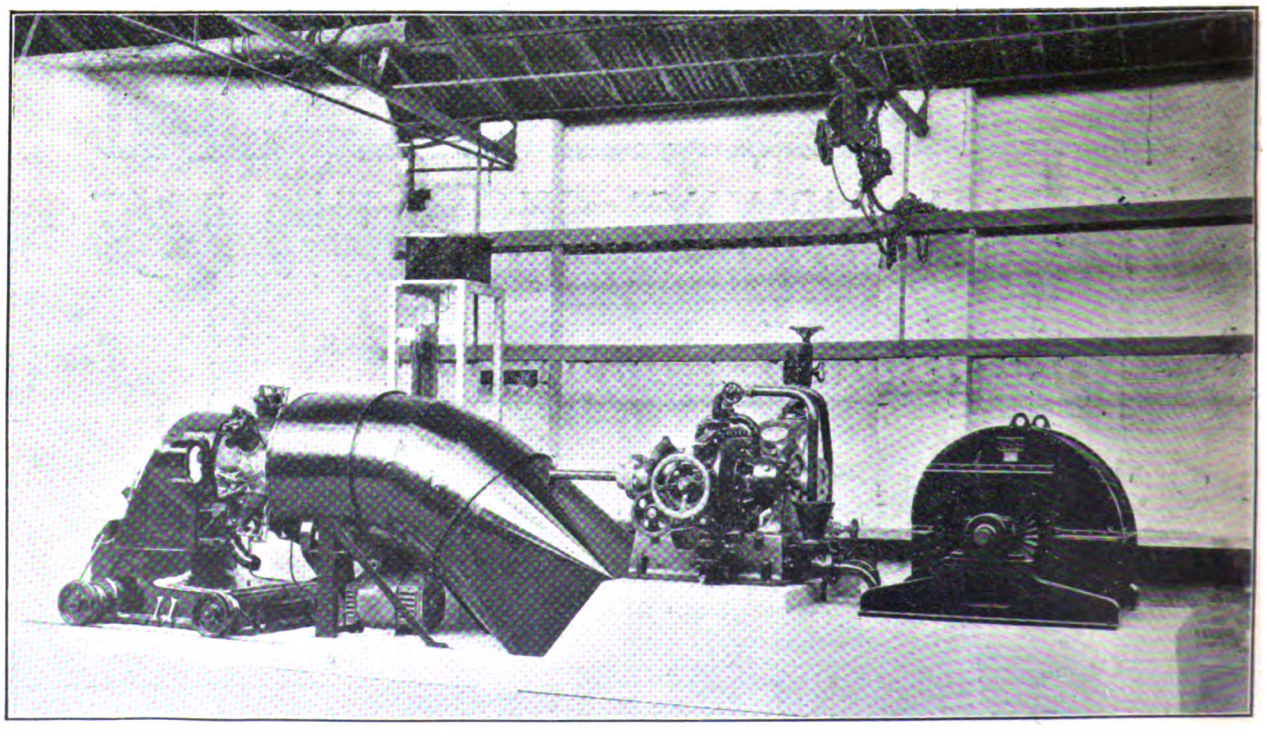
One of the most instructive exhibits at the Aero Exhibition at Olympia, London, was that of the Aeronautical Inspection Directorate of the British Air Ministry, which showed the whole system of inspection from the raw material up to the finished aeroplane and its engine. A particularly interesting feature on this stand was the full-sized brake-testing apparatus used for trying out the 215-230 h.p. Armstrong Siddeley Lynx engines.

At one end of the plant is a powerful fan which creates a current of air and drives it under the dyanamometer and through a tunnel on to the forward face of the Lynx engine. The brake-testing apparatus is fitted between the engine and the fan, and is driven by a shaft which is coupled up to the engine and passes through the cowling of the tunnel.

The Lynx engine is fitted on a mounting which is formed with a trolley. This runs on rollers, so that it can be wheeled up to the mouth of the air tunnel and withdrawn at the conclusion of the test with the least possible waste of time.



THE MOXON DRAINAGE OUTFIT.—This shows the semi-automatic pipe-laying chute in action.



AN ENGINE-TESTING PLANT.—An exhibit at Olympia in July of the method used by Armstrong Siddeley Motors for testing Lynx engines.

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We are applying to the preliminary and detailed survey of air port sites the knowledge and experience of flying conditions, with their relations to local requirements, gained during Sir Alan Cobham's recent tour of Great Britain.

In addition to the selection of the best possible site for attracting trade by air, we prepare specifications and drawings and supervise the work of development.

We are approved by the Air Ministry for carrying out this work.

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WIRELESS FOR AIR PORTS.

From the earliest days of flying, far-seeing people realised that wireless communication, the only practical means of communication over any considerable distance between persons on the ground and persons in the air, was likely to be of as great importance to commercial aircraft as it is to ships at sea.

The main difference between the ship and the aeroplane is that efficient communication at all times is in some respects even more important to the airman than to the seaman. In case of fog or weather conditions unsuitable for making port, a ship not fitted with wireless or a wireless direction-finder can go dead slow or heave to for days if necessary. But when caught in fog or storm the aeroplane has to proceed and to find its way to a safe landing. Wireless is thus practically a necessity to aircraft services if they are to maintain a regular schedule through the ever-changing moods of air and sky with their storms, clouds, mists, and fog-banks.

The rapid and continual progress made in the reliability and range of modern aircraft has therefore necessitated the development of an efficient system of wireless services for aviation purposes.

The pivots of this organisation are the Air Ports, equipped with wireless to enable them to maintain regular contact with each other and with aircraft. This system provides for the distribution of meteorological information, route-traffic between air ports, communication between air ports and aircraft, and direction- and position-finding.

Though the design of modern aircraft and the services of wireless have to-day rendered flying possible under weather conditions which only a few years ago would have been regarded as prohibitive, the state of the weather is still an important factor in aviation. One of the first aids of wireless to aircraft is therefore the rapid circulation of information about weather conditions.

Meteorological information is usually circulated between airports in the form of long figure code messages, but if it is necessary to communicate this information to pilots, telephony or telegraphy messages are sent *en clair*.

Where an organised air-route is established between fixed points it is of vital importance that an efficient system of wireless communication should exist, so that messages concerning the departure and arrival of aircraft, instructions to land at intermediate bases, information regarding transport of passengers and goods, and the many points of detail which are essential to the smooth working of an efficient air organisation, may be communicated without delay.

The exchange of similar information is equally of value between civil air-parks dealing with independent aircraft, as a constant check can thus be kept on machines in the air at any time.

For communication between Air Ports and pilots in the air telephony is usual. In large passenger-carrying machines a wireless operator is carried. Long-distance communication is generally done with continuous wave telegraphy.

The range over which aircraft and air ports can keep in touch with one another naturally depends on the design and efficiency of the wireless equipment used and on atmospheric and other conditions.

An Imperial Airways pilot flying near Cologne, Germany, has held direct conversation with Croydon, and a test transmission on short waves from an aeroplane over Croydon in July, 1928, was picked up as far afield as Cairo.

One of the most valuable uses of wireless for aircraft is that it can give the position at any time of aircraft in flight. Though the ordinary methods of navigation can be used with reasonable success in the air, certain conditions of weather arise when these methods may become misleading and in some cases useless. Especially is this the case in fog and mist.

Practically all modern aerodrome wireless stations are therefore equipped with direction-finding apparatus, and a pilot in doubt as to his position can call up an air port and ask for his position to be given him. This is done by two or three ground-stations working in co-operation. From their joint observations a "fix" is worked out and the information as to the aeroplane's position is then transmitted to it from the controlling ground-stations. With practised operators, when a position is asked for, the information can be provided in less than a minute and a-half.

So precise has this method of navigation become that pilots have often flown with wireless guidance between Croydon and the Continent when the ground has been invisible practically throughout the flight.

The London Terminal Aerodrome, which was opened at Croydon in January, 1928, is a remarkably fine example of modern wireless organisation as applied to the control of air-line operations.

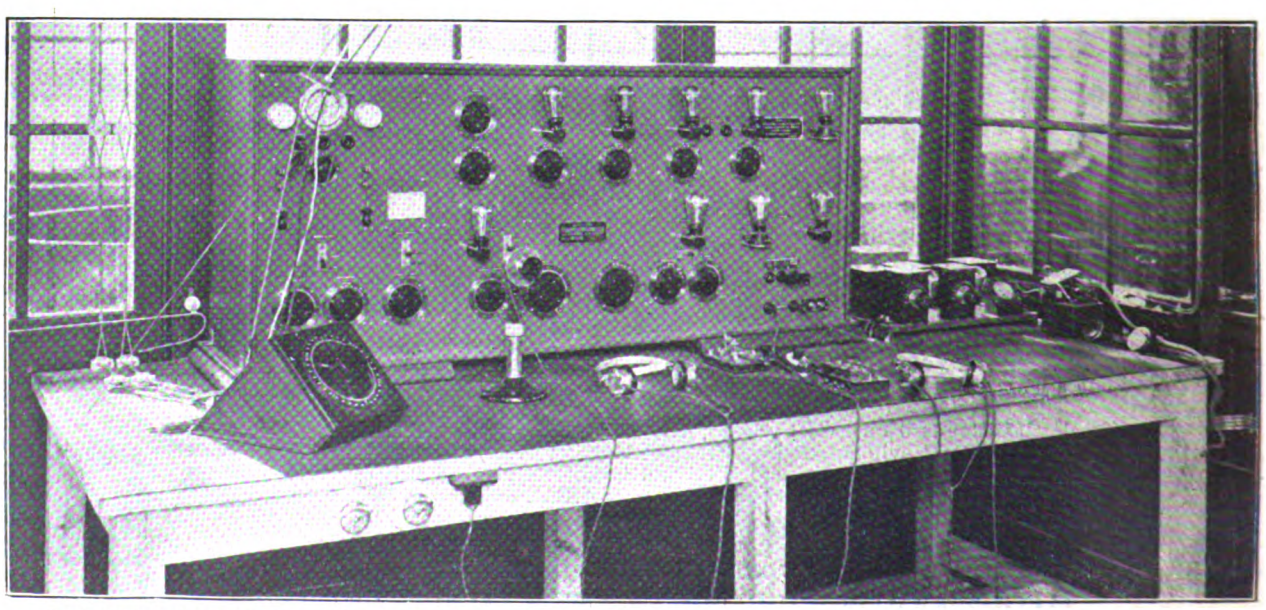
Eight years of practical experience with the old aerodrome wireless station at Croydon enabled the Air Ministry, in conjunction with the Marconi Company, to devise a new and greatly improved system of communication. Four transmitters, each of 4 kilowatts power, working on different wave-lengths, and direction-finding receivers embodying the latest improvements in wireless technique, were installed for communication with aircraft in flight and with other aerodromes.

The wireless control of aeroplanes and the direction-finding services are centred in the Aerodrome Control-Tower. In the wireless room, situated in the tower, a wireless officer is in constant touch with the aeroplanes in flight. He is in control of the direction-finding receiver, and of three of the four transmitters at the transmitting station at Mitcham, some 2½ miles from the aerodrome.

One of these three transmitters is arranged to transmit telephony on 900 metres, the second telegraphy on the same wave, and the third is a stand-by for emergency use. The fourth transmitter is controlled from the separate Route-Traffic Wireless Room.

In the near future an alternative wave-length of 870 metres for working telegraphy, and an alternative wave-length of 930 metres for working telephony with aeroplanes, is to be adopted, thus leaving the 900 metres wave more free than it is at present for the passing of distress and other urgent messages from and to aircraft. As all the transmitters can work on any wave-length between 800 and 2,000 metres, a change in wave-length is simply a matter of adjustment.

Some distance from the Control-Tower is the Route-Traffic



AIR PORT WIRELESS.—The Radio-Board in the Control-Tower at Croydon. The dial on the left is the Direction-Finding Indicator.

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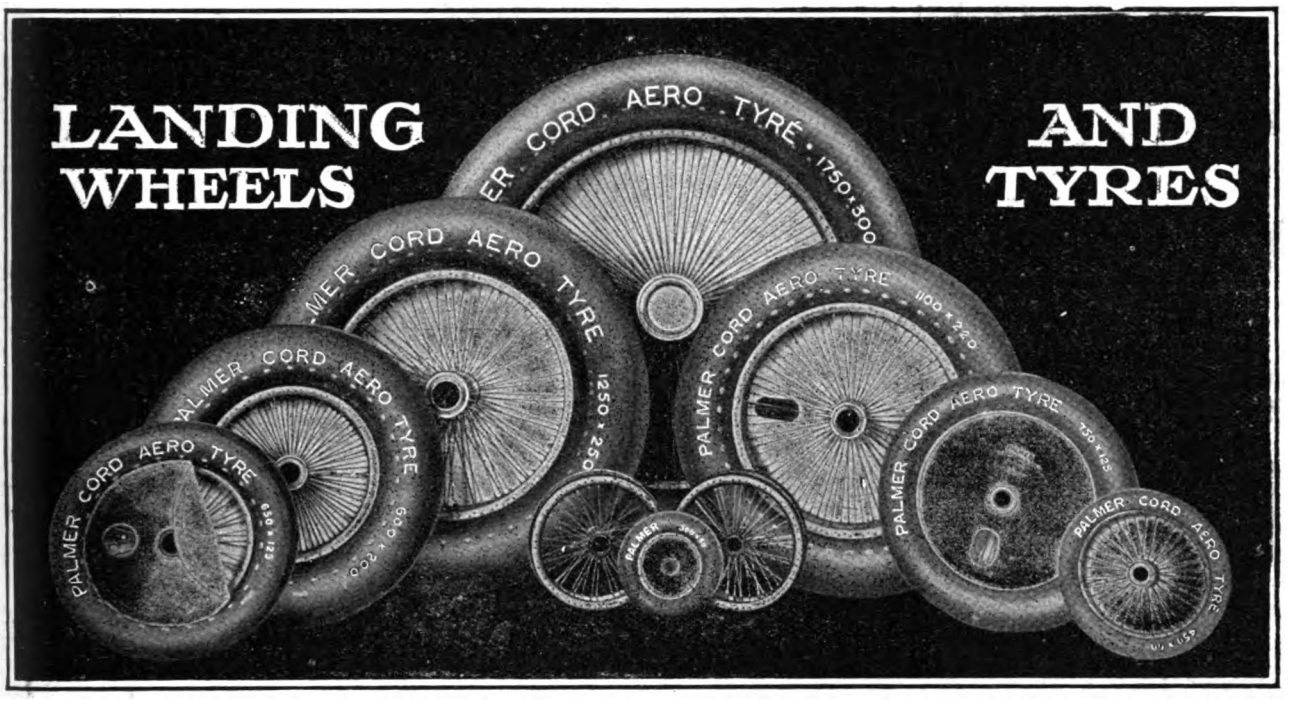
PALMER



STANDARD SIZES

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
"	195	130.	38.09	Central
300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
"	172	130.	38.09	Central
575×60	21	160.	28.	Central
"	180	150.	38.09	104/46
"	186	120.	34.92	Central
"	190	150.	38.09	Central
600×75	21	160.	28.	Central
"	180	150.	38.09	104/46
"	186	120.	34.92	Central
"	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
"	79	178.	44.45	Central
"	100	178.	38.09	132/46
"	101	178.	31.75	132/46
"	196	178.	55.	Central
600×100	188	120.	34.92	Central
"	304	150.	38.09	104/46
"	333	120.	34.92	Central
700×100	77	178.	44.45	132/46
"	92	185.	55.	135/50
"	95	185.	55.	Central
"	99	178.	38.89	132/46

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700×100	112	150.	38.09	Central
"	176	178.	44.45	Central
"	179	178.	55.	132/46
650×125	119	178.	55.	132/46
"	147	178.	55.	Central
"	188	120.	34.92	Central
"	336	178.	44.45	132/46
750×125	77	178.	44.45	132/46
"	92	185.	55.	135/50
"	95	185.	55.	Central
"	99	178.	38.89	132/46
"	112	150.	38.09	Central
"	176	178.	44.45	Central
"	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
"	162*	185.	55.	Central
"	163*	185.	66.67	135/50
"	169†	185.	55.	135/50
"	177	185.	55.	135/50
"	183	185.	55.	Central
"	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
"	174	250.	80.	Central
"	182	185.	55.	Central
"	187	220.	66.67	Central
"	201	185.	60.32	125/60

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000×150	210	185.	60.32	Central
1000×180	148	220.	80.	Central
"	149	185.	55.	Central
"	155	220.	66.67	Central
"	166	185.	55.	125/60
900×200	107	185.	55.	Central
"	108	185.	55.	125/60
"	128	220.	66.67	Central
"	137	250.	80.	Central
"	157	185.	80.	Central
"	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
"	136	250.	80.	Central
975×225	192	185.	60.32	Central
"	194	185.	55.	125/60
1100×250	364	220.	60.32	Central
1250×250	314	250.	80.	Central
"	154	304.8	101.6	Central
1500×300	305	304.8	152.4	Central
"	306	304.8	101.6	Central
1525×325	197	304.8	101.6	Central
1750×300	139	400.	152.4	Central
"	191	350.	150.3	Central
1750×350	193	400.	125.	Central
2000×450	363	500.	152.4	Central

*Wheels Nos. 161, 162, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings.
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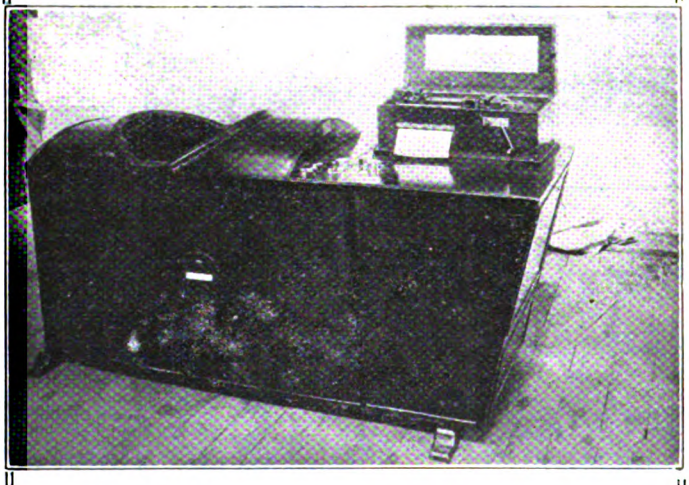

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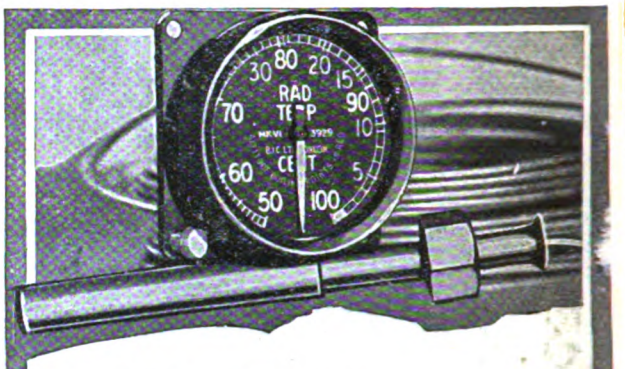

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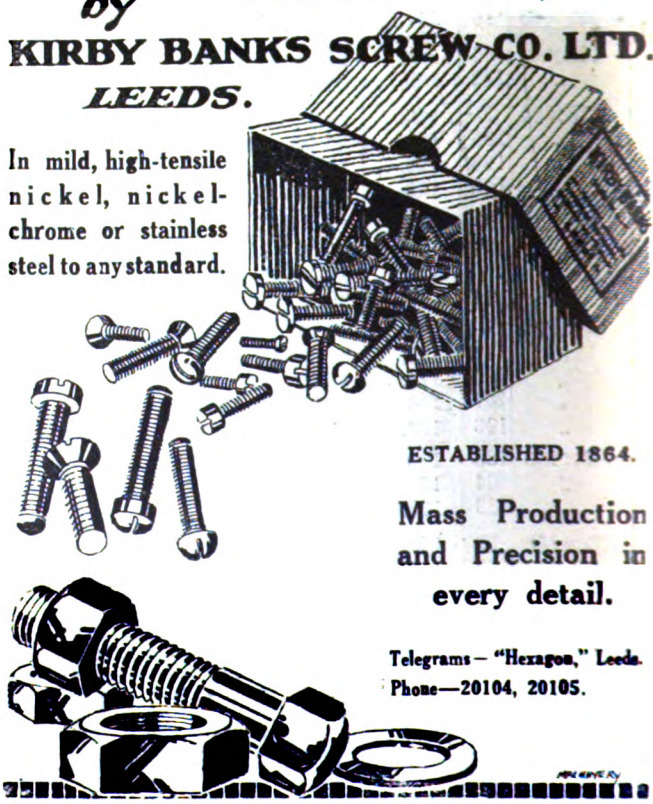

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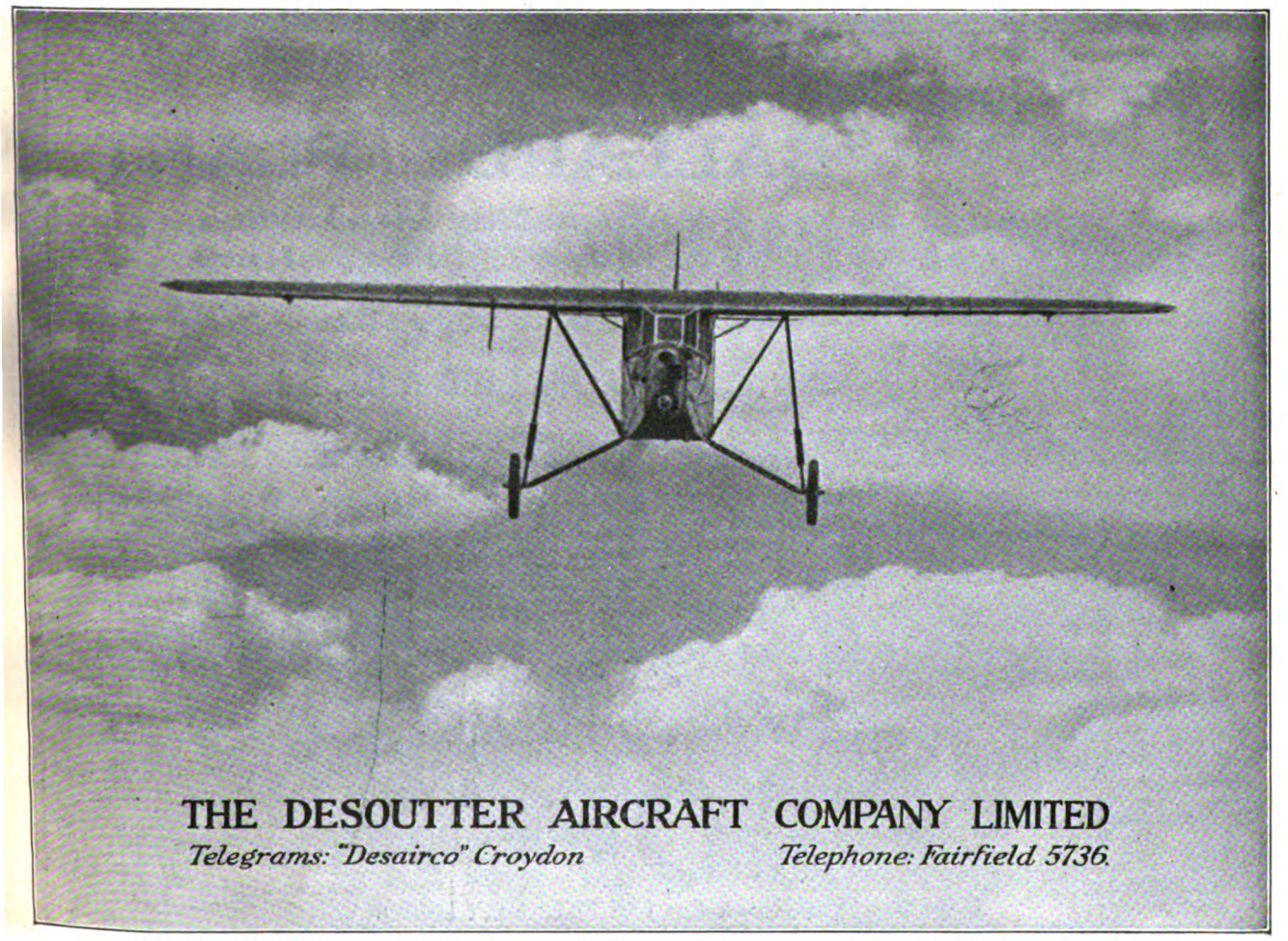

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Wireless Room, where communication is maintained on 1,380 metres wave-length with other aerodromes, for the exchange of messages dealing with the departure of aircraft and other service matters. The wireless officers in the Control Tower and in the Route-Traffic Office work independently of each other. All messages received, either from aircraft or from other aerodromes, are however passed to the Aerodrome Officer on duty in the Control Tower.

Direction-finding stations at Pulham and Lympne collaborate with the Croydon wireless station. When the pilot of an aeroplane sends a request to Croydon for a position, Pulham and Lympne, at which stations a constant watch is kept, simultaneously take his bearings. Pulham and Lympne then send their bearings to Croydon by wireless, and these, together with Croydon's bearings, are plotted on a large map mounted under glass in the wireless room. The point on the map where the three bearings cross is the position of the aeroplane and this reading is communicated by Croydon to the aeroplane.

THE WIRELESS EQUIPMENT AT HESTON.

The wireless installation at Heston is situated on the second floor of the Control Tower, and consists of the Graham ½ K.W. Intermediate Air Port Equipment.

The whole installation occupies a single mahogany bench. On the right is the transmitter proper which contains the oscillatory circuits, the oscillating and modulating valves, the various meters and controls and the rectifying and smoothing system.

Four wave-lengths are continuously available, namely 600 metres (for emergency communication with shipping if necessity arises), 764 metres (the wave-length allocated to Heston for flying training purposes), 900 metres (for intercommunication with commercial aircraft if required) and 1,500 metres (for communication with the largest passenger machines using wireless telegraphy). The whole apparatus can be changed from one wave-length to another in about one second. Continuous wave, interrupted continuous wave, and radio-telephony are provided and can be instantaneously switched as desired.

The unit on the left contains the sub-modulator panel, to control the transmitter, and underneath, a receiver which is continuously available from 250 metres to about 20,000 metres. Here again change can be made from one wave-length to another in about a second, and only involves the turning of a single switch. The well known Amplion microphone forms an important part of the equipment.

Some thoroughly satisfactory tests have recently been made between this equipment and that at Croydon and Rotterdam aerodromes, and reports on the speech from the Heston equipment show that excellent results have been obtained.

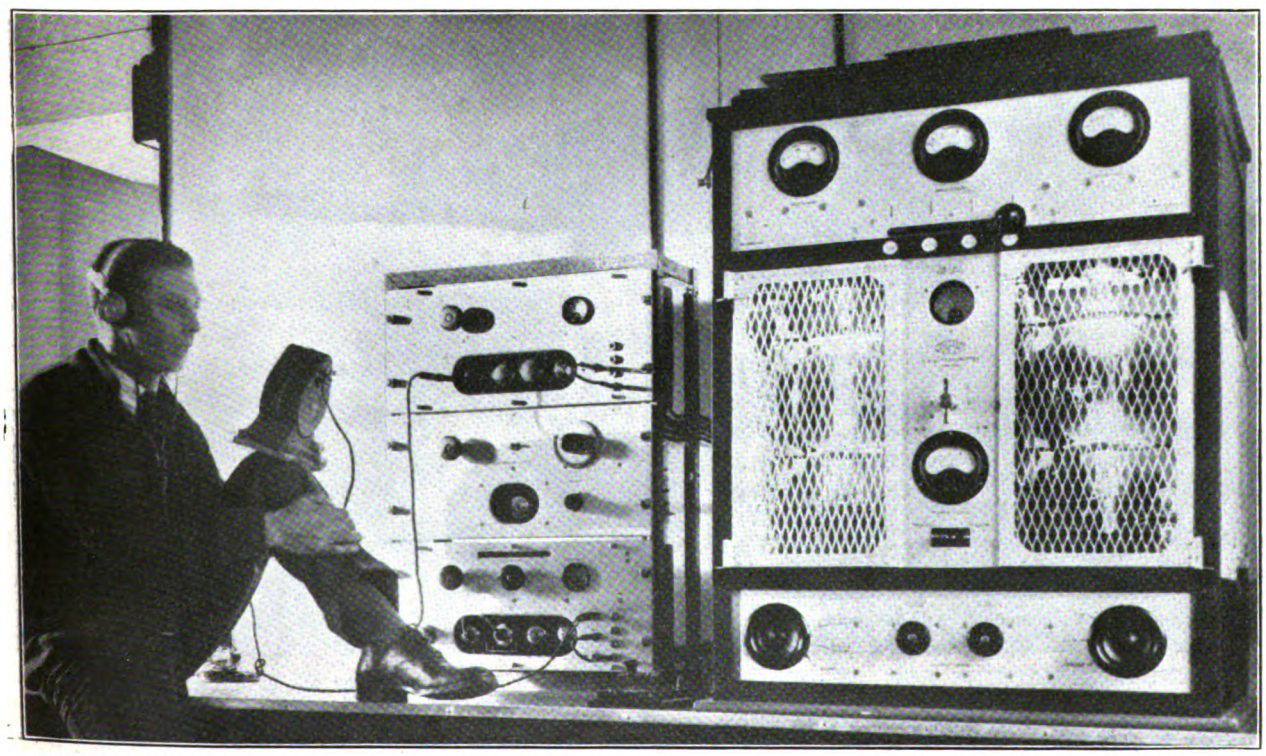
The new Graham direction-finding unit will be added to the installation within the next few weeks and then Heston can be regarded as being a really modern Air Port and one which can be used by any class of aircraft in exactly the same manner as Croydon is used. If it be true that Heston is the least fog-bound air park in the London area—as there seems every reason to believe—it will be well worth remembering that full wireless facilities are available there at short notice.

THE GRAHAM AEROPLANE EQUIPMENT.—Here a pilot is seen receiving a message.

One very interesting feature about the set is that it runs entirely from alternating current mains, and that there is not a single part or piece of moving machinery in it throughout. There is therefore no noise.

The uses of this transmitter, apart from possible communication with ordinary commercial aircraft, are twofold. Firstly, Heston has become the London light aeroplane centre for meteorological purposes, and there is every reason to hope that within a very short time the Heston transmitter, perhaps in conjunction with a number of other air-parks in the British Isles, will be broadcasting once every hour an authentic weather report for the benefit of light aeroplanes.

Secondly, this transmitter is being used for training pupils to fly,—by using it in conjunction with the Graham G.A.6 light aeroplane equipment which is attached to the standard voice pipe fittings.



THE GRAHAM AIR-PARK EQUIPMENT.—Mr. Baker, Chief Instructor at the Heston Air-Park, is here seen talking to a pilot in the air.

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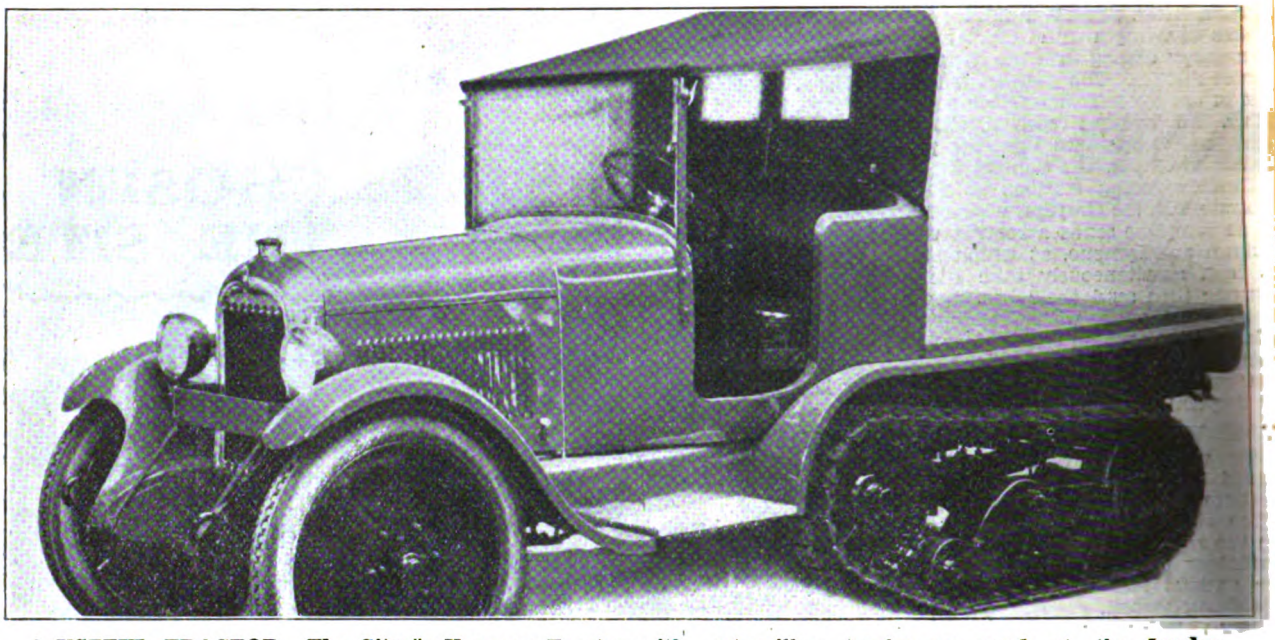


A USEFUL TRACTOR.—The Citroën-Kegresse Tractor, with caterpillar tracks,—as used at the London Terminal Aerodrome at Croydon. This type is used by Imperial Airways Ltd. to haul machines about, and for the transport of a big mobile flood-light for night-landings. It may also be used to haul surface-graders, and to do the work generally of a young traction-engine.

This G.A.6 unit is carried in the front cockpit of any standard instructional machine which is equipped with a fixed aerial.

This set weighs only 4¾lbs. and is only 8¾ in. by 5¼ in. by 4¾ in. in size. This, for the range obtainable with a fixed aerial, and considering that four modern valves are used, places such apparatus in an entirely fresh category, and marks much-wanted progress.

It is in fact, certain that the equipment is the smallest and lightest for use in any aircraft to-day and is exceeding robust. There is the further advantage that such items as may occasionally need replacing are obtainable in almost any ordinary wireless shop.

When this set is used for flying training the usual practice of the instructor occupying the front seat and the pupil sitting in the rear seat is followed up to the solo stage. When a pupil is ready to go solo, for the first two or three times the instructor switches on the wireless in the front seat and gets out of the machine.

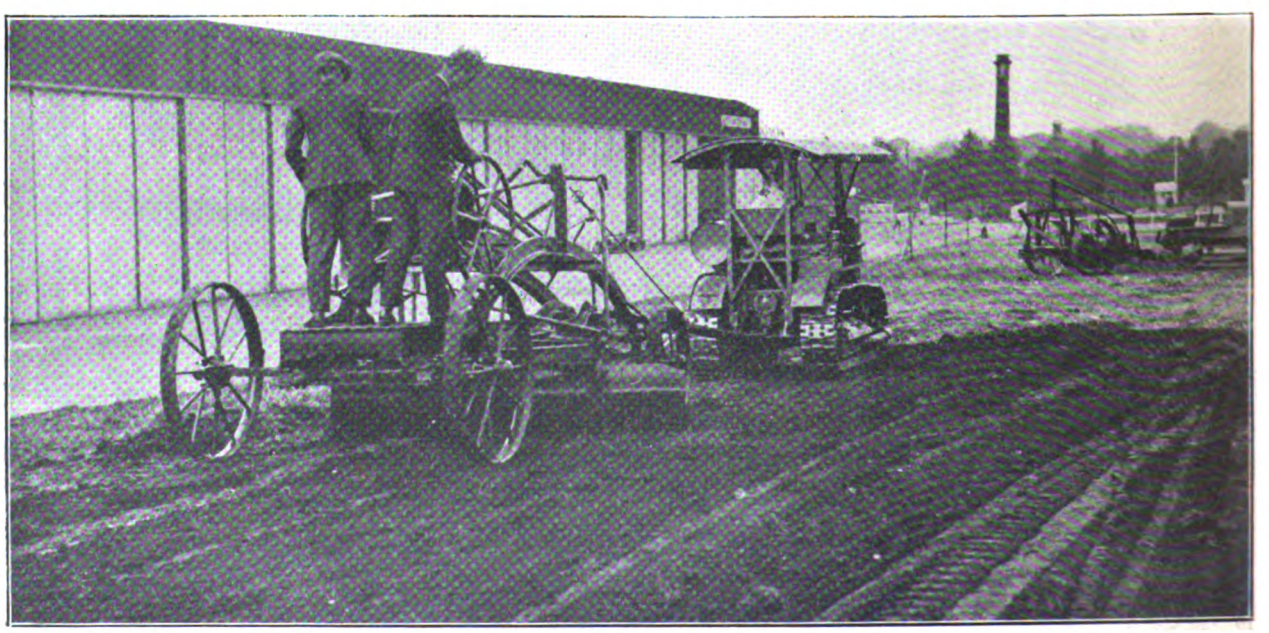
If during the solo flight the pupil shows any signs of getting into difficulties, the instructor can at once tell him what to do by wireless, and moreover, it should be observed that the pupil hears the familiar voice in a normal manner just as if the instructor were still in the machine.

The Air-Work Moth G-AACY has been fitted with a Graham set of this kind and has already been seen at the various pageants and flying meetings.

This Graham equipment made itself really useful on the Sunday morning after the Newcastle Pageant. Cramlington Aerodrome was submerged in thick mist, drizzling rain and drifting smoke from the city, and visibility was very low.

Mr. Sinclair and Mr. Windsor who had flown G-AACY to Cramlington and were anxious to get home, sat in the cockpit and listened until a *temps actuel* was intercepted from Croydon to a French machine. This report clearly indicated that although there was quite a lot of wind in the South of England, flying conditions were otherwise excellent. Consequently they pushed off, and soon after leaving Durham the weather cleared up and visibility was as much as 30 miles.

This single occasion in itself ought to be a strong inducement to every private owner and every light aeroplane school to carry one of these equipments on board, especially when one remembers that fixed aerials of a really convenient nature are standard.



A GRADING-MACHINE FOR AERODROMES.—The Howard 8 ft. Road-Grader at work on Croydon Aerodrome during a demonstration. This grader for maximum efficiency requires a tractor of 30 h.p. James and Frederick Howard Ltd. are well known as constructors of machinery for road-building and similar work. They now realise the possibilities of their apparatus for aerodrome construction. This machine can be used for removing ridges and conveying the material from the high spots to the holes. Finally the grader will make the whole surface level and smooth.

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COMMERCIAL AERONAUTICS.

ANOTHER LESSON.

The lamentable wreck of the Short Calcutta G-AADN off Spezia on Saturday, Oct. 26, is another example of the low progress which humanity makes in new arts and sciences. Lines of development which are perfectly obvious are neglected simply because those things which already exist do well enough to satisfy the limited ideals and intelligence of their users. And yet humanity is singularly contradictory, for it may be seized by a craze, and all over the World people who are supposed to be first-class engineers or first-class scientists or first-class business men follow the leaders like sheep. And when an individual, possibly a company, tries to break away from the herd, he is either regarded as a revolutionary, or else he has to work for years before other people follow him on the right path.

The first, but not the most important, lesson that the Spezia tragedy teaches is the folly of the present craze for three-engined aircraft. People who ought to have known better, and ought certainly to know better by now, have preached and are still preaching that three engines mean infallibility. Three engines mean nothing of the kind. Three engines only mean a greater risk of one engine breaking down.

Certainly, three engines all working under almost exactly similar conditions in a flying-boat are less foolish than three engines in a tractor machine, in which the nose engine cannot possibly be doing anything like as much useful work as is either of the wing engines. But even when you have three engines all working under similar conditions, the loss of one engine does not leave enough power to give full control or lift.

Admittedly, there are machines which with full load will fly and even climb on two engines out of three, and the Short Calcutta is among them. But how long such machines will go on flying on two engines out of three when they are put into regular use is quite another story. Wings lose shape slightly, rigging may not be maintained in absolute truth, engines lose power, and your three-engined machine minus one engine ceases to be safe.

And at best, two engines cannot give the same control as is given by all three.

When we come to four engines we are up against a different proposition. Four engines, placed in tandem pairs, can be disposed so that they work much more efficiently than any combination of three engines. Moreover, as two of the engines drive pusher-screws, half the power is certainly being used much more efficiently than it is in any tractor aeroplane. The proof of this is that in the Dornier and other aircraft in which tandem engines are used the machines will get off using their pusher screws only, and will not get off using their tractor screws only.

In an aircraft of the size of the Do.*x* there are so many engines that when one or two cut out there is still plenty of power left. Moreover, the engines are so placed that unless the cause of stoppage is a major breakdown, they can be put right while still flying.

In considering these arguments we must remember that though there is proof that G-AADN did come down owing to engine-failure, the Jupiter engine has been proved to be one of the most reliable in the World, and was, therefore, much less likely to break down than the majority of engines would have been. And, whatever the strength of the gale may have been, there is no reason to think that the machine could have been forced down merely by the wind.

The most likely cause of the descent is that it ran short of petrol, owing to slow progress against the strong wind, and that, finding he was making such slow progress, the pilot drove all his engines at full power, instead of at cruising speed, and that something did break.

There is even the possibility that a sea-bird flew into an airscrew and caused it to break. Here, again, the force of the wind would have nothing to do with the accident, because the relative speeds of the machine and of the bird would be the same either in a gale or in a flat calm.

But the arguments for or against the use of three engines must be considered.

Whenever an accident happens, every possible cause of that accident is worth considering, because even though it may be the wrong explanation, so long as it is a possible explanation it indicates something to be avoided in the future.

Quite often in the old days, when the Aero Club published what its Accidents Committee believed to be the cause of an accident, the explanation given, even when erroneous, did lead to improvements. And for that very reason, one holds that the Air Ministry should publish the findings of its Accidents Committee, even when that Committee is by no means certain of the cause of an accident. The reputed cause of railway accidents are always published, and the Air Ministry ought to follow the same policy.

The other, and more important, lesson to be learned is that, although it was one of the finest flying-boats in the World, G-AADN broke up after a short period on the water. There is no finer flying-boat in the World than the Short Calcutta. The hammering which a similar machine, flown by Sir Alan Cobham, stood when it was nearly wrecked on the coast of Malta, proves its staunchness. But, as has so often been said in this paper for years past, no flying-boat of any type built in the World at present will stand up to a heavy sea.

The hull structure will probably stand anything that the sea can do to it, but wing structures will not stand pounding by waves. And, when the wing-structure breaks up, broken spars and other parts are bound to hammer the hull to pieces sooner or later.

Moreover, when the wings break up, the hull has no stability, and *must* roll over and sink. And if a wing-tip float breaks, as has happened fairly often, that wing-tip may go under and capsize the whole machine.

To prevent such a happening there are possibilities in the twin-hull flying-boat, as patented by Mr. S. E. Saunders years ago, and as used by the Marchese de Pinedo in his flights all over the World. That is one way out. But there is another which seems even more sure.

Over and over again the argument has been put forward in this paper that the only way of assuring safety in sea-going flying-boats is to make the hull a self-contained motor lifeboat which is clamped to the wing-structure and the flying power-plant, and can be released from that structure when the danger-point is reached.

Designs for such a craft were actually produced by the Supermarine Aviation Works either during or immediately after the War 1914-18, but nothing further has been done anywhere in the World to develop that type.

No blame should be put upon our British constructors of flying-boats for this neglect. Flying-boats were so disgracefully neglected after the War, in spite of the magnificent work which they did during the War, that only within the last three or four years have our constructors of flying-boats been able to make even a small profit.

The people to blame are undoubtedly the Air Authorities of all nations where flying-boats are built. In this country alone we spend nearly half a million pounds a year on experimental work, for which we get amazingly small results. For £25,000 or £30,000 (leaving out the price of engines) we could quite easily produce an experimental flying-boat of that type. And very much better types could then be produced as a commercial proposition by all or any of our builders of flying-boats.

Without criticising in any way the policy of our Air Ministry in building our two big airships, the fact remains that for roughly about one-twentieth of the money we have spent on those airships we could have produced several years ago a flying lifeboat which would have made impossible such a disaster as that which occurred off Spezia.

As usual, we have thrown away valuable lives simply because we have been too lazy or too stupid or too self-satisfied to take sound advice when it has been put in front of us, and too jealous to follow a good example when it has been set. And the pity is that the people who suffered are not the people who were basically at fault.

The pilot may have been to blame for carrying on in the face of such a gale. Bad Italian seamanship may have been to blame for clumsiness in breaking tow-ropes, and for not taking off the crew before leaving the flying-boat to its fate. But fundamentally the blame belongs to those who compel people to put to sea in boats which are not seaworthy.—C. G. G.

LUFT HANSA PROGRESS.

As is well known, mail-bags can be picked up and also delivered by railway trains travelling at full speed. Special P.O. sorting coaches are also attached to such a train so that all P.O. work can be done while the train is in motion.

Luft Hansa, who, like all sensible people, realise that air transport is the proper mode of conveyance for mail, are now developing a device for picking up and dropping mail-bags from aircraft in flight. This apparatus is similar to other devices already tried out, and consists of a cable carrying the mail-bag to be dropped and a fork which catches the bag and detaches it. At the same time the trailing rope picks up a disc to which is attached the bag to be collected.

The method is an elaboration of that used by our Army Co-operation aeroplanes for picking up messages, but it delivers and collects at the same time.

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"THE CITY OF ROME" DISASTER.

The late editions of the Sunday (Oct. 27) papers reported the loss, on Oct. 26, of the Imperial Airways Short Calcutta G-AADN on the Naples-Genoa section of the airline from India.

The seven persons on board have been drowned. Three bodies had been recovered up to Monday evening.

Those on board *The City of Rome* were:—Pilot, L. S. Birt; engineer, F. T. Pembroke; wireless operator, S. J. Stone. Passengers:—H. Turney, H. K. Robinson, C. Ritchie and Miss Bomford.

The following is a statement made to the Press by an official of Imperial Airways Ltd.

The City of Rome, which is fitted with three engines, bore the registration letters G-AADN. It was the type used on the Mediterranean section of the London-India air mail service. *The City of Rome* was of a similar type to the machine used by Sir Alan Cobham on his 20,000 miles voyage round Africa.

So far as we can make out, the machine, after leaving Naples on the last stage of the flight to Genoa, ran into terrific weather at Leghorn. The wind was terrific and is computed to have exceeded 70 miles an hour. The machine was compelled to come down on to the water about 10 miles south of Spezia. The wireless operator had managed to get an S.O.S. through before this, and the message was answered by the Italian steamer the *Famiglia,* which set out from Genoa and soon found the air liner riding the heavy seas quite well. The Italians managed to get three tow-ropes to the machine, and towed her for an hour.

The seas were so terrific, however, that the three tow-ropes snapped. As the flying-boat was then riding the sea well, the captain went aboard a destroyer which put to sea at 11 p.m. to continue the towing into Spezia. The destroyer was unable, however, to locate the flying-boat, and aircraft, tugs, and destroyers, which left Genoa, Spezia, Viareggio, and Leghorn at dawn, were equally unsuccessful. A change of wind during the night had made conditions at sea worse.

The following account is taken, with full acknowledgment, from *The Times* of Oct. 29. Essential extracts from the dispatch from the Milan Correspondent of that paper read thus:—

The story of the disaster may now be reconstructed as follows:—

The big flying-boat had left the Neapolitan air port of Molo Beverello on Saturday morning with a crew of three and four passengers. The weather was bad and the sea rough, and all the weather bulletins predicted that the journey would be dangerous. Other machines flying on the same route had consequently decided not to make the journey.

Up to Ostia it seems that the flight had been without incident. After a halt at Ostia *The City of Rome* left for Genoa, where it was due at 4.30 p.m. The machine, probably owing to a breakdown of one of the engines, had to alight on the water off the Tuscan coast midway between Bocca d'Arno and Viareggio. S.O.S. signals were sent out at once from the flying-boat, which was floating on the sea lashed by a violent south-westerly gale which threatened to swamp it at any moment.

The wireless stations at Castollaccio, Varignano, near Spezia, and Leghorn immediately broadcast an appeal to steamers in the vicinity giving the position of the seaplane. Several tugs left Leghorn, and from Spezia a destroyer, which was at the time under steam, also went out. One of the tugs and the destroyer were forced by the violence of the sea to return to harbour.

Eventually the crew of the tug *Famiglia,* a vessel with a crew of 15 men commanded by Signor Salvatore Cariglia, succeeded in picking up the lights of the machine. After a great struggle the tug managed to get within 100 yards of *The City of Rome,* but it was impossible, and inadvisable, to approach nearer because the flying-boat might have been flung against the tug and smashed without any hope of rescuing its passengers and crew. The captain clearly saw persons on the flying-boat signalling with their hands.

A cable 250 yards long was then thrown out, and the pilot of the machine succeeded in catching it and fastening it to the nose of the machine. The tug then began to make towards the land at slow speed in order to avoid breaking the cable. The crew of the flying-boat helped by keeping in action her engines, which, apparently, were still efficient.

The towing lasted for a quarter of an hour. Then the cable, unable to stand the strain, snapped. From aboard the tug the crew were able for a few minutes longer to see *The City of Rome* and hear the noise of her engines, but then the small lights disappeared and it was no longer possible to fix the position of the machine.

Three times the tug circled round the spot where the flying-boat was last seen, but nothing was to be found. Nor was the noise of the engines any longer to be heard. As the tug was not provided with wireless, and some of the crew had been injured by shifting deck cargo, the captain decided to put back to Spezia. On arrival there Captain Cariglia went out again on board a destroyer to help further in the quest for *The City of Rome.*

The search was continued yesterday by Italian seaplanes and aeroplanes and a British three-engined machine of Imperial Airways, a twin machine of *The City of Rome,* which left Genoa and cruised over the area. These machines were unable to find any trace of the missing flying-boat.

At the same time the Naval Command of Spezia ordered out the destroyers *Prestinari* and *Nullo,* which closely examined the inlets into which the current would presumably have swept the British machine. In the afternoon at a point 10 miles south-east of the small island of Tino two floating bodies were seen by the crew of the *Prestinari.* The destroyer approached and succeeded in recovering them. They were identified as those of the pilot and the wireless operator.

This morning at dawn the deep-sea tug *Cyclope* and the destroyer *La Masa* left Spezia and continued the search, so far without any result. The British Consul at Spezia, after the formal identification of the bodies, made arrangements for the funeral, which will probably take place on Wednesday.

The following information has been received from a reliable source:—

Twenty minutes before the S.O.S. signal was sent out a wireless message came from the flying-boat that the port engine was failing. Ten minutes later a signal came through that the port engine had stopped, but that the boat was holding its height on two engines.

When the S.O.S. was sent out it was jammed by a ship which was trying out its wireless in Genoa Harbour. The signal was picked up by the Antibes Wireless Station in France and thence was broadcast to the whole of the Mediterranean. By the time a launch could get to the ship in Genoa Harbour to stop the experiments which were jamming the flying-boat's wireless further signals from the boat had ceased.

An inquiry is being held by the Italian authorities at Genoa into the behaviour of the captain and crew of the *Famiglia* for leaving the flying-boat after the towing cable broke.

The local meteorological stations report that the wind at the time of the accident was blowing at a speed of over 100 kilometres per hour (60 m.p.h.). This represents full gale force, but rescues at sea have often been made in such weather.

The captain of the *Famiglia* reported that after he took the flying-boat in tow her middle and starboard engines were running slowly, evidently in the endeavour to help the towing.

The position where the boat must have sunk has been located to within a mile or so, and the depth in that area is about 30 fathoms. The Italian *Regia Aeronautica* (Royal Air Service) have been trying to locate the wreck by aerial photography.

The Victims.

Miss M. Bomford was a daughter of the Rev. Trevor Bomford, who had been a C.M.S. missionary in India for 5[illegible] years. One of her brothers is Lieut.-Colonel Bomford, of the Medical College Hospital, Calcutta. Miss Bomford, who was a trained nurse, had recently visited her parents at Abbottabad, where they are now settled.

Mr. Henry King Robinson, another of the passengers, was a deputy Conservator in the Punjab Forest Department. Mr. Robinson was returning on leave to visit his wife and children.

Mr. H. Turney had been in the Customs House Service at Croydon ever since that establishment began in 1919. He was a capable pilot of Nieuports during the War 1914-18 and though he gave up flying he remained a keen sportsman and an athlete of note. On duty he was strictly official though never officious. Off duty his personal charm won for him a number of firm friends, by whom his death will be deeply mourned.

Mr. S. J. Stone, the wireless operator, and his wife, lived at Genoa. He had been in the service of Imperial Airways since March of this year.

Mr. F. T. Pembroke, the engineer, came from Bournemouth. He, like Mr. Stone, had been with Imperial Airways Ltd. since March of this year.

Mr. Charles Ritchie, whose family live at Lyme Regis, was a member of the staff of Imperial Airways Ltd. He had served as an engineer on the Eastern service and was coming home on expiry of contract.

A note on the flying service of Mr. L. S. Birt, the pilot, appears in the Personal Notices at the end of this paper, as he was an officer of the Reserve of Air Force Officers.

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THE LATEST ATLANTIC FAILURE.

On Oct. 22 an American, Mr. U. F. Diteman, left Harbour ace, Newfoundland, at 12.15 p.m. (local time) (5.15 p.m. M.T.) in an attempt to fly to London.

Since his departure, nothing has been seen or heard of ot or machine. Presumably disaster overtook them.

Mr. Diteman, a Montana cattleman, was about 40 years , and only learned to fly a year ago. He was comndably quiet about his intentions, which he kept secret. His machine was a Barling N.B.-3 low-wing monoplane, h either a 100 h.p. engine of some unknown type, or e a 60 h.p. Le Blond five-cylinder air-cooled radial—which the standard for this machine.

He had only 25 gallons (probably American gallons—this uld be only 20 Imperial gallons) on board at the start.

CROYDON NOTES .

Among other unpleasant things a road hog is one who, rough ignorance or malice breaks the rules of the road ade for his own and other people's safety, and convenice, and who also ignores the common courtesies of the ad.—It may interest a certain class of private owner or ot to know that there are rules of the Cross-Channel Air outes, as well as certain courtesies to be observed, and at it is not difficult to find a name for those who are so reless as to ignore the rules, written and unwritten, of e air routes between England and the Continent.

Recently an aeroplane containing three able-bodied men ft Croydon for Paris in baddish weather and landed somenere in France. Doubtless one of the occupants had to ay by the machine for a time, but it is supposed that all ree were able to obtain food, drink, warmth and good eds as well as petrol to continue the journey. Where petrol , there is usually a telephone, yet no news was heard of em until they fetched up smiling in Paris next morning. hese worthies were hailed as "missing airmen" in the ress and they probably looked upon the whole thing as o end of a lark.

The point is that the average air-line pilot would sooner alk five miles in a blizzard to telephone on such an ccasion, because he knows that the Control-Tower officer s his best friend and never lets him down, and a moment's hought should convince any pilot how serious as well as ow discourteous it is to do a silly "disappearing trick" of his sort.

The consequence of this particular caper was that the Control-Tower officer was kept busy all night trying to race people who were perfectly safe and sound, and the elatives of the worthies in question spent a night of acute nxiety and had to be soothed and reassured by the Traffic fficer.

The answer to it all is that a pilot is not competent to lo more than circle his municipal aerodrome until he has nade himself acquainted with the ordinary rules of the air outes, written and unwritten, and part of the curriculum f every pupil learning to fly should be a course of instruction on behaviour when using the regular air routes.

It is easier for a camel to pass through the eye of a needle han for a plump pilot to attain unto the cockpit of a Hercules. Steps are being taken, however, not to widen he door for the pilots, but to streamline the pilots to fit he door.

Some pilots have settled down to the 18-day-diet and may e seen mournfully husking the day's soya-bean or grapefruit pip, while others have purchased examples of almost extinct full-length corsets of late Victorian days, and are getting their wives to lace them up good and tight at the back. Pilots who creak in future will not be accused of gout or smothered hiccoughs, but will be pitied as victims of the tight-lacing vogue, or possibly even of the 18-day-diet.

Mr. Wilcockson is to take the newly-delivered Hercules, which has an enclosed cockpit by the way, if and when you get in to it, to India one day this week.

Anthony Fokker hit London from the States the other day and 'phoned Amsterdam for the new Fokker F.IX to come and meet him at Croydon and take him back to Holland. Mr. Hondong of the K.L.M. flew the machine over and Major Segrave came to Croydon for a flight in her. He handled the F.IX in the air and expressed himself highly pleased with her performance.

Mr. Fokker himself flew her back to Amsterdam on Friday morning last. He produced several photographs of the Fokker F.23 four-engine monoplane which he has constructed in America for 23 passengers, and he says is a very successful aeroplane.

The F.IX has three 450 Jupiters and gets off the ground with eighteen passengers on two of them. She cruises at 110 m.p.h. or over and has a covered cockpit like a small conservatory.

She will, of course, be fitted with a tail wheel and is already fitted with brakes. The cabin is very wide and looks like giving real passenger comfort, and the average man can stand upright in a bowler hat in the cabin without stunning himself.

Somebody asked Mr. Fokker why only 18 passengers with three Jupiters, and he replied that the plane would probably carry 40 for all he knew or cared or words to that effect. The K.L.M., who will probably have three of these aeroplanes on the London line next Summer, feel that to carry 18 passengers in real comfort and real safety at a real speed is better than to collar the extra few pounds sterling from a couple more passengers.

Two K.L.M. pilots, one outward bound from Amsterdam and one on the homeward journey, met, dipped a wing in greeting and passed on as usual. The meeting took place over the Ganges Delta and the pilots were Smirnoff and Beekman in one machine and Fryns and Soer in the other. [NOTE:—There is no British Air Line to do that yet.—C. G. G.]

On October 26 a wireless warning was sent out about an obstruction in the N.E. corner of Lympne Aerodrome. It is understood that *Geraldine* of *The Daily Mail*, landing at Lympne after dark on the 25th in the N.E. corner did not observe any such obstruction. The mystery has not yet been solved.—SPRY.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 12; Monday, 22; Tuesday, 26; Wednesday, 24; Thursday, 26; Friday, 30; Saturday, 21.

IMPERIAL AIRWAYS LTD.:
London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 50, passengers 560, freight 27¼ tons. India Route: Inward, passengers 0, mail 0 lbs.; outward, passengers 2, mail 782 lbs.

AIR UNION:
Paris—London: Machines 44, passengers 244, freight 2¾ tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 24, passengers 88, freight 6½ tons.

SABINA:
Brussels—London: Machines 12, passengers 31, freight 1¾ tons.

DEUTSCHE LUFT HANSA A.G.:
Amsterdam—London: Machines 26, passengers 66, freight 7¼ tons.

MISCELLANEOUS:
British machines 5, passengers 5.
Foreign machines 0, passengers 0.
Total number of trips by British machines, 55, carrying 565 passengers. Foreign machines, 106, carrying 429 passengers.

COMPARATIVE FIGURES.

Week ending Oct. 26:
Machines, 161; Passengers, 994; Crews, 410; Total personnel, 1,404.
Corresponding week, 1928:
Machines, 120; Passengers, 525; Crews, 232; Total personnel, 757.
Corresponding week, 1927:
Machines, 90; Passengers, 430; Crews, 161; Total personnel, 591.
Corresponding week, 1926:
Machines, 68; Passengers, 175; Crews, 85; Total personnel, 260.
Corresponding week, 1925:
Machines, 83; Passengers, 213; Crews, 95; Total personnel, 308.
Corresponding week, 1924:
Machines, 82; Passengers, 346; Crews, 102; Total personnel, 448.
Corresponding week, 1923:
Machines, 64; Passengers, 142; Crews, 95; Total personnel, 237.
Corresponding week, 1922:
Machines, 52; Passengers, 210; Crews, 78; Total personnel, 288.
Corresponding week, 1921:
Machines, 43; Passengers, 112; Crews, 59; Total personnel, 171.
Corresponding week, 1920:
Machines, 64; Passengers, 128; Crews, 85; Total personnel, 213.

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Satisfactions.

Land, Air and Water Services Ltd.—Satisfaction in full on Oct. 17, of debentures dated Sept. 30, 1929, securing £600.

PERSONAL NOTICES.

Deaths.

BIRT.—On Oct. 26, in the Gulf of Genoa, as the result of an accident to the Imperial Airways flying-boat *City of Rome*, Lascelles Spence Birt, Reserve of Air Force Officers.

Mr. L. S. Birt was born in 1902 and entered the R.A.F. with a short-service commission in July, 1924. After a course of flying training at No. 2, F.T.S., Digby, he was posted to No. 1 (Fighter) Squadron, then at Hinaidi, 'Iraq. He was promoted to Flying Officer in February, 1926, and in November, 1926, he was posted to No. 84 (Bomber) Squadron, Shaibah, Basrah.

He was restored to the Home Establishment in July, 1927, and posted to the staff of No. 2, F.T.S., Digby. In March, 1928, he was posted to the Flying Boat Development Flight, Felixstowe. He passed to the Reserve in January, 1929.

Mr. Birt flew a Blackburn Bluebird in the King's Cup Race of 1928, but had a forced landing and failed to finish the course.

WALMSLEY.—At Hinaidi, 'Iraq, on Oct. 24, as the result of a flying accident, Cpl. William Walmsley, No. 55 (B) Sqdn., R.A.F.

Marriages.

DESMOND—FRASER.—The marriage took place at Cowes, Isle of Wight, on Oct. 10, of Flt. Lt. Thomas Joseph Desmond, R.A.F., Manston, Kent, and Miss Elsie Fraser, only daughter of the late Colonel Fraser and Mrs. Fraser, of The White Cottage, East Cowes.

McINTOSH—ANSELL.—On Oct. 26, at the Savoy Chapel, R. H. McIntosh (Flg. Off., R.A.F.O.), of Imperial Airways, to Betty, daughter of Mr. W. R. Ansell.

Births.

CAHILL.—On Oct. 12, at Felixstowe, to Flt. Lt. and Mrs. C. H. Cahill—a daughter.

STARKEY.—On Oct. 23, at 2, Spring Grove Gardens, Richmond, to Sqdn. Ldr. and Mrs. H. S. Crichton Starkey—a son.

WEARE.—On Oct. 23, at Ferndale Lodge, Tunbridge Wells, to Nell (*née* Cherry-Downes), wife of Flt. Lt. F. G. C. Weare, M.C.—a son.

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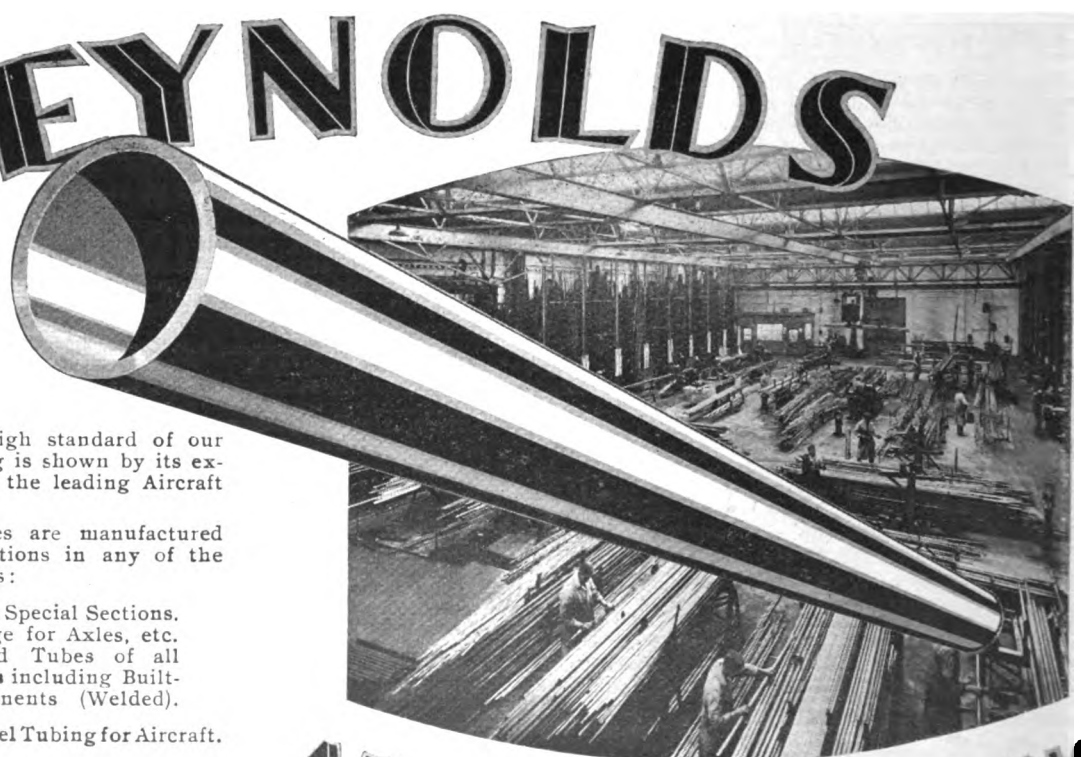

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ON MOTORLESS FLYING.

For some curious reason there seems to be a sudden growth of interest in motorless flying, or, as it is commonly called, gliding, in this country. Gliding is a game which has much to recommend it purely as a sport, and probably there is still more value in it as a means of scientific research.

After the Gliding Competition at Itford Hill in 1922, out of which sprang the light aeroplane movement, which has resulted in the production of many hundreds of excellent aircraft which are nothing in the least like light aeroplanes as people originally thought of them, all interest in gliding ceased for several years. But in the last six months quite a remarkable amount of correspondence on the subject has reached this office.

People have written asking where they can buy gliders or where they can buy designs from which they can build their own gliders, or where they can get information on the subject of gliding. And the other day a letter came in from a sportsman at Wolverhampton, who describes himself as late R.F.C. and R.A.F., saying that he wants to get in touch with an organisation, club, or journal whose primary object is the encouragement of motorless flight in heavier-than-air machines. He adds that at the same time he would be glad to know whether there are any firms in this country who manufacture gliders or who have had experience of their manufacture in the past. And the best one could do was to give him addresses in Germany.

Obviously, therefore, the time has come for something to be done about this business in this country. So a few points of interest on the subject are offered herewith to readers.

Gliding for Sport.

In the first place, gliding must be clearly divided into two categories. The first is gliding for sport. The second is gliding for purposes of scientific research. And the two can be combined, just as sport and research can be combined in a great many lines.

Even the most innocent forms of research can entail quite dangerous sports. For example, the serious entomologist who goes bug-hunting in the jungle stands quite a sporting chance of being eaten by a lion or tiger, swallowed by a python or a boa-constrictor, or trodden upon by an elephant. And, after all, he is often merely a butterfly-hunter.

Similarly, the scientific meteorologist or geologist who climbs high mountains in search of knowledge takes on the same risks as those people who go in for futile mountain climbing as a sport, or break themselves winter-sporting. And in just the same way all the sport and risk of gliding for fun can be had by the serious student of aerodynamics.

Gliding for sport is probably just as exhilarating and just as good fun and just as futile in the end as is any other kind of sport. But, like all other sports, even though it is futile, it has excellent moral and physical effects. It gives its followers plenty of fresh air and exercise. And it breeds in them a healthy spirit of competition and sportsmanship.

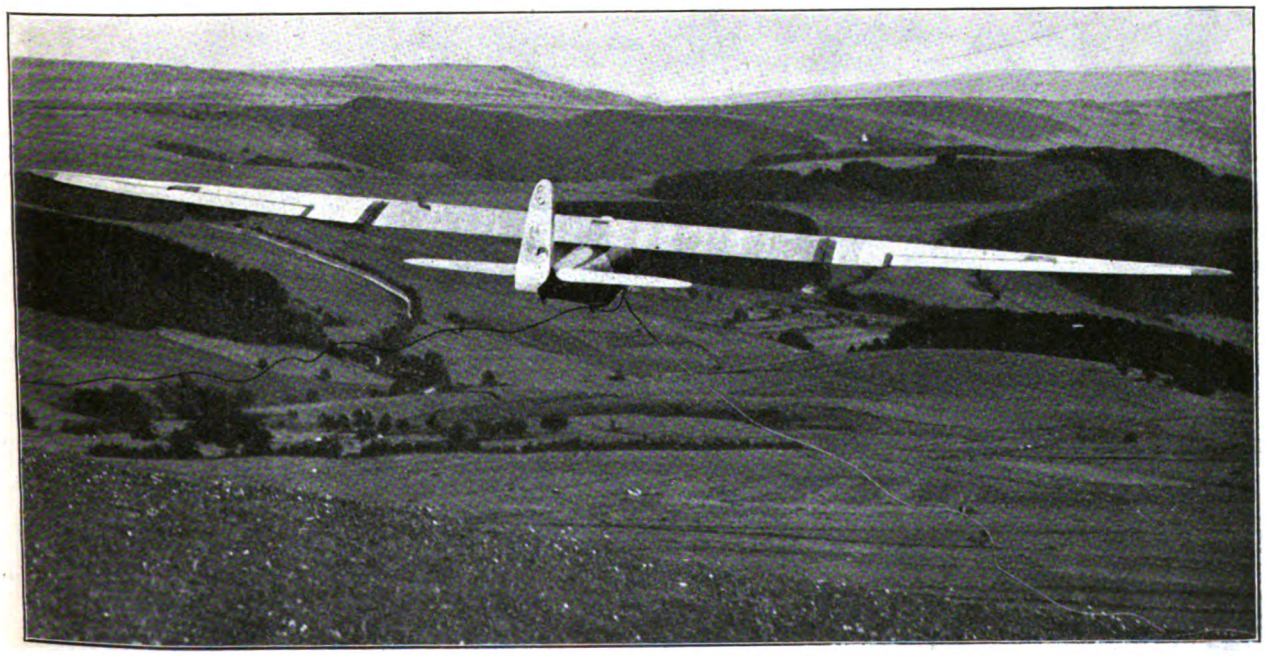
In its most futile form gliding is like toboganning, or lugeing, or bobbing. The game is best summed up in the words of the Chinese laundry-man in Canada who saw toboganning for the first time and described it as "Goee-like-Hell, walkee-back three-mile." But, even so, the slide downhill is exhilarating, and towing or carrying the glider back is magnificent exercise.

Of course, nobody who glides for sport will mechanise the game as did Mr. Anthony Fokker at Itford, when he arrived with a large American car rigged up with a kind of cradle on top cleverly designed to fit his glider. When he had done his glide and had alighted at the bottom of the hill, three miles or so away, his crew simply used to drive the car down the road to the nearest possible point to his landing, where they clipped the glider onto its cradle and drove back again.

Your true gliding sportsman will always man-handle his glider back to its starting-point, subject to two alternatives: (A) that a first-class gliding pilot, given enough wind, may stop in the air until everybody is bored stiff with him, and may then alight on the point from which

"THIS QUIET SAIL IS AS A NOISELESS WING TO WAFT ME FROM DISTRACTION."

(Byron—*Childe Harold's Pilgrimage.*)



A GENERAL VIEW FROM THE WASSERKUPPE.—The machine, which is the "Schloss Mainberg," piloted by Edgar Dittmar, has just been launched and has not yet shed its cable.

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A GOOD START.—Robert Kronfeld getting away on his record-breaking flight. The machine is here seen just as it has dropped its launching cable, and the two parties of the launching crew can be seen checking their down-hill run.

he started; or, (B), he may glide along his pet range of hills and come down miles and miles away, so that the glider has to be taken to pieces and brought back by road with the help of a friendly automobile. Either way, the game is very good fun.

As the accompanying photographs show, gliding is one of the national sports of Germany. There is a permanent camp of gliding enthusiasts in the Rhoen Mountains at a place called Rositten. In the Summer it is full of sportsmen and sportswomen, young and old, who spend their holidays there. In the Winter, the more enthusiastic still live there and glide in the Winter winds, thus gaining definite scientific information about the effects of temperature and wind-speeds on one another.

SCIENTIFIC RESEARCH.

The scientific side of gliding is another matter altogether, though it works in with the sporting side. There is certain knowledge to be got from gliding experiments about wing-forms and fuselage-forms, and combinations of the two, which one believes cannot be got in any other way.

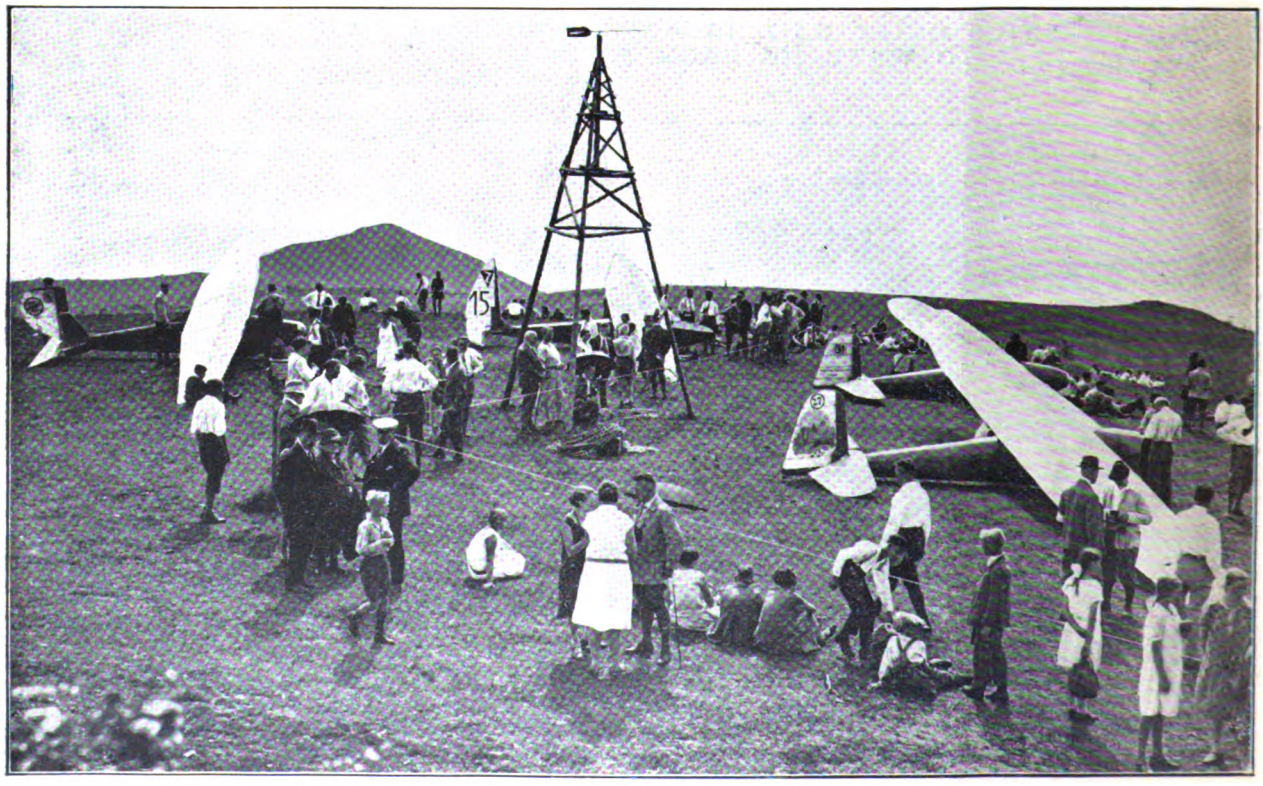
In all countries aircraft designers depend for such information on wind-tunnel experiments. They make models of aircraft, large and small, they put them in a tunnel, mounted on delicate measuring apparatus, and they either blow or suck a draught through the tunnel, and measure the effect of that draught on their models. Sometimes the results are highly informative. Sometimes they are highly misleading.

Like all scientific researchers, wind-tunnel experts are liable to be misled because they are so busy looking for one particular result that they forget how surrounding conditions may affect that result. And, if they remember, they have no accurate way of correcting their results.

The air in wind-tunnels becomes turbulent because some of it sticks to the sides of the tunnel and the rest rolls and curls over it—air being rather stickier than treacle. Also, the supports by which models are attached to the measuring instruments interfere with the true reading of those instruments.

Competent experimenters do make allowance for these interferences, but in the end the knowledge gained is never quite the same thing as that which can be got from full-scale experiments in the open air. The air-waves caused by the turbulence inside the tunnel are never on the same scale in proportion to the size of the models as are the waves caused by the internal working of free air, any more than the effect of the waves in an experimental tank, as used by designers of ships, are in proportion to the waves in the open sea.

When an aeroplane is built from wind-tunnel results, and the engine is put therein, it may be a good aeroplane or



A GENERAL VIEW.—The starting place on top of the Wasserkuppe.

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1921 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 163 4 m.p.h.

1922 A Napier-engined Supermarine flying-boat regained the Schneider Trophy for Great Britain at a speed of 149 m.p.h.

1922 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 180 m.p.h.

1923 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 192.4 m.p.h.

1926 The first non-stop crossing of South Atlantic Ocean carried out by Commandante Franco flying a Dornier flying-boat with two Napier engines.

1927 Schneider Trophy won by a Napier-engined Supermarine-Napier seaplane flown by Flight-Lieut. S. N. Webster, A.F.C. Speed 281.669 m.p.h.

1928 Capt. H. S. Broad, flying D.H. Hound, fitted with Napier engine, secured three World's speed records whilst carrying loads of 500 and 1,000 kilogrammes.

1928 The greatest formation flight ever carried out was made with four Supermarine-Napier Southampton flying-boats, each fitted with two Napier engines. The machines flew from England to Australia, round Australia and back to Singapore, covering 180,800 engine miles without mechanical trouble.

1929 The first non-stop flight from England to India was carried out with a Fairey monoplane fitted with Napier engine. 4,130 miles in 50 hrs. 38 mins.

Land—1929 The highest speed ever attained on land was made by Major Sir Henry Segrave when he drove his Irving-Napier car over one mile at the amazing speed of 231.36 m.p.h.
Capt. Malcolm Campbell set up world's land speed records at Verneuk Pan with his Napier Arrol-Aster as follows :—over 5 miles, speed 211 m.p.h.; over 5 kilometres, speed 216.53 m.p.h. They both used Napier engines

Water—1929 The world's motor-boat speed championship was won at Miami by Major Sir Henry Segrave, driving Sir Charles Wakefield's Napier-engined "Miss England."
Sir Henry Segrave at the Lido with the same boat made six runs over the measured mile, averaging a speed of 92.8 m.p.h.
At this meeting, competing against the best from Italy and America, Sir Henry Segrave won all trophies, including the Duke of Piedmont's cup and Count Volpi's cup.

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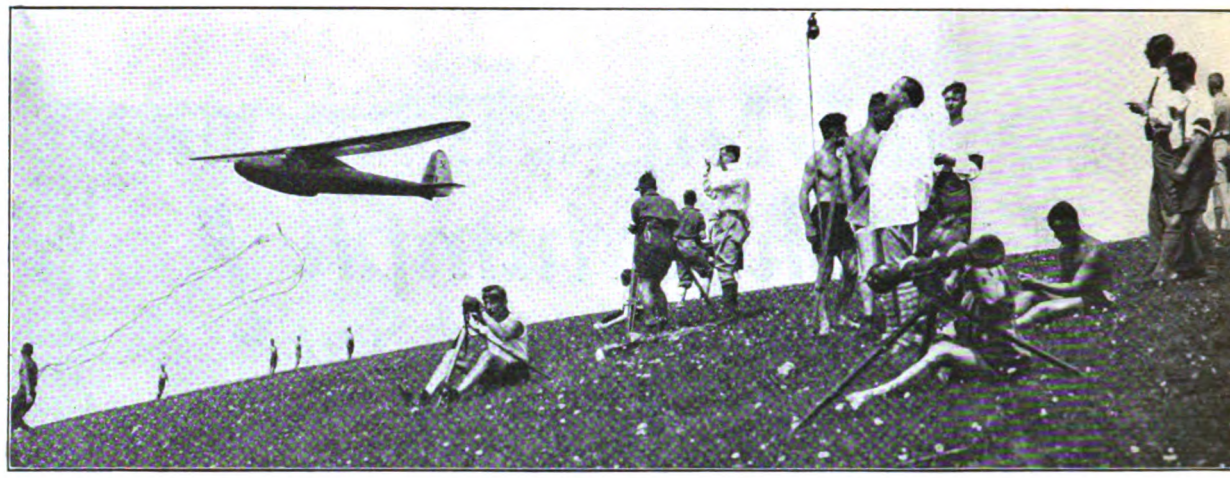


LAUNCHED.—The famous glider pilot Wolf Hirth. The launching cable is just dropping off the machine. In the foreground may be seen observers with range-finders watching the competitors.

it may be a bad aeroplane, but little can be learned from it about the thing which aeroplane designers most want to know,—that is the actual efficiency of their aeroplane. The engine and the air-screw interfere with just exactly the air currents that they most want to study, which are those round the body and nose of the machine, and round the junctions of the wings and the body.

Also, thanks largely to the effect of the War 1914-18, we have engines of such power that our ideas of real economy in power have become altogether distorted. Quite obviously even our very best aeroplanes use far too much power in pushing or dragging themselves through the air.

The Modern Aeroplane.

Considered as a glider, the best aeroplane in the World to-day is a contemptible apparatus. People go and stick windmills for dynamos, and bomb-racks, and guns, and things all over it, and even strap spare wheels, and spare air-screws, and suit-cases, outside it, without doing much harm to its performance, because the whole thing is so bad, when considered beside the ideal streamlined shape for that speed and power, that a few obstructions more or less do not matter.

Conversely, considered as a high-speed vehicle, a bird is a contemptible apparatus.

Few aeroplanes have a better gliding angle than 1 in 10, and only a few are as good as that. On the other hand, few birds have a speed of more than 30 miles an hour, and most of them are considerably slower. But somewhere between the two there ought to be a flying machine which is both a really good glider and a high-speed vehicle. And systematic gliding experiments may help very considerably in discovering such a machine.

Many a time pilots have described aeroplanes which they disliked as having the gliding angle of a brick. A correspondent in Canada described an American machine the other day as "landing like a gliding paving-stone." Compared with a bird, those descriptions might well describe the gliding angle of even the best aeroplane, for not much power is needed to heave a brick along a path of 1 in 10.

Just what the gliding angle of a really good bird is nobody knows, because there is never an opportunity of seeing a bird glide at its best angle in absolutely calm air. And if there is any wind blowing at all, a bird uses instinctively every curl in the air for his support.

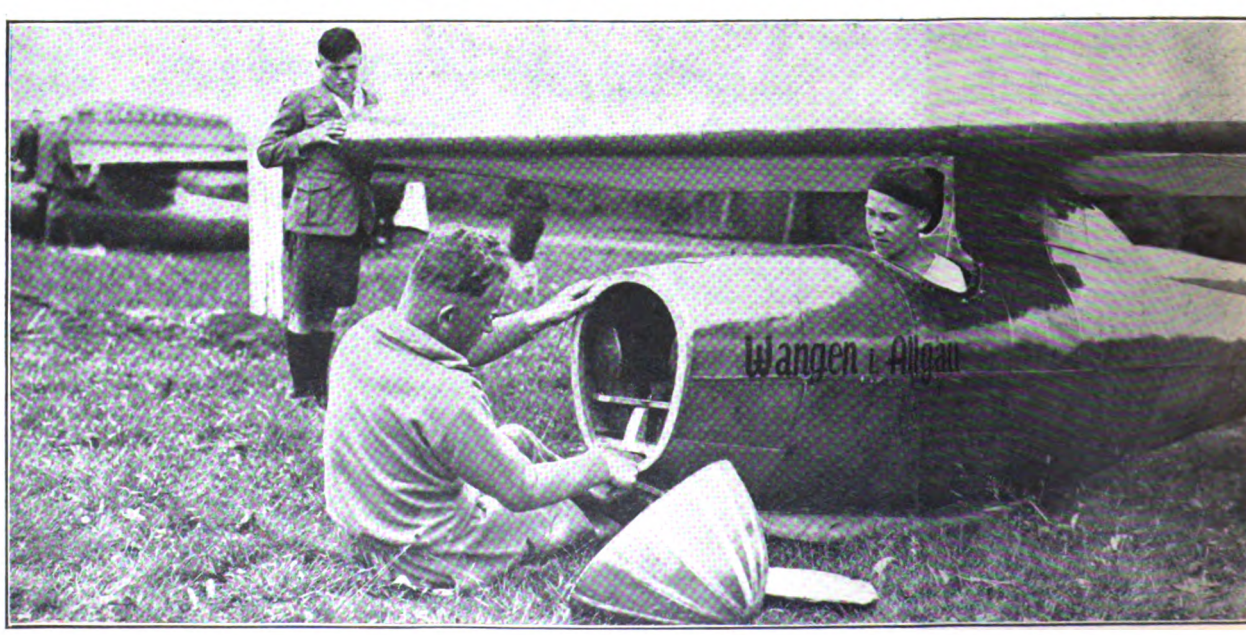
The small birds which flap their wings vigorously cannot be considered as gliding birds, but the real gliding birds, of which the gull is probably the worst and the albatross is probably the best, certainly have a wonderfully good gliding angle.

False Reasoning.

Many of the early students of bird flight, among them Dr. Hankin who studied the gliding of birds for many years in India, got into their heads the idea that birds possess some strange power unknown to us of keeping themselves up in the air without an upcurrent. But when one read a good deal on this subject in the early days of flying, about twenty years ago, one came definitely to the conclusion that all the examples quoted by Dr. Hankin, and his supporters, of birds ascending without flapping their wings in a flat calm and so forth, were merely due to misunderstanding the conditions. In every case there was a perfectly good reason why there should be an upcurrent.

One of the most careful and intelligent students of bird-flight was the late Dr. Chanute, a very great railway engineer, who made the study of flying his hobby. He was the man who really taught the Wright Brothers to fly, and actually paid for a good deal of their early work.

In one of his observations he noticed a turkey-buzzard ascending steadily in spirals, on a flat calm day, without flapping his wings at all. Then he noticed a feather fall off the bird and come down slowly, although the bird was steadily rising. Apparently he took this at first as being evidence of the absence of an upcurrent, arguing that if



ONE WAY OF DOING IT.—Adjusting the rudder-bar of a glider through the detachable nose.

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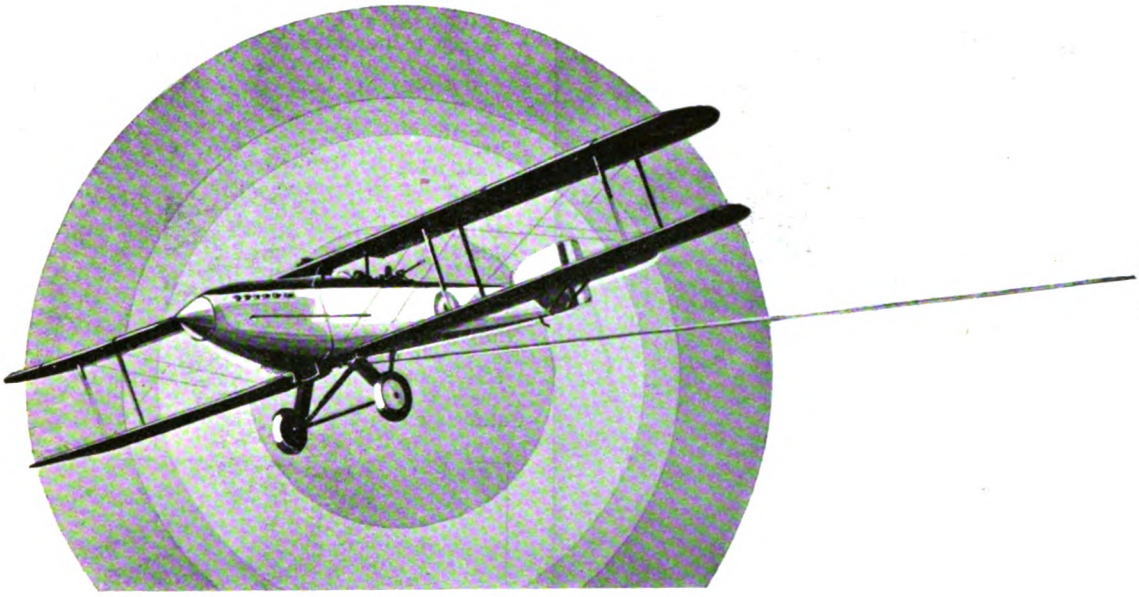

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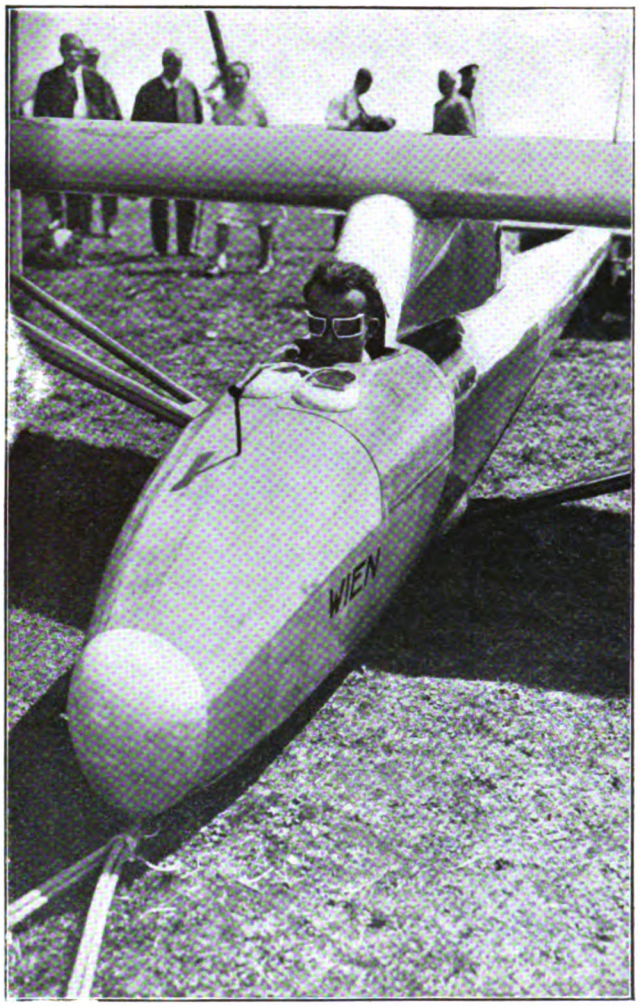

READY TO START.—Robert Kronfeld just before getting off on his record-breaking flight on July 20, in which he reached a height of 2,000 metres and covered over 150 kilometres. The attachment of the launching-cables should be noted.

there had been any upcurrent at all, the feather, being so light, would not have descended.

One of the earliest students of flying in America, Mr. Victor Lougheed, read this incident in Dr. Chanute's writings at the time, and, being a practical engineer, tried out an experiment of his own. He happened to be stopping in a hotel at the time, so he extracted a feather from one of the hotel pillows, dropped it out of the window, and timed it with a stop-watch till it alighted in the street. The air was flat calm at the time, and, calculating from the height of his window and the time of the descent, he figured out that the feather fell at the rate of 10 feet a second.

Now, if that turkey-buzzard had a gliding angle which made the vertical component of his descent—or, as it is now generally called in America his "sinking speed"—say 5 feet a second, and if there happened to be an up-current at that point of 8 feet a second, then obviously the bird would go up 3 feet and the feather would fall 2 feet a second. And the perfect aeroplane ought to be something like that.

PROGRESS.

The elementary gliders which we had at the Itford Competition in 1922 were able to keep up for hours on the upcurrents caused by a fairly strong out-of-season North wind blowing against the steep cup-faced slopes on the North side of the hill, which collected the wind and made a regular chimney of it.

They knew nothing of the advantages to be got from a big span and small chord (which we used to call "high aspect-ratio" and valued highly in the early days), nor what can be done with flexible trailing edges to the wings, which we used to have in early aeroplanes. Our overpowered extravagant war-machines have given our designers wrong ideas about a lot of things, and on none more than what is a reasonable price for aeroplanes and engines.

Since then the German gliding enthusiasts have produced gliders which will soar easily on the upcurrents caused by much lighter winds blowing against quite moderate slopes. So evidently a great deal of progress has been made by the German gliders.

On the other hand, nothing has been done in this country. So all our present aircraft designers are short of the scientific knowledge which might have been gained if we had gone on with our gliding experiments here.

Among the South Downs we have ideal gliding ground because slopes can be found over which soaring experiments can be made when there is a wind blowing, and down which useful experiments in discovering actual gliding angles can be made in a flat calm. If gliding experiments were made with a thorough understanding, so far as our present knowledge goes, of what we are trying to discover in the way of improving the efficiency of our aircraft, then they could be turned to good account.

THINGS TO BE LEARNED.

Mr. Victor Lougheed, to whom one has already referred, has some very interesting theories on the possibilities of gliding angles. His opinions are worth considering because he has been at the game a long time and is a practical engineer rather than a scientist. As a matter of fact, in 1909 he wrote a book called "Vehicles of the Air," which was not only the best thing that had been written on aircraft up to that time, but is to-day quite the most valuable work of reference on the doings of that epoch-making year.

Also, as a matter of general interest, one may add that he happens to be the elder brother of Mr. Lockheed of the Lockheed Hydraulic Brakes and of the other Mr. Lockheed who designed the Lockheed Vega, which one still holds is the most efficient aeroplane in the World. They spell their name differently simply so that people may know how to pronounce them and not call them Luffheed or Lowheed. And the brothers are a remarkably clever family of successful engineers, so Victor Lougheed's ideas are worth considering.

Mr. Lougheed started an argument on the subject of gliding-angles a few days ago by saying that the modern Pullman train, with roller-bearing axles, has a gliding angle

THE RECORD BREAKER.—Robert Kronfeld, who on July 20 reached a height of 2,000 metres (6,250 ft.) and covered 150 kilometres in his glider.

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of 1 in 200. That is to say, if you put it on a slope of 1 in 200 and take off the brakes it will overcome its starting inertia and gather speed. In other words, if you started it on a mountain 5,280 feet high it would glide for 200 miles. As a matter of fact, it would really glide a good deal further, because when once it gathered way its inertia would probably keep it going at even a finer angle, or, at any rate, its inertia would carry it over a long flat stretch before starting on another downward slope.

Of course, a train does not have to support itself on its wings, and when you are talking about a gliding aircraft you have to allow for the fact that the wings of the machine have to carry the weight while the force of gravity pulling it down overcomes the head resistance. But Mr. Lougheed believes firmly that a really good gliding bird, say, like a turkey-buzzard or a hawk, probably has a gliding-angle as good as 1 in 250, and that the first-class gliders such as the albatross or the Andean condor may have gliding-angles as good as 1 in 500.

When you come to think of it, supposing that the condor really has a gliding-angle of 1 in 500, if he started off a mountain 10,000 feet high, and did not meet with any interference in the way of change of wind or down-currents, he could glide for 500 miles without flapping. So that is something up against our best aeroplanes, which from the same height would cover less than 20 miles with their engines stopped.

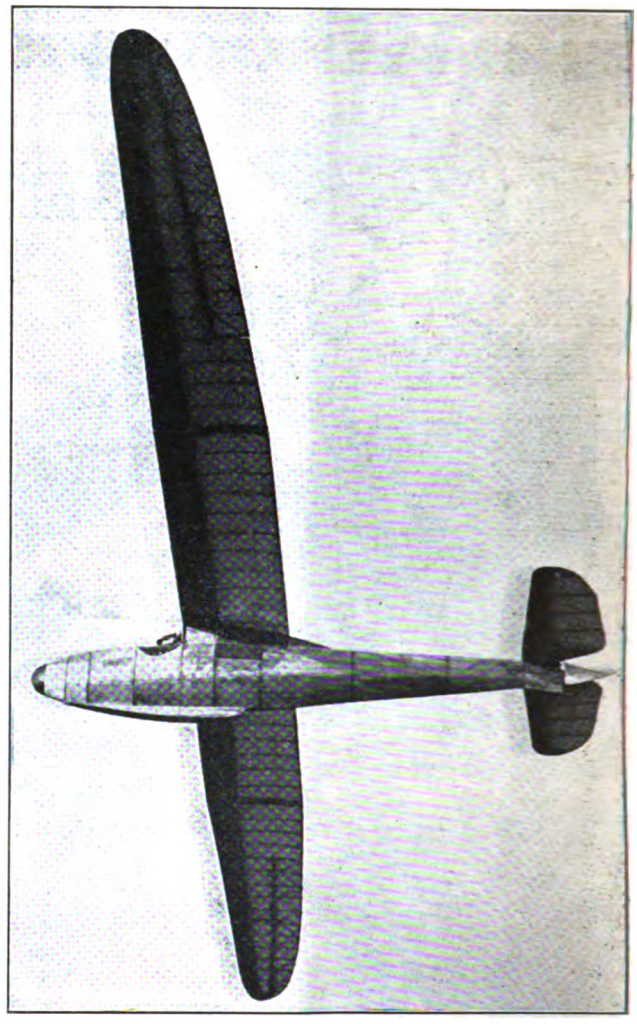
Towed Gliding.

Hitherto, in this essay on gliding one has considered it only as a sport or an art or a science which can only be performed or studied or operated with the help of a range of hills. But our friends in Germany have shown us that serious gliding experiments, especially in the study of gliding-angles and so forth, can be made with the help of an ordinary aeroplane.

Those of us who were at the Rotterdam Meeting saw Herr Espenlaub who was one of the earliest, and is certainly one of the most expert, of German gliders, towed in a glider to a height of several hundreds of feet, where he dropped his tow-rope and proceeded to glide down into the aerodrome.

The machine which towed him up was a miserable little thing with a tiny little two-cylinder engine which at first sight seemed unlikely to be able to lift itself. But so light is Herr Espenlaub's glider that even this little machine got off without much trouble, and climbed faster towing the glider than one would ever have expected it to climb alone. The same glider towed behind a fairly fast aeroplane would probably have had to be held down with the elevator to keep it from out-climbing the machine which was towing it.

This little demonstration showed clearly that for really scientific experiments, especially for experiments in a flat calm, which would be the most valuable of all, perfectly good glides can be made with a towed glider. And the attachment to which the tow-rope is made fast can itself work through a spring-balance which will give an exact measure of the draw-bar pull needed to tow the glider, and so something very like an exact measure of the head resistance of that particular type of aircraft at different speeds can be got.



A RECENT GERMAN GLIDER.—The "Lore" of the Wurtembergischen Luftfahrtverbandes piloted by Herr Wolf Hirth.

A FAMOUS GLIDING PILOT.—Edgar Dittmar by the tail of the "Schloss Mainberg."

The whole subject is full of interest, and, as has been said, it has been badly neglected in this country. In Germany, gliding is a national sport. In France, some quite interesting gliding experiments have been made during the past year or so. In America and in Australia a number of sportsmen are beginning to take a revived interest in what is, after all, the most elementary form of flying. And even in Soviet Russia a certain amount of gliding has been done.

Therefore one suggests that the time has now come when something ought to be done about it in this country. Consequently, if any readers of this paper want to be put in touch with other readers who have ideas on the subject, they are invited to write to the office of The Aeroplane, 175, Piccadilly, London, W.1, and mark their envelopes "Gliding."

Personally, one feels that this is a movement which is likely to grow very considerably, and so one does not undertake to do anything more than put these enthusiasts in touch with one another. After that, if they want to form a gliding association or anything of that kind, we shall be very pleased to publish notices about their doings in The Aeroplane.—C. G. G.

"AGE CANNOT WITHER . . ."

The late *Direction Générale de l'Aeronautique* (which has now been superseded by the *Ministère de l'Air*), before its passing, decreed that on and after Oct. 1, 1929, all aircraft built more than ten years ago should be regarded as obsolete and ineligible for a renewal of the French equivalent of an Airworthiness Certificate.

The *Ministère de l'Air* has not yet countermanded this decree, and the result is that a wholesale objection is now being raised. It is argued that if the *Bureau Véritas* is willing to certify and insure old aircraft as fit for flying, the Government, which has sold these old aircraft to unsubsidised companies, schools, flying associations, etc., has no right to deprive these bodies of their means of livelihood purely on a matter of age.

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THE AERODROME CONFERENCE

The Conference convened by Sir Alan Cobham and Sir arles Wakefield was held in the Lecture Theatre of the stitution of Electrical Engineers on Nov. 5. Col. the aster of Sempill was in the Chair as Chairman of the yal Aeronautical Society.

With that personal modesty which is so typical of Sir arles Wakefield, the invitations to the Conference were tually sent out in the conjoined names of the Royal Aero-utical Society, the Royal Aero Club and the Air League of e British Empire, despite the fact that no one of those dies, nor the whole three combined, would ever have had ther the initiative or the intelligence or the driving power have imagined or to have organised or to have got to-ther such a gathering of the Municipal Authorities of reat Britain.

The whole idea from the beginning was the product of e brain of Sir Alan Cobham. It was probably healthily riticised by the sound common sense of Lady Cobham. It as submitted to and approved by Sir Charles Wakefield hose commercial genius saw the possibilities for success f the scheme as a whole and whose immense patriotism nd generosity prompted him, as he has done so often be-ore, to pay for the whole thing out of his own pocket. One loubts whether either of the august bodies whose names igured so large on the invitation cards paid for so much s a postage-stamp.

As has been said before Sir Charles paid for the tour on the piece-work principle, and if ever there was a man who could get value out of a piece-work job it is Sir Alan Cobham who, apart from having almost inhuman powers of physical endurance, has equally phenomenal powers of organisation and eloquence. If Sir Alan Cobham had not been appointed the Apostle of Aviation he might have been one of the World's finest Army staff officers.

So far as the London Press are concerned the papers have treated this historical event shabbily,—all except *The Times* which gave it three-quarters of a column. *The Daily Mail* apparently had nothing to say about the Conference, but devoted roughly £25 worth of space to the fact that at the subsequent Banquet the one woman present was called by several different names and smoked a cigarette.

However that matters very little. The London papers cater for the London mob. The essential guts of this country, thank God, are in the Provinces, and the Municipal Authorities of a hundred cities going home and getting to work on Municipal Air-parks and stirring up municipal rivalry with competing cities and towns, will do far more for the advancement of British Aviation than all the vapouring of Fleet Street could do.

Sir Alan Cobham has again done a great service to British Aviation, and the result of his campaign for British Aerodromes should be a great encouragement to him when he starts early in December, in *The Youth of Britain,* for Africa where, with Captain Gladstone and Mr. Tymms,—who have already gone ahead,—he is to start to work on organising the Imperial Airways route from Cairo to the Cape.—C. G. G.

THE NECESSITY FOR MUNICIPAL AIR PORTS.

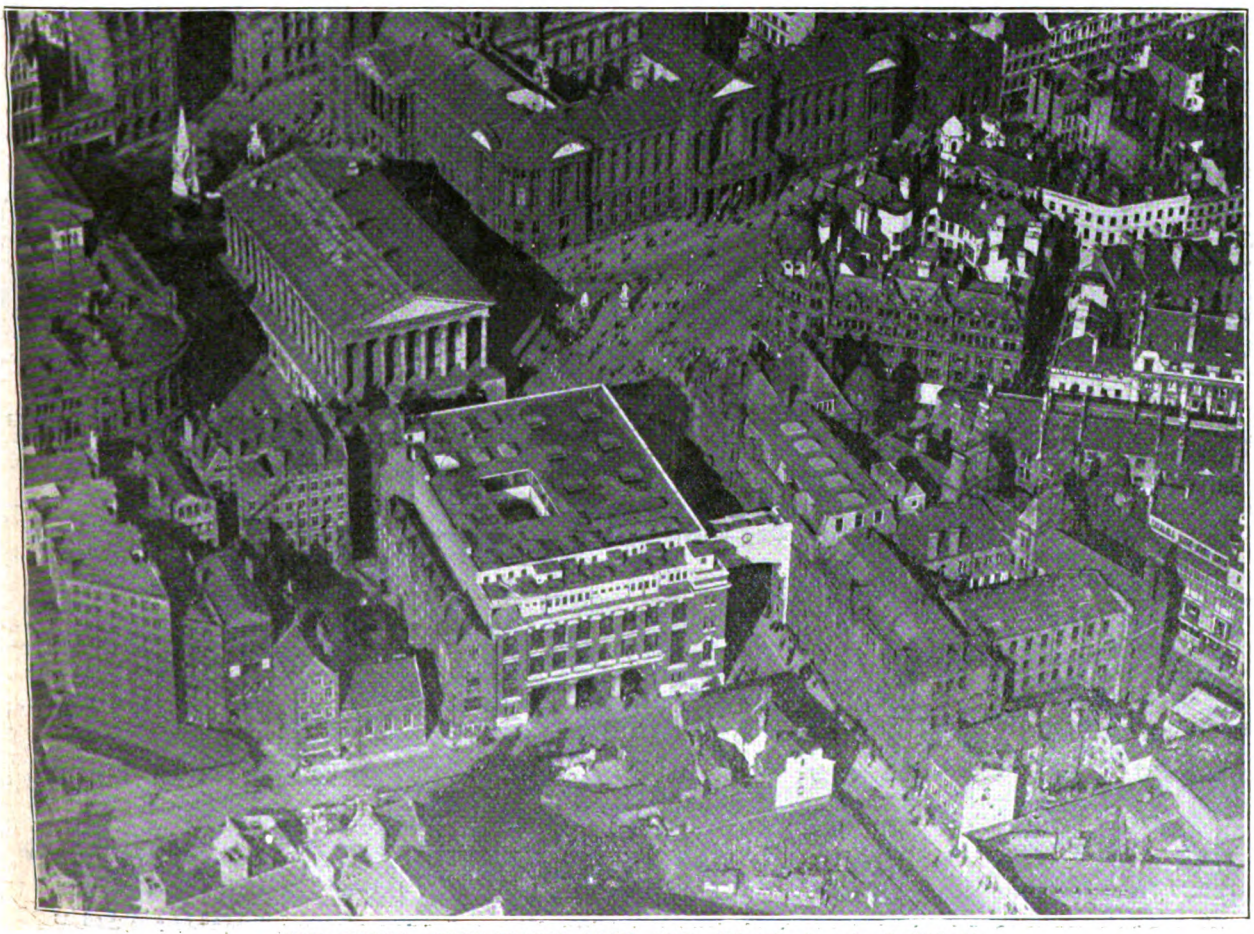
[*Reported by the Staff of* THE AEROPLANE.]

When Col. Sempill opened the proceedings the hall was quite full so there must have been several hundreds of delegates to the Conference. One's only regret was that the various municipal groups were not banded together in their respective entities and furnished with banners and flags, but this one supposes is too frivolous an idea for such an occasion.

One could hear numerous people pointing out Sir Alan Cobham and his aide Capt. Ward as the people who had been instrumental in making the visitors air-minded. In many cases these visitors had been given their first flight by Sir Alan Cobham.

Col. The Master of Sempill opened the conference by introducing His Worship the Mayor of Westminster, Major V. B. Roberts, D.S.O., M.C., who had managed to find time to attend the conference in spite of his many pressing engagements.

THE MAYOR OF WESTMINSTER said that he felt it was a high honour to be asked to open a conference such as this



SEE YOUR CITY FROM THE AIR.—Birmingham's Guildhall.

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which was an unique occasion in the history of this country. The City of Westminster welcomed these civic brethren from all over the country to this meeting which marked the arrival of the Air Age. Britain had had the privilege of leading in the development of most forms of transport. We had held the lead upon the Seas and we hold the same position in the Air. The Conquest of the Air was only 25 years old. Other nations were keenly alive to the importance of aviation and he felt that the development of municipal aerodromes was a very important link in the development of Civil Aviation in this country. There was no room for an air port in his municipality of Westminster. There was the possibility of utilising the Thames for seaplanes or when Charing Cross Station was moved south of the River, the roof of the new station might be developed as a landing space. An aerodrome had the possibility of becoming a Euston, or a Southampton, among air ports.

He then read a letter from Sir Kynaston Studd, the Lord Mayor of London, who was unable to be present. Sir Kynaston Studd, after regretting that he could not attend the conference, expressed his conviction that every town and city must have its air port and this question of landing-grounds must be threshed out. The Mayor of Westminster concluded by congratulating the three responsible societies on their enterprise.

The Chairman then called upon the Under-Secretary of State for Air, Mr. F. Montague, to speak.

Mr. Montague, speaking on behalf of the Secretary for Air, Lord Thomson, said that the latter was extremely gratified to learn of the very representative gathering at the conference. The need for air ports had been emphasised by the recent tour of Great Britain by Sir Alan Cobham in his Giant Moth which had been made possible by the generosity of Sir Charles Wakefield, who had been referred to as the Patron Saint of Aviation in Britain. The Directorate of Civil Aviation had looked forward to the acquisition of aerodromes by local authorities and had provided in Section 8 of the Air Navigation Act for the local authorities to confer with the Ministry of Health and the Air Ministry over any town-planning scheme so that provision might be made for an aerodrome site. He referred to the circular letter sent out by the Air Ministry to the municipal authorities stressing the need for more aerodromes. He mentioned that the subsidy paid to N.F.S. was dependent upon that organisation creating 20 new aerodromes and 100 landing-grounds in the course of the next three years. Four municipal aerodromes had already been licensed, namely those of Blackpool, Hull, Nottingham and Wythenshawe (Manchester) and ground for aerodromes had actually been purchased by Bristol, Carlisle, Plymouth, Manchester, and Stoke-on-Trent. Altogether 100 local authorities were actively engaged in the acquisition of aerodromes. He regretted that Sir Sefton Brancker, the Director of Civil Aviation, was detained by his duties in either Rome or Athens, as this was an occasion which the Director would have made a point of attending.

Col. The Master of Sempill said he would give the outline of the remarks on the development of civil aviation which Sir Sefton Brancker had intended to give, though he knew that he could not successfully imitate Sir Sefton's candour of oratory. Incidentally, before Col. Sempill began to read these remarks he said that if anybody was interested in statistics the Air League would be delighted to supply these and further, with municipal assistance, would supply lecturers.

Harking back to his subject, he said that the total mileage flown by civilian air lines during this year would total about 55,000,000 miles. Various slides were put on the screen, but these were changed so rapidly that there was little chance to gain their import, except the maps, which helped one to realise that France has organised her civil aviation almost entirely outside herself and that Germany has devoted herself to the development of air lines within her own borders, with one or two notable exceptions, such as the route across Russia and Siberia and the Junkers organisation in Persia.

He referred to the conditions obtaining after the War 1914-18, when the manufacturers of German aircraft were forced to open factories abroad. Three slides of the Dornier Do.*x* were shown as being the finest example of civil aircraft in the World. Some facts and figures of civil aviation in the U.S.A. were next given. The Transcontinental air-mail route from coast to coast was especially stressed, as was the use of night-flying in this connection.

The general conditions existing in the Dominions and Colonies were outlined. Australia is in the most advanced state with a ring of routes almost completely round the country. Canada is beginning to organise her routes, chiefly by means of generous contracts from the Postal Department. Canada, of course, for many years has been making use of the air with aircraft for fire-fighting and forestry patrol work. Referring to the Freedom of the Air, he said that although at the first meeting of the International Convention for Aerial Navigation, which met during the War 1914-18, the delegates had decided that the

THE ROAD TO BERLIN.—A photograph of Hannover, taken from a German air-liner. Hannover is used as a stopping place on the London—Berlin route.

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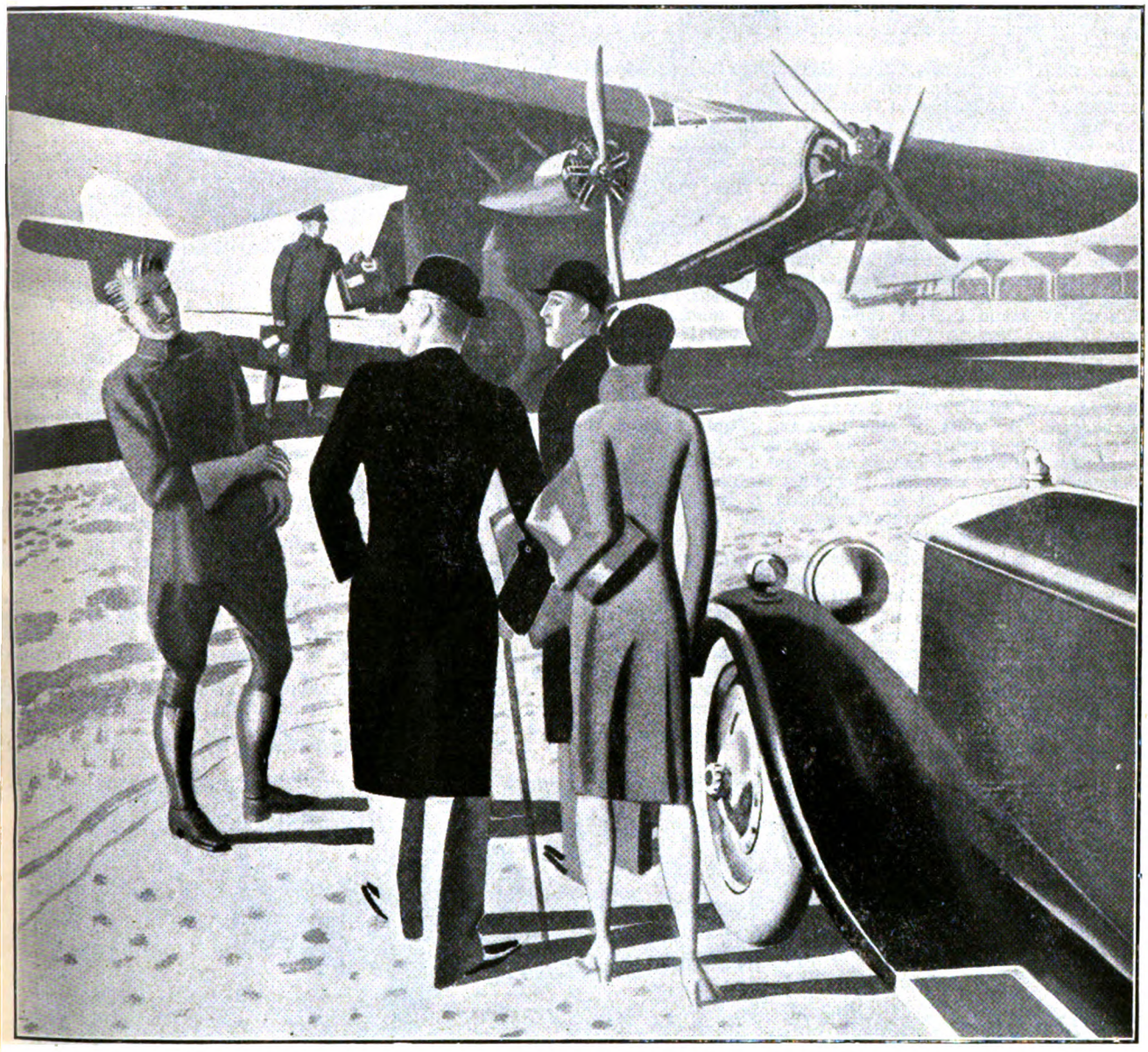

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[illegible] Major Richard spoke at the Hague when only Great Britain, Holland, Spain and the United States were represented at the meeting. A twenty-seven-page paper entitled "[illegible]" was read at the meeting, the author being unknown at the time.

Major L. F. Richard, Chief Aerodrome Officer at the Croydon Air Port, then read his paper on "The Administration of Airports." He said that the personnel required for the administration of an aerodrome would depend on the type of traffic to be dealt with and the amount. He proposed to outline the organisation required for running the smallest kind of aerodrome and then to deal with the administration of the largest.

He proposed to take as his examples the emergency landing ground at Penshurst and the Air Port at Croydon.

The small aerodrome would require a resident caretaker, who should be married and available for the whole 24 hours. This man would be directly responsible to the local authority. His duties would include the guiding of machines while taxying and pegging them down in the open if there was no hangar accommodation. He must keep trespassers off and constantly inspect the aerodrome equipment. He must obtain the pilot's signature, collect the necessary landing charges and repair minor damages to the surface of the aerodrome. He must be able to make simple weather reports. Cattle grazing over the aerodrome must be kept under control and the caretaker should see that these were placed in such a way that machines landing up-wind will not run into them. At the beginning of his paper Major Richard said that the caretaker must have tact. One would add and be long-suffering.

At a big port like Croydon there was the senior Aerodrome Officer and beneath him were five other aerodrome officers, amongst whom the various duties were divided.

The senior aerodrome officer has to see that the air navigation regulations are complied with as well as the local ones. One of the aerodrome officers is responsible for the handling of the machines on the ground and the Control-Tower officer has to keep in touch with all pilots. In case of fog he warns them of the proximity of other machines, and if necessary tells them to fly at different levels, so as to minimise the danger of collision.

The senior aerodrome officer on duty at night is respo[illegible]sible for all the lighting equipment and its management.

There is a look-out in the Control Tower whose duty i[illegible] to raise the disc with the firm's name on it which indica[illegible] that the waiting machine may leave the Customs area a[illegible] taxy over the aerodrome. The machine is not allowed [illegible] take off until a powerful light has been flashed as t[illegible] "All-Clear" signal to the pilot. The look-out has also [illegible] keep a watch for incoming machines and, when he sig[illegible] one, to give the signal. This consists of blasts in Mo[illegible] on a Klaxon, which warns the ground staff for duty. T[illegible] Morse signal indicates the firm operating the machine.

Out-going passengers are taken in charge by officials [illegible] the appropriate air line and taken to have their passpo[illegible] approved. After this proceeding they are taken stra[illegible] into the machine.

In-coming passengers are taken through the Customs a[illegible] then their baggage is loaded into cars. Meanwhile t[illegible] passengers are interviewed by the Immigration authori[illegible] after which they are able to drive away in the wait[illegible] vehicles already loaded with luggage.

On one occasion during the Summer they had [illegible] machines in and out in one day, and 2,000 passengers a[illegible] 112 tons of freight in the week.

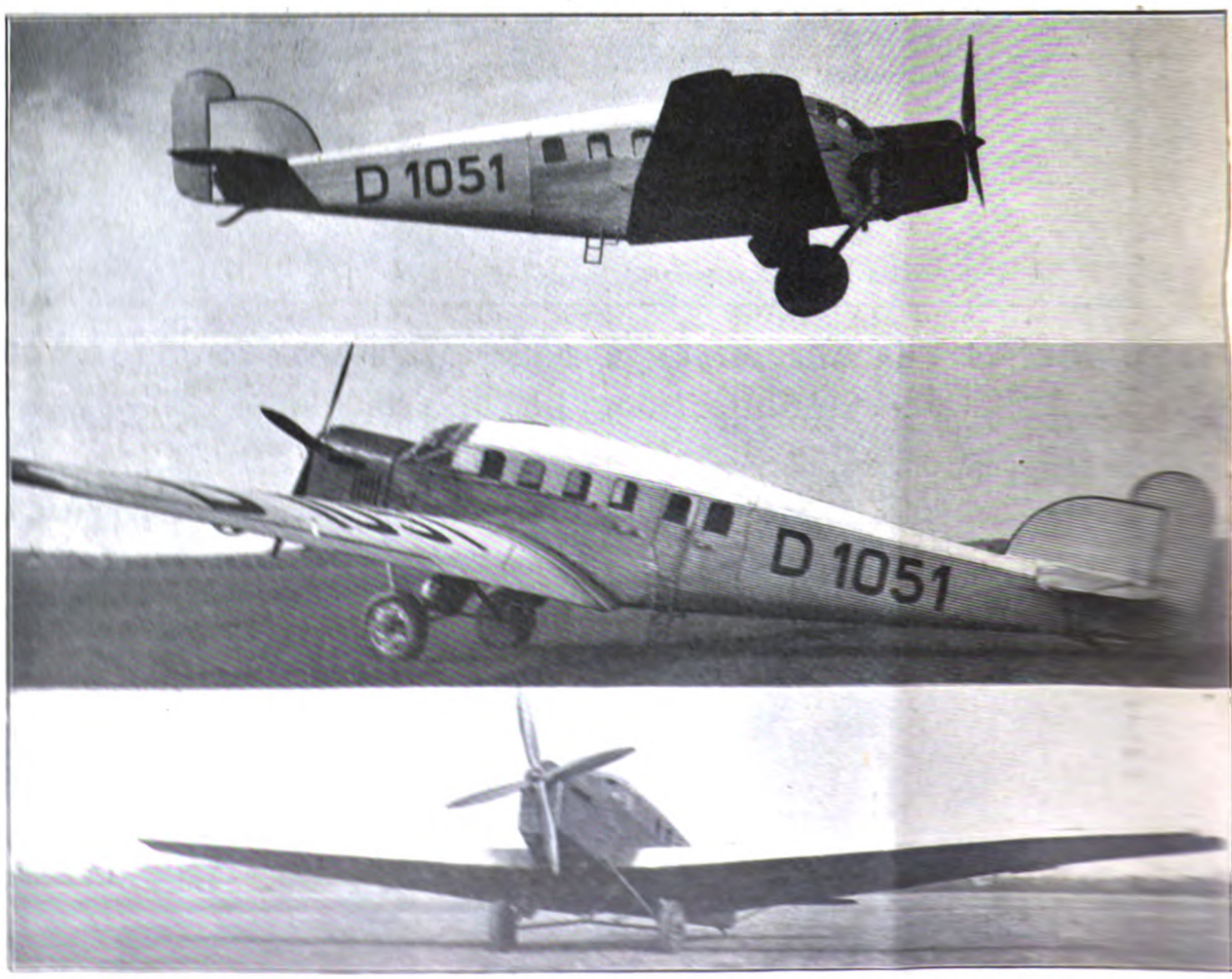
Major Richard referred to the maintenance staff requir[illegible] Publicity was very valuable and the sightseers should [illegible] catered for, as they were the potential passengers of t[illegible] future. They employed a guide at Croydon who had a fu[illegible] time task of taking people round and explaining everythi[illegible] to them at 6d. per head.

Major Richard concluded by explaining that he had [illegible] deal with a very big subject in a very short time and th[illegible] if he had not made everything clear he would be delight[illegible] to welcome any delegates at Croydon and take them roun[illegible] when he could explain more fully.

A delegate then inquired whether Major Richard cou[illegible] supply any figures as to the cost of running Croydon. [illegible] reply Major Richard said that he had no figures availab[illegible] but with Air Ministry permission he would be delight[illegible] to furnish the figures.

Another delegate then inquired about the acreage requir[illegible] for an aerodrome and was told that this information wou[illegible] be contained in the next paper.

Still another delegate wished to know whether every ae[illegible]



GERMAN PROGRESS.—A Junkers in which its three engines have been replaced by one heavy-oil [illegible] Diesel engine.

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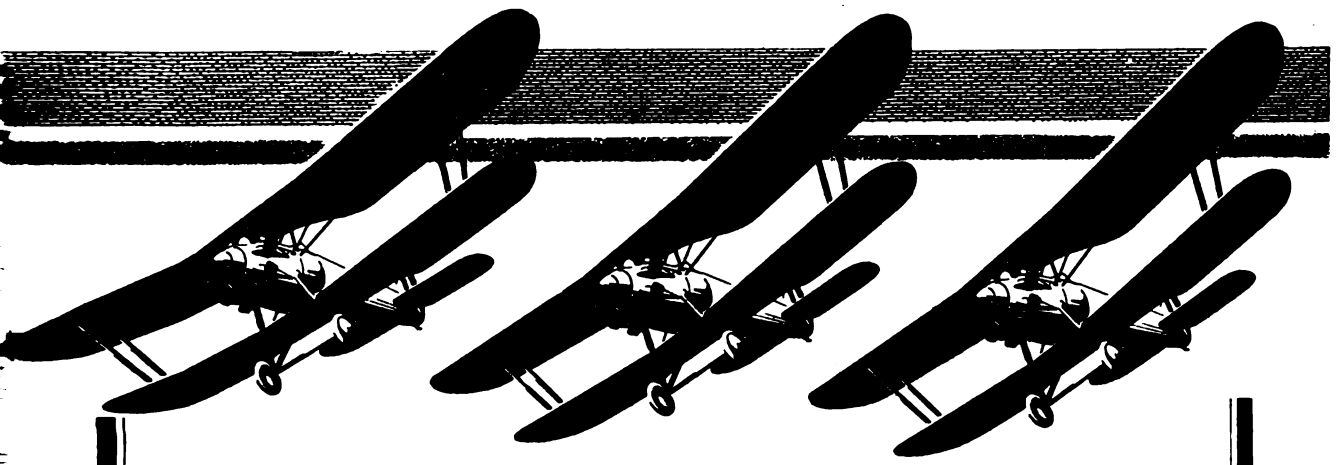

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drome would have to have Customs facilities and whether, in the event of the aerodrome not possessing these, the local authority would be responsible for machines landing there and evading the Customs.

Mr. F. G. L. Bertram solved this difficulty by stating that if any machine did not clear at a Customs Airport such as Croydon or Lympne the responsibility rested on the local police and the pilot. If any municipal authority wished to provide Customs facilities the housing for the Customs would have to be built by the owners of the aerodrome but the staff would be supplied by the Board of Customs and Excise.

Another seeker after knowledge said there had been much talk about "heliocopters," and wanted to know whether the increasing use of machines of this type would reduce the landing area required. Col. Sempill intervened and said that the Conference was concerned with aircraft in use to-day and that in any case a very small landing ground would only be of use for one machine at a time. It was therefore necessary, in any case, to have an aerodrome of normal dimensions.

The next delegate said that Hythe was only two miles from Lympne. There were also aerodromes at Littlestone and Hawkinge. Was the local authority there to build another aerodrome and make a fourth? He was informed that one of the aerodromes he had mentioned belonged to the Royal Air Force and could only be used by civil aircraft in emergency and that Littlestone was an emergency landing ground. There was no reason why another aerodrome should be built however.

Major R. H. S. Mealing, who is Technical Assistant in the Department of Civil Aviation at the Air Ministry, then read his paper on "The Lay-out and Equipment of Airports." He said that Major Richard had assumed the possession of a suitable aerodrome. He had to start earlier and suggest the way that air ports should be laid out and equipped.

It was necessary for any air port to be licensed for use by the Air Ministry as otherwise it could not be used by aircraft plying for hire or reward. Such a licence signified that the air port provided an area of land sufficiently large and level for an aeroplane to land and take-off safely under any wind conditions. The buildings and equipment are not licensed as such. Before an aerodrome can be licensed the site must measure at least 600 yards in each direction but 1,000 yards in each direction is very much better. These are equivalent to areas of 75 and 200 acres.

The ideal air port would be as level as a billiard table, but the average gradient should not exceed 1:50. This is an average figure. Any particular undulation should not exceed 1:40.

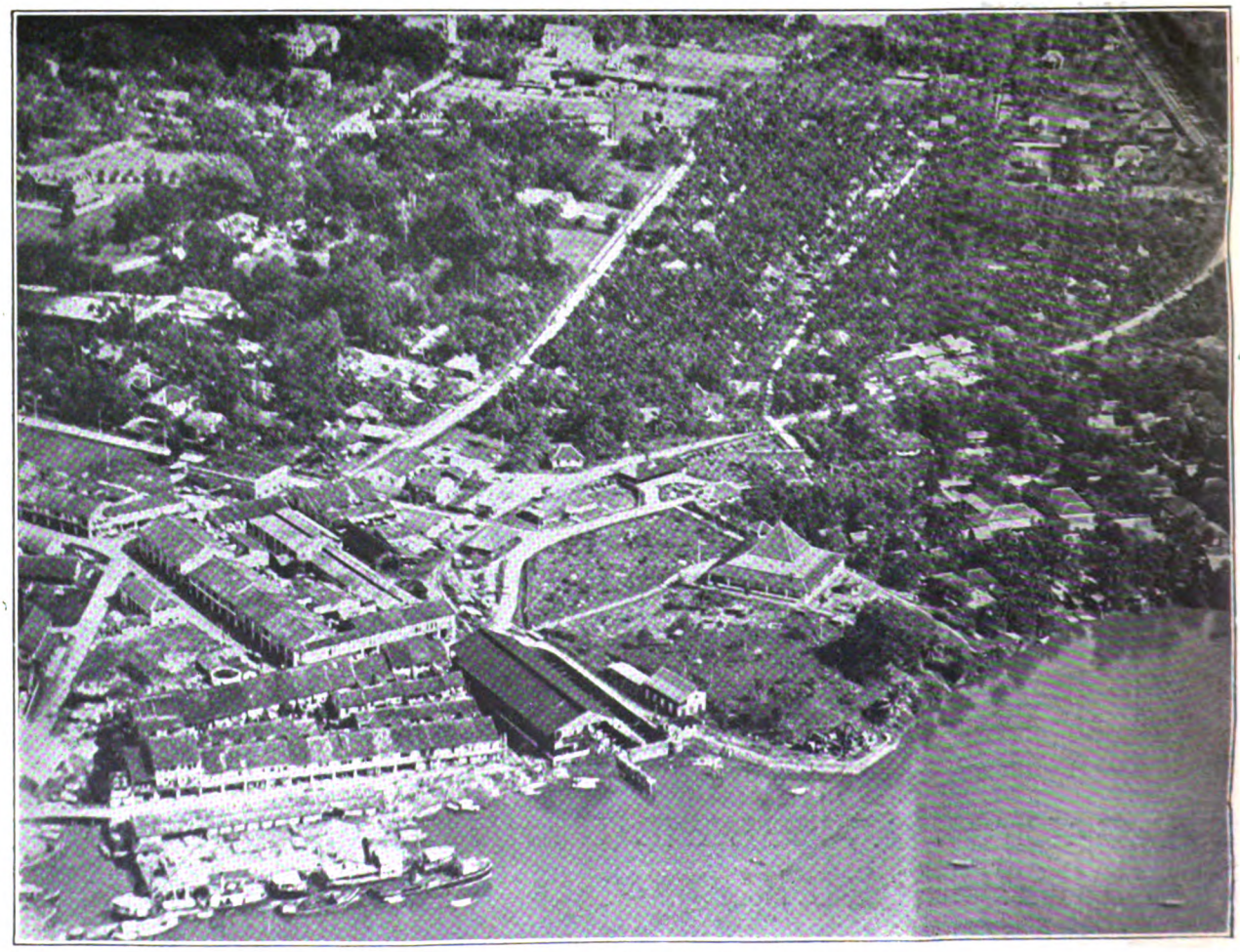
A rough and ready test is to borrow somebody else's car and drive it at 20 miles an hour over the proposed aerodrome. If the passengers are not unduly inconvenienced the surface is good enough for an aerodrome. If one can drive a fully-laden 3-ton lorry with solid tyres over the same surface, and not have it sinking in, the surface is good enough for ordinary machines to land on. The minimum pressure that an aerodrome has to withstand is just about ¾ of a ton per square foot. In this country a turf surface can be easily provided and maintained and an artificial form of covering is not likely to be necessary.

An important condition for licensing an air port is that there should not be any surrounding obstructions such as trees, chimneys and the like. Generally speaking, an obstruction on the border of an aerodrome will reduce the available landing area by about fifteen times the height of the obstruction. Thus the necessary conditions for obtaining a licence are adequate dimensions, a suitable surface and lack of obstruction.

The next thing is the question of luxuries. These are not really luxuries but progressive necessities. The most meagre requirements for an aerodrome are a landing circle, the name of the town, marked on the ground, a wind sleeve to show the direction of the wind, facilities for the supply of petrol and oil, and a telephone. A better equipped air port will possess facilities for sight-seers. The advantages of providing for these people had been stressed by Major Richard.

If air-lines are going to be operated from the aerodrome there will have to be offices for the sale of tickets, buffets for refreshment and probably a restaurant. Probably in time aerodromes on main air routes will require hotels. There should also be a rest room and sleeping accommodation for pilots.

With the introduction of all-metal aircraft the time will come when a hangar will not be required for housing such machines. On the other hand mechanics will require cover under which they may work when effecting necessary repairs. On an aerodrome of this size there will have to be accommodation for workshops. He would not tell them where to put their buildings but would emphasise the places where they must *not* be laid down. The prevailing wind in England is from the South-West. Therefore buildings



A FAR EAST AIR PORT.—Kuching in Sarawak.

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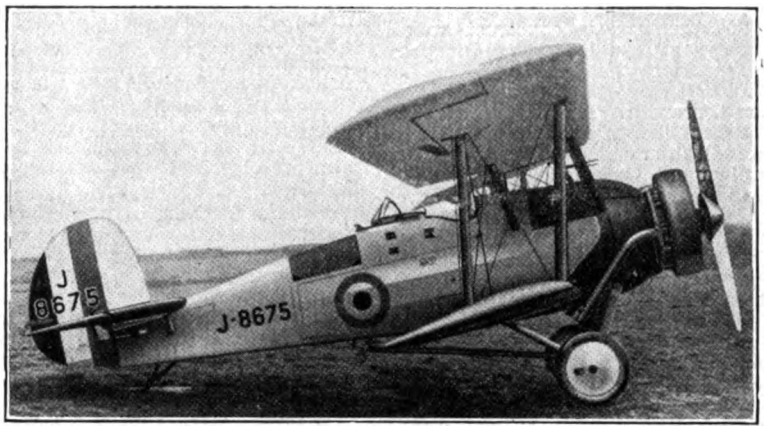
AIRCRAFT



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	Plain Engine.	Geared Engine
Approx. total weight	4000 lbs.	4115 lbs.
	1820 kgs.	1870 kgs.
Speed at ground level	143.5 m.p.h.	149 m.p.h.
	231 km.p.h.	240 km.p.h.
" " 5000 ft.	139.5 m.p.h	145 m.p.h.
" " 10000 ft	134 m.p.h	140 m.p.h.
" " 15000 ft.	125 m.p.h.	131 m.p.h.
" " 1000 metres	226 km.p.h.	236 km.p.h.
" " 3000 metres	216 km.p.h.	225 km.p.h.
" " 5000 metres	193 km.p.h.	204 km.p.h.

	Plain Engine.	Geared Engine.
Time to 5000 ft.	5.25 minutes	4.25 minutes
" " 10000 ft.	12.5 "	10.5 "
" " 15000 ft.	26 "	21.75 "
" " 1000 mtrs.	3.5 "	2.5 "
" " 3000 "	12.5 "	10.25 "
" " 5000 "	34 "	27.5 "
Absolute Ceiling	19000 ft.	19100 ft.
	5800 metres	5830 metres
Service Ceiling	17300 ft.	17700 ft.
	5280 metres	5400 metres

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placed in the North-East or South-West corners will be obstructions for the greater part of the year.

Sooner or later there will have to be wireless or meteorological facilities at every air port.

With the development of night-flying, lighting facilities will be required to enable pilots to land safely at night and at the same time to identify the air port. For that purpose a location light will be required which must be of a distinctive colour. At Croydon they were shortly erecting a large "T" which will be painted white for use by day and illuminated with red Neon tubes by night. This apparatus will always point head to wind.

The air port will also require boundary lights to outline its outskirts. Obstructions must have obstruction lights and a flood light must be employed to illuminate the ground for night landings.

If authorities are not yet prepared to construct an air port they can at least reserve ground for such a purpose. Provision has already been made in the Air Navigation Act for local authorities to establish air ports and carry on any business in connection therewith. They may also raise a loan for the purpose of establishing an air port. Under certain circumstances actual financial assistance can be obtained from the Unemployment Grants Committee.

At the conclusion of his lecture Major Mealing showed some pictures of representative air ports in England, Europe and America. These were particularly interesting as showing the difference between the various surfaces employed, the use of runways being specially noticeable in America.

Col. Sempill said that in view of Major Mealing's offer to confer with any interested local authority he thought that the delegates would abstain from asking him questions as they could question Major Mealing at their leisure when he visited them.—T. J.

The Originator of The Campaign.

Sir Alan Cobham, K.B.E., A.F.C., who addressed the Conference on "The Selection of Air Port Sites," asked his audience not to be unduly alarmed by the awful expenditure on air ports required by the previous speakers. All that was really wanted at the moment from the Municipal Authorities in each case was a plain level piece of ground.

At present the Municipal Authorities were in the unique position of being first in the field. The first air port in any town should always be the best one. Those who took the opportunity now would get the best site. A good many towns only possessed one really favourable site. The people who selected that site would have the most favourable position for operation.

The selection of a site for a Municipal Aerodrome should not be made in haste. The environs of a town should be thoroughly combed. In the first place the people making the choice should fly round and over the town, not once or twice, but perhaps twenty times. They should pin-point on their maps every possible place and also every possible combination of fields, etc. In addition they should investigate every possible site shown on a 6-inch ordnance map. Then by a series of eliminations they would get the best aerodrome.

A very important point in the selection of a site was the limits of the land available. Although Air Ministry regulations for an aerodrome only demanded a run of 690 yards in two directions they should remember that this limit was only possible where the other circumstances were advantageous. On some sites 1,500 yards was not enough. A great deal depended on the surrounding country and the possibility of obstructions. Any obstruction nullified the area by fifteen times its height laid on the ground. Municipal Authorities would find it necessary to purchase the approach ground to their aerodrome in order to prevent building.

In industrial areas the aerodrome would have to be from twelve to fourteen hundred yards in all directions. He had seen some proposed sites which were on small plateaux. If the plateau was not too high this might be an ideal position. The plateau was there for ever and the approaches were safeguarded from building by the slope away from it, or even if it was built on, the roofs of the houses would be below the level of the aerodrome.

Other difficulties were the possibility of high-tension cables and wireless masts being built. A wireless mast could ruin the whole of one side of a town for the purpose of an aerodrome. If the Authorities got to work on their aerodrome without delay this trouble ought not to arise because those who were building wireless masts and laying cables were in close co-operation with the Air Ministry. Another difficulty might be the proximity of hills. Not only was there the difficulty of climbing over the hill in an aeroplane but there was also the dangerous down current from the top of the hill.

Above all, Municipal Authorities must consider the possibility of expansion. There was bound to be a boom in

CHANGING LONDON.—Piccadilly Circus and Regent Street as they were a few years ago.

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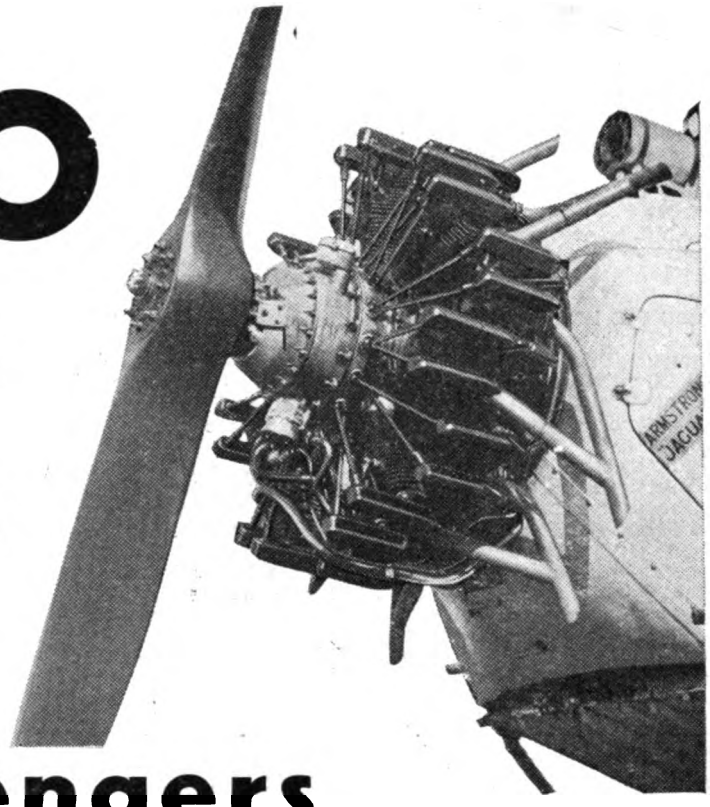
4,000 full throttle Take-Offs with 10 Passengers



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aviation in the near future. The problem of air congestion was already making itself felt in certain aerodromes. Any organisers of flying meetings to-day might expect from 60 to 100 visiting aircraft and if they all arrived within an hour machines would be landing on the aerodrome at the rate of one every minute.

Air transport was not a luxury method of travel. It was essentially a method of speed. There was no advantage in saving time by travelling by air if the time was to be lost between the aerodrome and the town. The aerodrome must be as close to the centre of the town as was practicable.

Another problem to be considered was the meteorological one. Factors to be taken into consideration were smoke drift, fog, and low clouds. Smoke might drift up a valley and leave a plateau clear. Fog would be found in low-lying districts and low cloud was frequently found on high land. In his experience the thing which stopped flying more than anything else was low cloud. With it visibility was nil. On the other hand ground fog hindered the operation of air transport very little. Meteorological observations should be taken over a period of time before deciding on any site.

Finally, he warned Municipal Authorities against making a mistake in their selection of a site. If they bought land that was unsuitable they could spend more and more money on it and still it would not make a good air port. As time went on their air port would have vested interests. Operating firms would be established, flying schools and clubs might come there and aircraft factories would be built there. These vested interests would make it impossible to change the site. Municipal Authorities ought to look fifty years ahead. They might buy land to-day and only only use half of it but they must always remember that they would need plenty of land for expansion. Buying land now would save greater expenditure in the future.

Lord Herbert Scott, C.M.G., D.S.O., President of the London Chamber of Commerce, who addressed the Conference on "Trade by Air," said that in the United States of America the development of Civil Aviation had been largely assisted by the co-operation of the Chamber of Commerce. The American Chamber of Commerce had made the American business man air-minded. The London Chamber of Commerce was doing everything possible to encourage Civil Aviation and the other Chambers of Commerce throughout the country were joining in the movement. This was proved by the way in which the Manchester Chamber of Commerce had turned out and cheered their Lord Mayor on his way when he had flown to London to get the licence for the Manchester Air Port. They had realised that in this way a busy man was saving a great deal of time.

He (the speaker) had great faith in the future of the flying-boat. He thought that the British flying-boat had a great future before it and would be of inestimable value in linking up the Colonies and Dominions with the Mother-country. He thought that air ports for seaplanes and flying-boats were as important as air ports for land machines.

The British public had splendid examples in front of them in the practical interest in air transport shown by His Royal Highness the Prince of Wales and by the Prime Minister. This country had the finest aircraft in the World and the best pilots, but sea and inland air ports were essential for promoting trade by air.

Colonel the Master of Sempill, closing the Conference said that on behalf of the three Societies which had organised the Conference he wished to thank the Municipal dignitaries for attending the Conference, and he hoped that they had heard things which would be of value to them.

The Lord Mayor of Hull (Mr. Benno Pearlman) said that he was sure that he was voicing the feelings of all present in expressing their deep appreciation of all those experts who had addressed the Conference and given them so much valuable information and advice. The opening of the Hull Municipal Air Port had taught the people of the City and County of Kingston-on-Hull a lesson in airmindedness. He could not say how many people had been present at the opening ceremony, but they had been able to give £1,000 to the medical charities of the City from the takings on that day.

He warned the other Municipal Authorities present that the starting of an aerodrome required the patience of Job and the temperament of an angel from Heaven. Unquestionably this country was behind other countries in this matter. Those who had not yet started to get an aerodrome would benefit by the errors made by those who had started one.

It was only since the opening of the Hull Air Port that he had discovered how many Authorities there were in London who were ready and willing to give advice. He hoped that the example set by Hull would be so emulated by the other Municipalities that people who wanted to fly from one place to another would be able to do so without trouble.—C. M. MCA.

THE BANQUET.

On the evening after the Conference Sir Charles Wakefield entertained at the Savoy all those who had been at the Conference, and a number of members of the Aircraft Industry, and sundry other celebrities.

The guests were all men with the exception of Mrs. Councillor Luard, M.B.E., Mayor Elect of Hereford, which fact led to quite a good deal of amusement. Mr. Knightsmith, the perennial Toastmaster, giving the Royal Toast, began with, "Mr. Chairman, My Lord, My Lord Mayors, Mayors, Lady and Gentlemen." Sir Eric Geddes added to the formula "Lord Provosts" and ended with "Worshipful Madam and Gentlemen." The Toastmaster varied this by making it "Lady Mayoress Elect." Colonel Sempill invented the phrase "Right Worshipful Elect Madam," and Lord Herbert Scott addressed her as "Worshipful Lady Mayoress To Be."

MUNICIPAL PURPOSES.—A high-power electrical plant, and a big timber mill, in Canada, photographed from the air.

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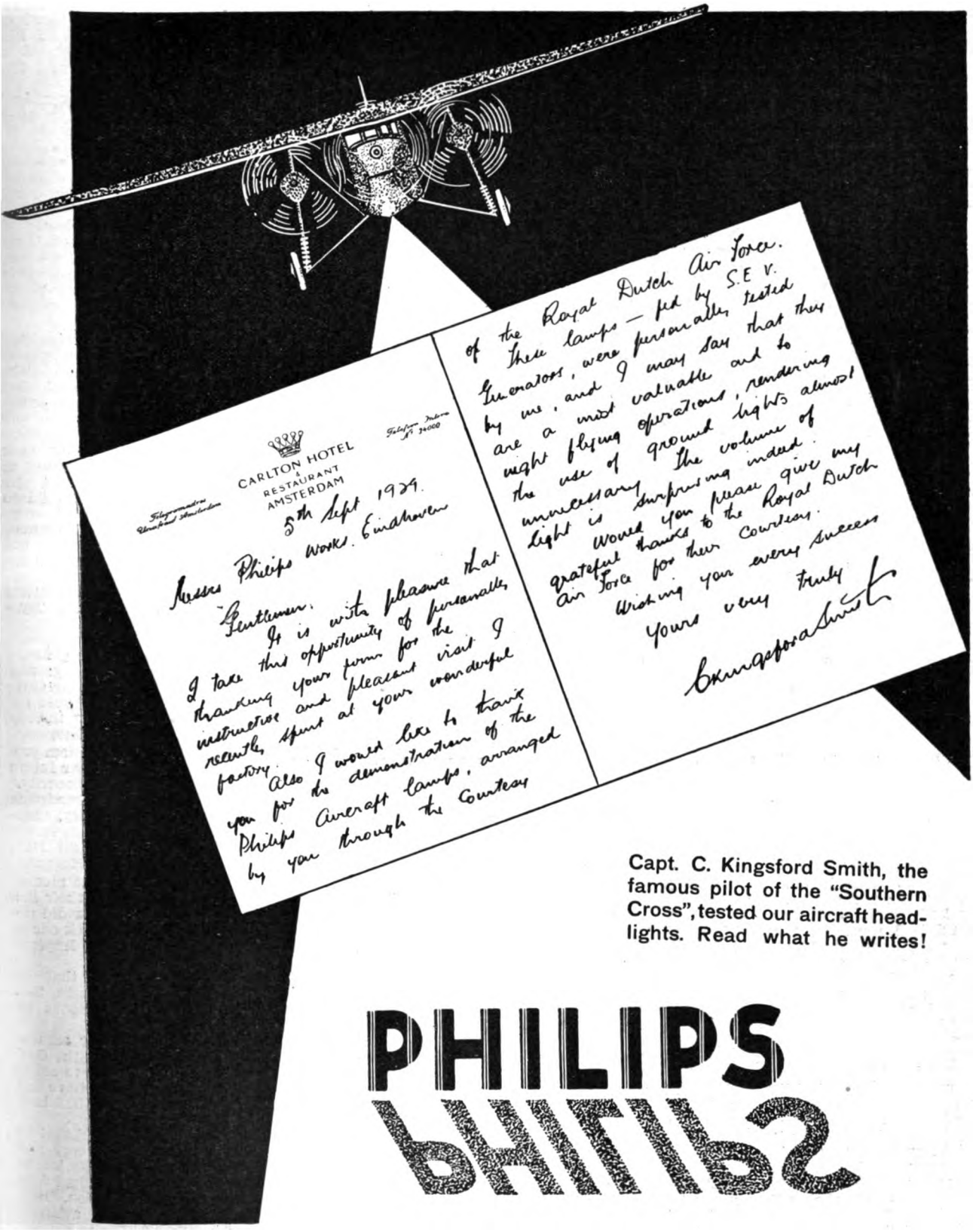

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Sir Alan Cobham earned a cheer by including "Town Clerks and Borough Surveyors," all of which added to the gaiety of the occasion and was immensely appreciated by Mrs. Luard herself.

After the Royal Toasts, Sir Charles, proposing the Toast of the Municipal Air Ports of Great Britain, said that this Conference marked a turning point in the development of British Aviation, and that it was due to the work of one man, Sir Alan Cobham. Enthusiasm was always the preliminary to progress.

The Lord Thomson of Cardington, Secretary of State for Air, made the finest speech he has ever made in connection with aviation, and one greatly regrets that it cannot be reported word for word. Although restrained in manner it was the speech of an enthusiast and it was real oratory.

He said that he doubted whether any other form of transport could have assembled so many municipal representatives, and reminded us that civic pride had never clashed with national interests. He hoped that the municipal authorities would all go home resolved to have air ports throughout the country. The towns of Great Britain needed as many aerodromes as they had railway stations and in more accessible positions.

As a nation we depended on transportation. The Royal Air Force by its immense efficiency made us safe against immediate danger of offence. Transport was needed to link the Empire together.

Through stupidity or timorousness we had shirked developing this new mode of transport. No sacrifice was too great to make our race the most efficient in the World.

We had now had this great conference and this Banquet thanks to Sir Charles Wakefield and Sir Alan Cobham. He wanted those present to go out and make their people think like themselves. He recalled that when Pitt had been told that he had saved England, he had replied that the people of England had saved themselves by their exertions, and had saved Europe by their example. We must teach our people to be strong and efficient, thus we should get peace for ourselves and for the Western World.

Sir Eric Geddes, Chairman of Imperial Airways Ltd., said that we could not have serious aviation without air ports. For long flights abroad infrequent airports were enough, but for short distances air ports must be frequent and convenient. He quoted figures showing that since 1920 air-line flying had increased by hundreds per cent. in distance, number of passengers and weight of goods carried, and added that since 1920 internal flying had only increased by 25%.

Imperial Airways had to refuse many charters because there were no reasonable aerodrome facilities in this country. For long journeys entailing an over-night stop an air port might be five or fifteen miles out of a town. For taxis aerodromes must be near business centres.

For the state of our aviation the Air Ministry got most of the abuse and Imperial Airways got the rest. He did not grudge the Air Ministry their share. He compared the Air Ministry to the cow of the Scots farmer which although it had no pedigree and no milking record was "an awfu' guid coo" because it gave all it had.

Sir Eric said that this country was never a good starter but it always finished well. In aviation it had kept up the reputation of our race for being a bad starter. To-day Germany had 80 air ports, the United States had 1,500, and England had four. At the finish every English municipality must have an air port. And the sooner the better, for as towns grew ground would cost more.

Here Sir Eric made a statement which ought to become the prime argument in all air port campaigns, he said that after going into all costs thoroughly and having them checked in every way he found that a reasonably well-equipped aerodrome, about 600 yards square, cost a very little more than one mile of a modern arterial road. He said that he did not think that any town would refuse to lay a mile of new road if it would bring business.

In conclusion he said that this dinner was the culmination of one of the finest campaigns ever conceived. He congratulated Sir Charles Wakefield on his generosity and foresight and Sir Alan Cobham on his genius and flair.

Colonel the Master of Sempill, proposing British Air Transport, said that this day in future ought to be known as Sir Charles Wakefield's Day instead of as Guy Fawkes Day. It was the day when the Civic Voice had proclaimed that it wanted air ports and more air ports.

He pointed out that the work of Sir Eric Geddes and of Imperial Airways was of great significance. It was washing the Empire in something unlike Lux and causing it to shrink. Sir Alan Cobham's great flights had been successful without any ground organisation and showed what could be done if ground organisation existed, and we must remember that of all ground organisation that required for aviation was the most easily organised.

He recalled that in the days of Roman Britain an Emperor had travelled from Rome to Britain and back in precisely the same time as had been taken by a British Ambassador going to Rome and back in 1830. Thus there had been no advance in ground organisation in 1,500 years. To-day was the time to think of a new ground organisation.

Lord Herbert Scott congratulated Sir Alan Cobham on his good spade-work all round the country. [Presumably there is no reference here to the effects of tail-skids on aerodromes.] People could only be convinced by practical example. Motor transport was now a serious rival to railways. Air transport had come into its own. It must go ahead and capture this great new industry. He said that self-satisfaction was disastrous to trade.

Sir Alan Cobham said that he was proud of being able to speak to such a gathering. He had in fact spoken to all of them before and he had taken most of them up in the air for the first time. He said that he had the happiest memories of his tour. He had taken up many valuable loads of Mayors and Municipal Officials—and, he added, just before starting he had often been told by their rivals to "take 'em up and drop 'em all out."

He had sometimes been asked why we should have air ports. The answer was that we could not fly without them. You could not run a car without a road or ships without ports. If the development were left to private enterprise we should wait a very long time. Aerodromes were public facilities like roads or bridges. Each of these was an advantage to the city which it served.

Aerodromes should be the property of the municipalities and should not be left to a monopoly of private enterprise who might get a throttle-hold on the whole system. The municipalities should be the ground landlords and they might leave the work of the aerodromes to private enterprise.

Not till every country had an air mail service could we realise the good of air mails and not till we had air ports could the uses of air-parks be appreciated. The making of air ports was cheaper to-day than it could ever be.

The Lord Mayors and Mayors of 1929 and 1930 would go down in History as the people who had put aviation over. If only we had as many aerodromes as we had golf courses aviation would be a success. He ended by saying that but for Sir Charles Wakefield all this campaign would have been impossible.

Sir Charles Wakefield proposed the Toast of the Guests and said in just so many words how pleased he was to have us there.

Councillor Pearlman, Lord Mayor of Hull, whose speech went down with great effect, replying, extended the grateful thanks of Hull for Sir Charles Wakefield's support in getting the Supermarine-Rolls-Royce S.6 to that city for their Civic Week. He admitted openly that Sir Charles had paid for getting it to the city. He emphasised the fact that nobody had done so much to foster aviation as had Sir Charles.

He said that air service was now a practical business proposition. Any town without an aerodrome in the near future would be "relegated to the limbo of parochial obscurity." Hull had got the first fully operative municipal aerodrome in Great Britain and it had been got by "pertinacity, audacity and tenacity of purpose." He envisaged a chain of air ports from Belfast to Manchester and Leeds and Hull, whence the great air-liners would serve Northern Europe.

Turning to Sir Eric Geddes, he remarked almost menacingly that it was up to Imperial Airways to run their line from Hull to Europe and that if Imperial Airways did not do so foreign lines would get the trade. [This struck one as a trifle unkind seeing that the flying-boat fleet of Imperial Airways is immobilised in the Mediterranean.]

Continuing, Councillor Pearlman reminded us that Sir Alan Cobham's tour covered 60,000 miles in 21 weeks, that he had taken up the Municipal Authorities of about 100 cities and towns and 10,000 children as well.

Sir Herbert Hambling said that he had never seen so many gold chains in his life, and he thought that the Governor of the Bank of England, if there, would like to annex them. Nobody but Sir Charles Wakefield could have got them together or could have got so much done as had been done that day.

Sir Philip Sassoon, proposing the Chairman, said that he could testify personally to the kindness and energy and enterprise of Sir Charles Wakefield. He was rightly looked upon as the Patron Saint of British Aviation. He had done more than any single living man for British Aviation. Now he had opened a new chapter in our history of aviation. He had enlisted to help him the heads of all our Municipalities and the Youth of Britain as well. He was to be congratulated on his success.

So ended what has been certainly one of the most remarkable events in the history of aviation. There is no doubt that it marks a critical point in the psychological momentum of the British people. Without in any way suggesting that from now on the development of aviation in Great Britain and in the Empire is going to be all plain sailing, those who are prepared to work and give their best to the development of aviation in this country will find, like travellers who have climbed a hill, that at any rate the general grade is in their favour in future.—C. G. G.

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AUTHORS AND AVIATION.

On Nov. 4 the fortnightly after-dinner discussion at the Authors' Club was devoted to "Air Facts and Problems." Dr. A. P. Thurstan was in the Chair and the guest of the evening was the Secretary of State for Air, Lord Thomson.

Opening the discussion Lord Thomson said that about the gravest problem he had to face at present was the expansion of the Air Forces of other countries. Even in America, apparently the safest of all countries, expenditure on aviation had increased by 124%, and all over the World countries were spending money on air services which was not justified by their Budgets. Unless a halt was called competition in other forms of armament would be insignificant compared with that in aviation. Service and civil.

Lord Thomson said that he personally had always believed in spending money on ground organisation and leaving the air operators to pay for their machines, just as taxpayers and ratepayers paid for roads and harbours and left the users to develop the vehicles.

There was the greatest difficulty in getting money to spend on developing air routes. Therefore he was very glad to see that the Municipal Authorities were now tackling the subject in a practical way. He referred to the visit (on the following day, Nov. 5), of 450 gentlemen representing 100 Municipalities throughout the country all desirous of establishing aerodromes. He remarked that many of them had made their first flights with Sir Alan Cobham in a state of trepidation and had descended from the aeroplane full of confidence and convinced that they were to be pioneers of a great movement.

Further, Lord Thomson said that since 1924 he had been an unrepentant believer in the future of lighter-than-air transport. He said that he had been trained as a Sapper but did not claim to be an engineer, in fact many engineers would deny that he could be one. But he had felt that lighter-than-air transport was a problem to be solved.

As an Empire we were divided by wide ocean spaces and we had to find something able to travel those spaces using cheap fuel and with ample accommodation. For that reason he had spent nearly four weary months in the previous Labour administration wrangling with a sub-committee of the Cabinet in which his principal opponent was a very determined Yorkshireman. Eventually he had extracted from him a large sum of money for a great experiment.

He emphasised the fact that R.101 was an experiment and that the men who produced it were highly competent. He claimed modestly that if he himself had any quality it was that of spotting men. He had spotted these men in 1924 and had no reason to go back on his opinion. He described his voyage in R.101 when he conducted his office operations in comfort and enjoyed himself thoroughly.

He said that when he last visited New York twelve tugs were needed to pull and push the *Majestic* into position for docking, and yet people sneered at airships because 300 men were needed to get it into its shed. He held that R.101 was a great improvement on any ship that now existed and was much stronger than the *Graf Zeppelin*. She might not be as fast as he would like, but she was a big step forward.

He divided the opponents of airships into four categories: First, the natural obstructionists and the timorous; second, the shipping companies, who feared a rival; third, the petrol retailers, who objected to fuel at £5 a ton compared with their £25 a ton; and fourth, the champions of heavier-than-air craft.

The majority of experts at the Air Ministry were against airships. He believed in heavier-than-air craft, but in our great Empire there was room for every kind of progressive development. Five years ago we were the only country building airships. To-day two others were spending large sums on such experiments. The greatest airship expert in America had told him that England now had a start of three years in this matter.

Speaking as an author Lord Thomson said that the only book out of which he had made any money was *Air Facts and Problems*, and that was not because many people bought it, but because he had sold the serial rights to an American newspaper.

Dr. A. P. Thurstan referred to the great performances of Orlebar, Waghorn and Atcherley, who had flown at six miles a minute half the velocity of sound, and expressed his belief that in a few years time we would be flying faster than sound. There was now no part of the World more than a week's flying away, with existing machines and given proper ground organisation. We now had heavy oil engines which were setting a lead to the World and would probably revolutionise motor-cars. He wanted to know when we should get fresh strawberries from Australia by airship or aeroplane.

Major-General E. B. Ashmore, who organised and commanded the London Air Defence Area during the War 1914-18 argued that even if we reached international disarmament we should always need proper air defence, for otherwise any nation could turn its civil aircraft into bombers. They would be little use against proper defence, but they would be good enough against the defenceless.

In any case we should always need some armament if only for police duties. In terms of the police we might say that the Navy were needed for traffic control, the Army for point duty and the Air Force as a flying squad. The World was daily becoming smaller, distant countries were becoming neighbours, and he could not believe we should ever be in the position in which we were some years ago when during an acrid discussion with a foreign Power, London was found to be entirely without self-defence.

Mr. Fred Sigrist, Joint Managing Director of the Hawker Engineering Co., Ltd., under whose management the Sopwith Co. turned out some 15,000 aeroplanes during the War, said that he did not believe in large airships. They were expensive to run and handle, they were hopelessly fragile, and had few practical uses. The mere periodical examination of the structure was difficult, and in some places practically impossible except at immense cost. And the rate of depreciation was prohibitive.

On the other hand, Civil Aviation was making great strides, and the organising of municipal aerodromes would popularise aeroplanes. He said that we were only on the edge of commercial aviation. It could not function without a subsidy in this or any other country and the designer had received little encouragement to produce better aircraft for transport.

Colonel the Master of Sempill referred to the magnificent work done by Sir Charles Wakefield, and drew particular attention to his latest good work in financing the recent campaign in favour of municipal aerodromes, culminating with the Meeting on Nov. 5.

Mr. Nichols Marcy, speaking as the father of an officer in the R.A.F., objected to the Short Service system which took a boy from school, gave him five years in the Air Force and then threw him out to make a living without any trade or profession, and unable to find work. [Mr. Marcy has evidently not studied this question in all its aspects, and evidently does not know that under the existing system of vocational training an Air Force Officer can fit himself for a good job on leaving the Service just as if he had gone to a University. Also apparently he does not know that something over 75% of officers who leave the R.A.F. on expiry of their Short Service commissions are found jobs within a very short time.—C. G. G.]

Sir Alliott V. Roe spoke on the lack of money for aviation.

The whole affair was very pleasant, the speeches were commendably brief, and consequently there was plenty of time for those present to enjoy individual conversations before they had to go home.—C. G. G.

THE R.100.

According to the Goole correspondent of *The Times*, the date for launching the airship R.100 from Howden Air Station has been fixed for Nov. 15, if the weather is favourable and the mooring mast at Cardington is not in use by the sister ship, R.101. Dead calm weather will be necessary, and the attempt will be made at dawn.

Three hundred soldiers from Fulford Barracks, York, are to manœuvre the ship from the shed, helped by the Airship Guarantee Company's employees.

According to the paper, "Tests will be concluded in the next few days and the delay is because the mooring mast at Cardington, the only one in the country, is being used by the other vessel. Sq. Ldr. Biosh will be in charge during the flight."

The last paragraph is hopelessly wrong. The ship could have been out three months ago, but for delays caused by differences of opinion concerning details of design. And the officer's name is Booth.

THE PEREGRINATIONS OF R.101.

On Nov. 1 the R.101 left Cardington at 09.40 hours and was away for seven hours. The passengers included Sir Samuel Hoare, formerly Secretary of State for Air.

The airship passed over Sandringham, where H.M. the King was in residence, and cruised over the East Coast. She also flew over Norwich, where the staff of Boulton and Pauls, Ltd., could observe the effect of their handiworks.

During this trip the engines were opened right out and a speed of nearly 70 m.p.h. was obtained. This was satisfactory as being practically up to estimate.

On Nov. 2 the R.101 left Cardington at 20.12 hours and was away all night. During this time she flew over the Channel, where she made speed trials in the vicinity of the Needles.

These speed trials were made over a triangular course and also over a straight course of fourteen miles.

The results of these trials have not yet been worked out, though the estimated maximum speed of 70 m.p.h. is known to have been nearly attained.

After her night out R.101 returned to the mast at 8.15 hours, or with the milk. And, as is often the case after a night out, the reveller had difficulty in finding the keyhole. In R.101's case one of the side guys bent an auxiliary girder near the nose and distorted a steel bracing-tube attached to the mooring-spindle.

The night's revelries also caused intestinal trouble, certain tubes actually splitting. Aluminium bends in the cooling systems of three of the four forward-working engines cracked and had to be replaced with rubber sleeves.

No doubt as the ship gets older she will forswear these nocturnal outings and her constitution will thereby suffer less injury.—T. J.

TO AIR-NAVIGATION STUDENTS.

The series of classes organised by Capt. A. G. Lamplugh, which are the road for admission to the Ancient and Honourable Order of Air Dogs, seem to be going very strong. The lists are full up, and at the last class there were 32 people present, with the result that there was not enough seating for them and members threatened to bring their own camp-stools next time.

These classes are a most valuable institution, for the knowledge gained thereat makes all the difference between a man being a genuine pilot and a mere motor-driver. And of course membership of the Guild of Air Pilots and Navigators makes all the difference between being classed as a ship's officer or as a mere taxi-driver.

As there is no possibility of joining these classes this session, would-be students are strongly advised to get in touch with the organiser, Capt. A. G. Lamplugh, The British Aviation Insurance Group, 3 and 4, Lime Street, E.C.3, with a view to joining the next series of classes.

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THE ROYAL AIR FORCE.

The London Gazette.

Air Ministry, October 29.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—J. A. H. Louden is reinstated as a Plt. Off. with effect from Oct. 17, and with seniority of July 30, 1928. The following Plt. Offs. are promoted to the rank of Flg. Off.:—J. S. Pole (Sept. 16); H. P. Wilson (Oct. 2); H. D. McGregor, W. H. Jones, F. R. Jones (Oct. 13); C. G. Davies (Oct. 18) (with seniority of Oct. 13).

Flt. Lt. B. D. S. Tuke is placed on the retired list (Oct. 28); Lt. S. C. Woolley, R.M., Flg. Off., R.A.F., relinquishes his temp. comn. on return to Corps duty (June 15). (Substituted for the notification in the *Gazette* of June 25).

Group Capt. E. F. Briggs, D.S.O., O.B.E., is placed on the half-pay list, scale A (Oct. 25).

MEDICAL BRANCH.—J. G. Skeet is granted a temp. comn. as a Flt. Lt. with effect from and with seniority of Oct. 14; Flg. Off. J. J. MacAndrews, M.B., resigns his S.S. comn. (Oct. 23); Flg. Off. H. D. Humphreys is promoted to the rank of Flt. Lt. (Dental) on promotion to the rank of Captain in the Army Dental Corps (Jan. 27).

CHAPLAINS BRANCH.—The Rev. C. A. Smith is granted a S.S. comn. as a Chaplain (Roman Catholic) with the relative rank of Sq. Ldr. (Oct. 18).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTES BRANCH.—The following Plt. Offs. are promoted to the rank of Flg. Off.:—J. M. Gittins (Oct. 23); G. H. Thevenard (Oct. 24); G. M. Randall (Oct. 25). The following Flg. Offs. are transferred from Class A to Class C:—G. P. W. Chandler (Aug. 22); J. V. Holman (May 1); R. K. Coupland (Oct. 29); A. N. Francombe (Oct. 11).

Flg. Off. F. V. Gauntlett relinquishes his comn. on completion of service (Oct. 29).

The comns. of the following Plt. Offs. on probation are terminated on cessation of duty:—J. K. Watson (Sept. 24); P. A. Jessel (Aug. 22); E. M. Wright (Aug. 22).

Appointments.

Week ending November 5.

GENERAL DUTIES BRANCH.—Squadron Leader A. McR. Moffatt, to No. 23 Group H.Q., Grantham, 2/10.

Flight Lieutenants J. L. Wingate, to A. and G. School, Eastchurch, 23/9. G. Combe, to A. and G. School, Eastchurch, 23/9. D. R. W. Thompson, to No. 10 Group H.Q., Lee-on-Solent, 27/10. V. S. Parker, D.F.C., to No. 22 Sqdn., Martlesham Heath, 27/10. H. V. Pendavis, D.S.O., to Home Aircraft Depot, Henlow, 1/10.

Flying Officers H. F. Luck, to Royal Airship Works, Cardington, 2/9. G. E. G. Lywood, to Station H.Q., Mount Batten, 26/10. T. O'N. East, to E. and W. School, Cranwell, 29/9.

Pilot Officers R. P. Garnon-Williams, to No. 25 Sqdn., Hawkinge, instead of to No. 23 Sqdn., Kenley, as previously notified, 3/10. P. B. Rogers, to No. 23 Sqdn., Kenley, instead of to No. 25 Sqdn., Hawkinge, as previously notified, 3/10. D. H. F. Barnett, to No. 5 F.T.S., Sealand, on appointment to a Perm. Comn., 5/10. J. A. H. Louden, to No. 24 Sqdn., Northolt, 17/10. J. S. Tanner, to No. 2 F.T.S., Digby, 23/9. The undermentioned Pilot Officers are all posted to R.A.F. Depot, Uxbridge, on appointment to S.S. Comns. with effect from 11/10:—C. F. G. Ayde, C. P. F. Alderson, I. O. Baldwin, J. N. Baxter, N. V. Bertram, B. W. E. R. Bonsey, M. Q. Candler, W. O. J. Coke, V. A. Dawson, C. C. M. Dunman, F. P. R. Dunworth, N. Foster-Packer, H. M. Gahan, F. B. H. Hayward, T. E. Dunville, N. Hill, M. V. Johnstone, N. D. Lamb, G. W. Lawson, D. McGregor-Cheers, L. E. P. Mahon, D. E. Milson, W. S. Moody, P. E. L. A. Myers, R. W. H. Rayneau, E. G. Reed, P. A. Smith, J. F. Sutton, C. H. Williams, S. M. Worrall.

MEDICAL BRANCH.—Squadron Leader (Dental) R. H. Bebb, O.B.E., to H.Q., 'Iraq Command, 8/10.

Flight Lieutenants E. C. K. H. Foreman, to Station H.Q., Bircham Newton, 13/11. C. W. Coffey, to Station H.Q., Biggin Hill, 30/10. J. G. Skeet, to Central Medical Establishment, 14/10. F. W. Goodread (Quarter-Master), to No. 1 Stores Depot, Kidbrooke, 8/10.

Flying Officers G. H. J. Williams, to No. 3 F.T.S., Grantham, 3/10. T. A. Edwards, M.B., to Station H.Q., Hornchurch, 5/11. N. M. Jerram, to R.A.F. Pathological Laboratory, Halton, 6/11.

ACCOUNTANT BRANCH.—Flight Lieutenants J. J. Caiger, to No. 1 F.T.S., Netheravon, 11/10.

A Fatal Accident.

The Air Ministry regrets to announce that as the result of an accident in Hong Kong Harbour to a Fairey IIID machine of No. 442 (Fleet Spotter Reconnaissance) Flight, Kai Tak, on Oct. 29, Flg. Off. Albert Ross Ward, the pilot of the aircraft, was killed. The other occupants of the aircraft were uninjured.

The R.A.F. in Palestine.

Group Captain P. H. L. Playfair, M.C., who was in command of the British forces in Palestine during the disorders there in August, gave evidence on Nov. 4 before the Commission of Inquiry held at Jerusalem. *The Times* report states:—

Group Captain Playfair's evidence began with Aug. 18, when Mr. Luke, the Chief Secretary, first requested that armoured cars be held in readiness owing to the increasing ill-feeling, predicting at the same time that the test would come on the next Moslem Sabbath. Group Captain Playfair was urgently called to Jerusalem on August 23, and before leaving Amman he ordered the Transjordan Defence Force to stand by. Subsequently he ordered an air demonstration over Jerusalem, while armoured cars reconnoitred the Ramleh and Jaffa districts.

Arriving in Jerusalem late on the Friday afternoon, he learnt that the situation was grave and asked for additional reinforcements of ground troops from Amman. He divided his three sections of armoured cars thus:—One was ordered to patrol the frontier, one was left at Maan, and one despatched to Ramleh. He ordered 18 aeroplanes to go from Amman to Palestine. He cancelled all leave and simultaneously decided with Mr. Luke to ask for an infantry battalion from Egypt until the arrival of other troops.

On the following day the Royal Air Force, with a numerically weak British section of Palestine police, answered many calls in and around Jerusalem, especially at Ramleh, where an armed tender encountered a concentration of armed Arabs. Group Captain Playfair's object was to concentrate the British police in the city, using mobile units in the outlying districts for the threatened Jewish colonies.

The first tender was sent to Hebron about 10 o'clock on the Saturday morning, when the massacre was first reported, but it failed to reach its destination before 2 o'clock, because it met with armed Arabs on their way to Jerusalem.

The total British strength on his taking over command was 13 officers, 175 men, and three sections of armoured cars, and he found himself confronted with the difficult task of protecting a minority against a very strong majority of attackers, operating in small bands but constituting a force of military significance, whose object was to attack individual Jews and the property of Jews scattered in 135 agricultural settlements.

The R.A.F. War Memorial.

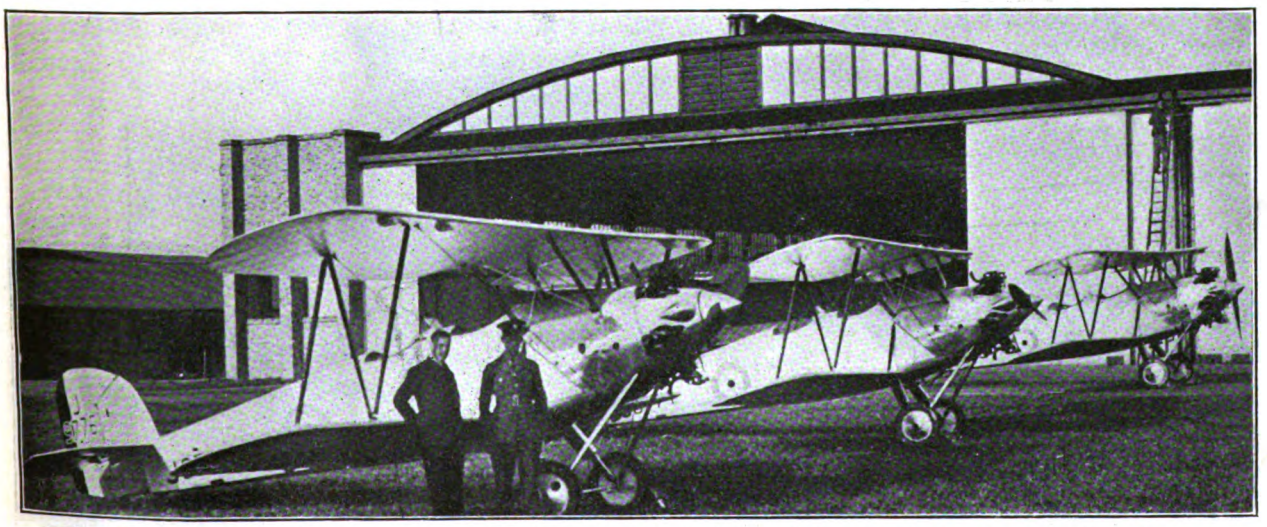
A brief ceremony will be held at the R.A.F. War Memorial on the Embankment on Sunday, Nov. 10, at 12.30 hours. This ceremony will take the place of the one which has been held for several years on Armistice Day.

Air Marshal Sir John Higgins, K.C.B. (Air Member for Supply and Research, the Air Council), will lay a wreath on the Memorial on behalf of the R.A.F. and of the Executive Committee of the R.A.F. Memorial Fund, in memory of the fallen of all ranks in the War 1914-18.

Although no invitations are being issued, the Committee hope that relatives of the fallen and friends will attend the ceremony.

The Journal of the R.A.F. Staff College.

The second number of *The Hawk*, the journal of the R.A.F. Staff College, will be published on Dec. 6. An Air Ministry Order states that the primary object of this journal is to provide a medium whereby interesting and useful material produced at the Staff College may be circulated for the information of the Service as a whole. The secondary object of this journal is to record changes, developments and



FOR THE R.A.F.—A batch of three Hawker Tom-Tit training biplanes (Armstrong Siddeley Mongoose engines) ready for delivery to the R.A.F.—(*"Aeroplane" photograph.*)

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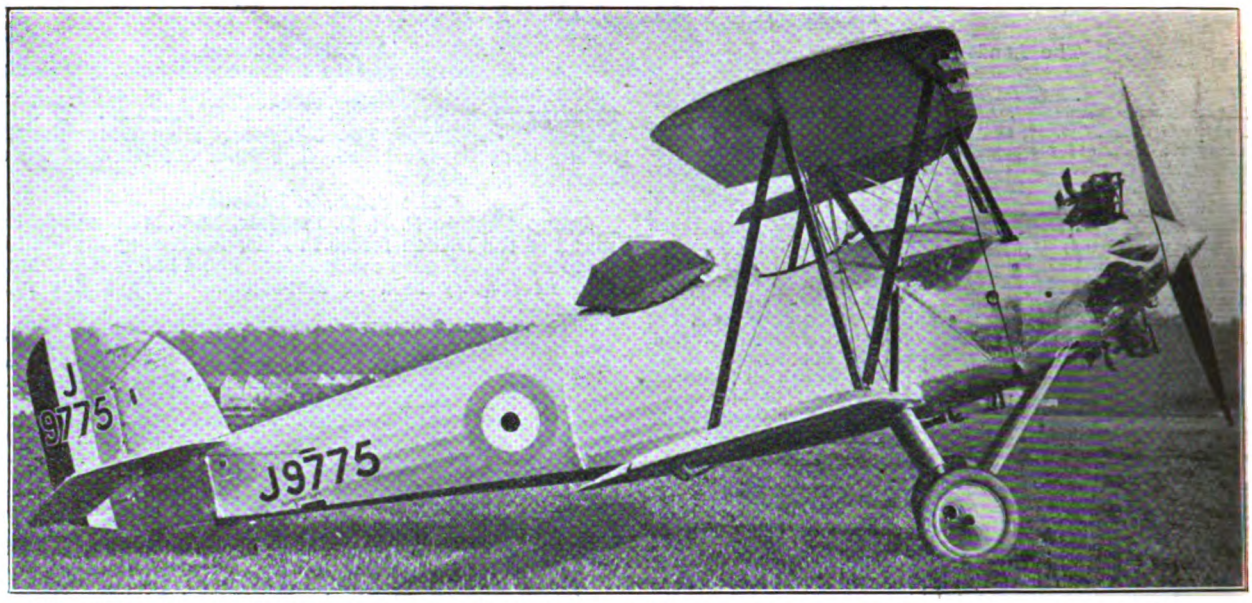

THE HAWKER TOM-TIT.—A two-seat light training biplane fitted for fog-flying training, with a hood over the rear cockpit and a complete range of navigating instruments.—(*"Aeroplane" photograph.*)

happenings (serious or amusing) at the Staff College itself, with a view to keeping ex-members in touch with the College.

Orders for *The Hawk* (2s. 10d., including postage) should be addressed to the Editorial Secretary, R.A.F. Staff College, Andover, Hants.

Wives and Families Overseas.

A recent Air Ministry Order gives the following information regarding the admission into certain countries of the wives and families of Officers and Airmen of the R.A.F.:—

1. *'Iraq and Sudan.*—Public married quarters are not available in 'Iraq and Sudan, and therefore, when an officer or airman is posted to either of these places, his wife and/or family will not, except as provided in para. 3, be permitted to join him there.

2. *Aden and Transjordan.*—Except as provided in para. 3 below, the wife and/or family of an officer or airman serving in Aden or Transjordan will only be permitted to reside in the country in which the officer or airman is serving in the event of public married quarters, which are necessarily limited, being available. Passages at public expense will be provided for the wives and/or families of officers and airmen allotted such public married quarters.

3. Permission for the wife and/or family of an officer or airman serving in 'Iraq or Sudan, or of an officer or airman serving in Transjordan, who cannot be accommodated in married quarters, to join the officer or airman, may be given on the following conditions:—

(i) That the approval of the air or other officer commanding, 'Iraq, Middle East, or Aden, as appropriate, is obtained in each individual case. This approval will not be given unless the air or other officer commanding is satisfied that accommodation suitable for an officer's or airman's family is available. (ii) That all expenses, including passage both ways, are borne by the officer or airman concerned. (iii) That the officer or airman will not be eligible for any local allowances of any kind in respect of his wife and/or family; but, provided that they are not accommodated at public expense, he will continue to draw such allowances (if any) at home rates as he would have been entitled to had they not proceeded to join him. (iv) That any arrangements made cause no additional expense directly or indirectly to the public.

4. If an officer or airman is posted direct from the United Kingdom to 'Iraq, Sudan, Aden, or Transjordan, and is then, at the conclusion of his tour of duty in those places, posted to another station abroad where public married quarters are available for him, passages will be admissible under the conditions of K.R. and A.C.I.

No. 22 Squadron Re-Union.

The first re-union dinner of "Twenty-Two" Squadron, R.F.C. and R.A.F. Old Comrades' Association, will be held at the Old Red House, 94-100, Bishopsgate, E.C., on November 23, after a meeting of the Association, which is called for 17.00 hours on that date. The Old Red House is about two minutes from Liverpool Street Station. Dress will be lounge suits.

The Secretary hopes that those who have "Twenty-two" Song-books or interesting photographs of the Squadron will bring them along.

Application for tickets should be made to the Secretary, C. F. Davis, St. Thomas's Square, Salisbury, before Nov. 9.

H.M.S. "Engadine."

The Eleventh Annual Re-union of those who served in H.M.S. *Engadine* will be held at the Adelphi Hotel, John Street, Strand, on Saturday, Nov. 9, at 6.30 p.m. Dinner 6s. 6d. Particulars from Arthur B. Ward, 135, Burbage Road, Dulwich, S.E.21.

EXPANSION AT OXFORD.

On Nov. 2 the new Lecture Hall of the Oxford University Air Squadron was officially opened by the Secretary of State for Air, Lord Thomson of Cardington, in the presence of the High Authorities of the University and of the City of Oxford.

The Squadron is well provided with housing room, for, before acquiring this new hall, it already had a large shed which is practically an ordinary aeroplane hangar in which is the material from which the members of the Squadron

A SERVICE MOTH.—A D.H. Gipsy-Moth (Gipsy engine) with metal fuselage. The Moth forms part of the equipment of Communication Squadrons.—(*"Aeroplane" photograph.*)

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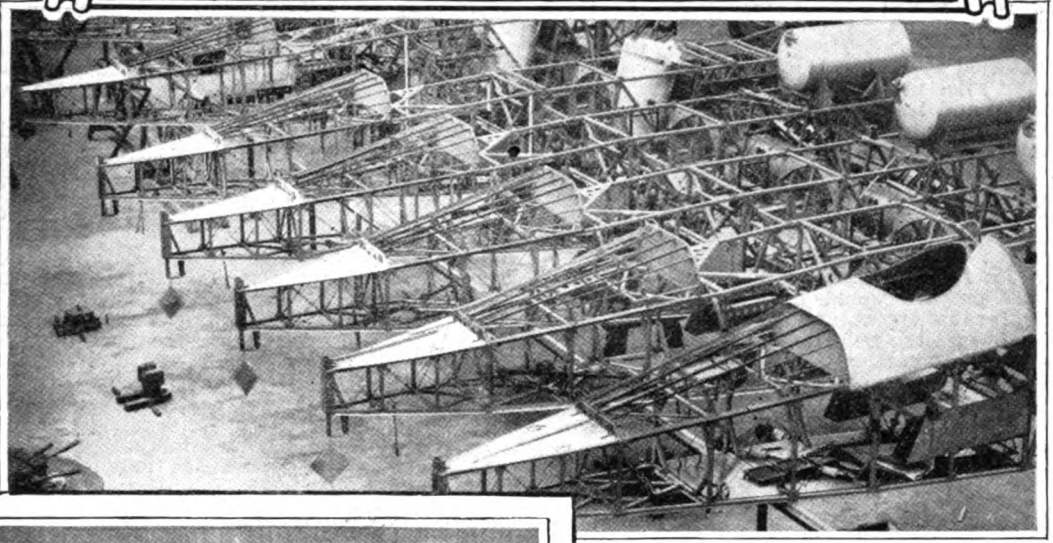
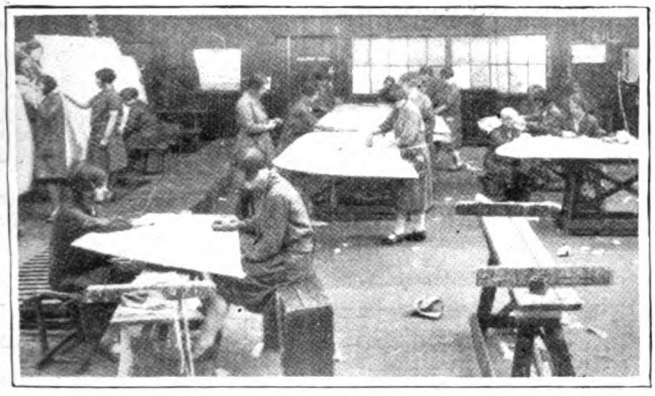
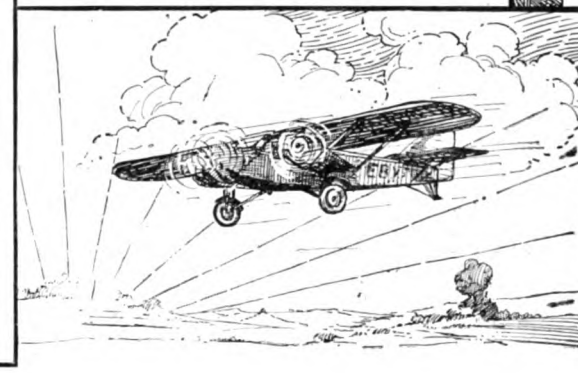
WESTLAND







WESTLAND AIRCRAFT WORKS

Where the Westland Wapiti is Built.

The upper illustration shows part of a line of Westland Wapiti fuselages in the main erecting shop at the Westland Aircraft Works at Yeovil. The fuselages travel along the assembly line on arrival from the fuselage shop and at each stage additional parts are added. At the end of the line the machines are fitted with undercarriages and go forward for rigging and the fitting of engines. The second photograph shows a portion of the wing covering shop where the fabric is applied to the wood or metal frames. Irish linen fabric is used and after the wings are taped and covered the external wing fittings are added, including the Handley-Page Automatic Slot Gear.

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get their technical education. This material includes a standard Avro and a Bristol Fighter from which experience in rigging and truing-up parts is learned. There is also a Napier Lion and an Armstrong Siddeley Jaguar to show how water-cooled and air-cooled engines work. Round the room are diagrams of practically everything to do with the construction and operation of modern aeroplanes.

The New Lecture Hall will provide a quiet place for lectures, while those who are not attending lectures are operating in the hangar. Also the authorities hope to organise a library there. And it will be a social meeting-place for the members.

In opening the Hall, Lord Thomson stated that the Squadron was started in 1925 with the objects of encouraging an interest in aviation in the University, fostering aeronautical research, and leading students of the University to join the R.A.F. as a profession, just as they joined his own profession, the Army, as their work in life.

The first object had certainly been well achieved. The Squadron was up to full strength, and at the annual training at Manston 74 members were attached to the R.A.F. Of these, 64 had done solo flying, and 54 were fully qualified by the end of the period of training.

Referring to the scientific side, Lord Thomson said that doubtless greater progress would be made at Oxford in the future. So far as apparatus was concerned the Air Ministry would give all the help that it could.

As regards members of the University making careers for themselves in the Royal Air Force, he said that men of culture and imagination were wanted in the R.A.F., and the more the Service could recruit from the Universities the sooner the R.A.F. would realise the ideal of what an officer should be.

Taking them all round, he said that the results reached by the Squadron had been very satisfactory, and he would like to recognise the foresight and vision shown by the authorities of the University of Oxford as a venerable body which was giving encouragement to something which was very new.

He said that there was that day in Oxford a very distinguished man, General Smuts, who more than any other one man might rightly be said to have been the begetter of the Royal Air Force as an independent arm. General Smuts years ago foresaw the possibilities of an independent Air Force, and coined the phrase "The *terra incognita* of the air." General Smuts was one of the best examples of a combination of the philosopher and the man of action. That was exactly the type of man the R.A.F. needed, and he hoped that Oxford would supply that type in increasing measure.

For the benefit of the younger generation one may here remark that General Smuts, who was a lawyer with high academic distinction, became one of the leaders of the Boer Army in the War of 1900 and thereabouts. After that War he became an active citizen of the British Empire. He fought in East Africa, alongside his old leader General Botha, against the German Forces in that area. Later he came to England, and, as an intimate friend of Mr. Lloyd George, he was given the task of weighing the evidence for and against the institution of an Air Force as a separate third Service.

This report, the result of the weighing of evidence in his keen legal brain, was presented with legal precision, and undoubtedly had very great influence in persuading the Cabinet of the period to create the Royal Air Force. In this report he perpetrated that remarkable oxymoron which Lord Thomson quoted.

After Lord Thomson had duly declared the new hall open the company were entertained to tea by the Squadron in the new hall and in the big hangar.

Among the high personages of the University present were the Vice-Chancellor (Dr. Holmes Dudden), the Registrar, the Principal of Hertford, the Warden of Wadham, the Rector of Exeter, the Senior Proctor and the Censor of Non-Collegiate Students. The civic authorities were represented by the Mayor, Mr. J. T. Button. The Royal Air Force was represented by Air Marshal Sir Edward Ellington, Air Commodore Bowhill, Group Captain Gossage, and Group Captain Rathborne.

The University as a whole and the University Air Squadron in particular are to be congratulated on this latest addition to the University premises. Perhaps its architecture does not blend happily with that of the older Colleges, but it will serve its purpose admirably.

Wing Commander A. G. R. Garrod, M.C., D.F.C., M.A., who commands the University Air Squadron, deserves to be heartily congratulated on having acquired even this small addition to the amenities of the Squadron. But even more does he deserve congratulation on the progress which the Squadron has made under his command. Nothing could better indicate the position of the Squadron in the scheme of things than the presence at this little ceremony of so many representatives of all that is best in the University and in Service Aviation.—C. G. G.

SPORT IN THE R.A.F.

Sandhurst v. Cranwell.

The annual Rugby Football match between the Royal Military College, Sandhurst, and the Royal Air Force College, Cranwell, will be played at Sandhurst on Nov. 9 at 14.45 hours.

All Rugger enthusiasts who are not themselves playing on that day should make a special effort to go to Sandhurst to see this game.

Boxing.

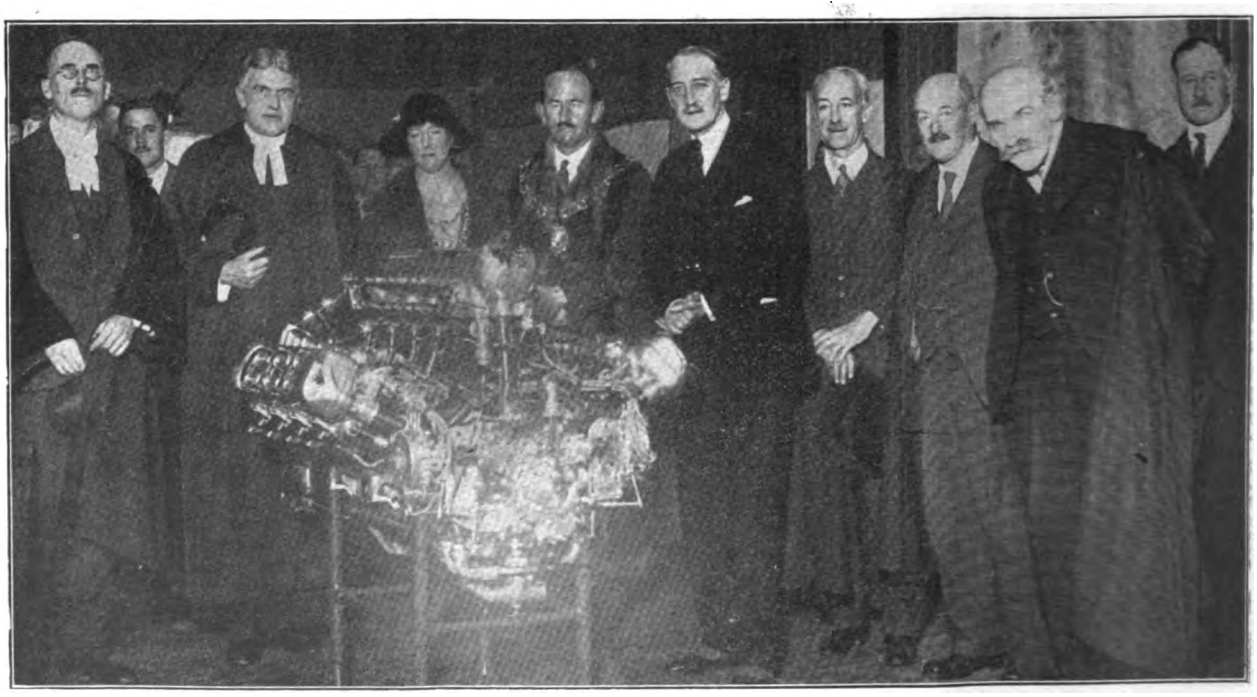
The Sir Charles Wakefield Boxing Tournament for R.A.F. Novices was held at Henlow Camp on Oct. 30 and 31:—

The points scored in the three divisions were as follows:—

Officers:—Digby (holders), 25 points; Netheravon, 17; Sealand, 16; Henlow, 13; Upavon, 8; Farnborough, 6; Eastchurch, 6.

Airmen (Open):—Halton (holders), 33 points; Henlow, 31; Uxbridge, 25; Manston, 20; Cranwell, 11; Netheravon, 10.

Airmen (Junior Competition):—Digby, 39 points; Worthydown, 34; Gosport, 31; Eastchurch (holders), 25; Martlesham Heath, 23; Andover, 20; Calshot, 19; Upavon, 18; Sealand, 18.



OXFORD UNIVERSITY AIR SQUADRON.—Lord Thomson, Secretary of State for Air, after opening the New Lecture Hall of the Oxford University Air Squadron on Nov. 2 in the presence of the Higher Authorities of the University and of the City of Oxford.

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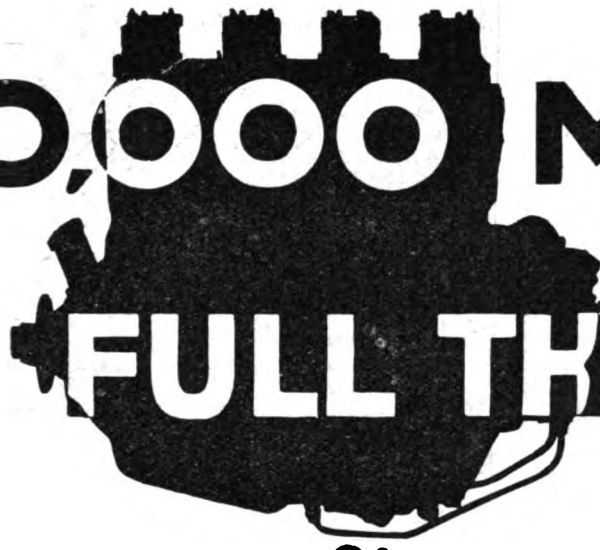
50,000 MILES



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1st, 4th and 6th

KING'S CUP RACE, 1929
1,150 miles
17 entered — 14 finished
Fastest Time for Light Aircraft
and
3rd, 4th and 5th

CHALLENGE INTERNATIONAL DE TOURISME, 1929
4,000 miles
2 entered — 2 finished
including
1st in Heavy Category

ZENITH CUP, 1929
1,150 miles
1 entered — 1st

AUSTRALIAN EAST-TO-WEST HANDICAP RACE, 1929
2,450 miles
10 entered — 9 finished
Fastest Time, and
2nd, 3rd, 4th, 5th and 6th

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The Daily Telegraph report of the Tournament states:—

How full-blooded was the boxing will be realised by the fact that of the first ten bouts five ended in the knock-out and two were stopped by the referee. One of the hardest punchers was L-AC. O'Connell (Calshot), a middle-weight, who, though shouldering an enormous handicap in the matter of height and reach, had AC. Cattell (Worthydown) down several times.

Not in one of the twenty-five finals was there the least disposition to play for safety. It was not that it was just blatant fighting. What was pleasantly surprising was that the majority of the competitors had a nice appreciation of the value of straight punching. Further, most of them were not afraid to speculate in their right hand.

Plt. Off. Hilliar (Netheravon) quickly saw in his bout with Plt. Off. Sayers that his opponent had no sort of guard to keep out a left hook, and, employing it to the full, he won by a knock-out in the second round, so that his station took middle-weight honours.

Plt. Off. Grant (Digby), in the officers' welters, outpointed Plt. Off. Slocum (Sealand), and we saw Plt. Off. Williams (Digby's heavy-weight) knock-out Plt. Off. Hardy (Henlow). Both were magnificent specimens of manhood. Hardy was the taller, and, I thought, the heavier of the two. Williams set up such a high pace and punched with such devastating power that Hardy was overwhelmed. What defence he was able to offer, Williams broke down ruthlessly. Hardy was floored four times, and once was punched through the ropes.

The results of the finals were:—

JUNIOR DIVISION.

Fly-weight.—AC. Clementson (Worthydown) w.o. AC. Lewis (Martlesham) unfit.

Bantam-weight.—AC. Graham (Martlesham) beat AC. Davis (Andover) on points.

Feather-weight.—AC. Cash (Worthydown) beat Cpl. Davy (Calshot), the Referee stopping the fight in the first round.

Light-weight.—AC. Welch (Gosport) knocked out AC. Millborrow (Eastchurch) in the second round.

Welter-weight.—AC. Mosscrop (Digby) beat AC. MacFarlean (Sealand) on points.

Middleweight.—AC. Haden (Digby) knocked out AC. O'Connell (Calshot) in the first round.

Light-Heavy-weight.—AC. Ridout (Digby) beat AC. Cattell (Worthydown), the Referee stopping the fight in the second round.

Heavy-weight.—AC. Stoneman (Gosport) knocked out Sjt. Coote (Upavon) in the second round.

OFFICERS' DIVISION.

Feather-weight.—Plt. Off. Purcell (Digby) beat Flg. Off. Owen (Upavon) on points.

Light-weight.—Plt. Off. Nobleston (Netheravon) knocked out Plt. Off. Ashton (Henlow) in the first round.

Welter-weight.—Plt. Off. Grant (Digby) beat Flg. Off. Slocum (Sealand) on points after Slocum had been cautioned for holding.

Middle-weight.—Plt. Off. Hilliar (Netheravon) knocked out Plt. Off. Sayers (Sealand) in the second round.

Heavy-weight.—Flg. Off. Williams (Digby) knocked out Flg. Off. Hardy (Henlow) in the first round, the Referee stopping the fight.

SENIOR DIVISION.

Fly-weight.—AA. Keast (Halton) beat AC. Davis (Uxbridge) on points.

Bantam-weight.—AC. Statery (Uxbridge) knocked out AA. Booth (Halton) in the second round.

Feather-weight.—AA. Hughes (Halton) beat AC. Robinson (Henlow) on points.

Light-weight.—AC. Herlihy (Uxbridge) beat AC. McKie (Henlow), the Referee stopping the fight in the third round.

Welter-weight.—AC. Lowater (Henlow) beat Cpl. Collishaw (Manston) on points.

Middle-weight.—AC. Thoroughgood (Manston) w.o. AC. Storry (Cranwell), injured.

Light-Heavy-weight.—AA. Grover (Halton) beat AC. Simmonds (Henlow), the Referee stopping the fight in the second round.

Heavy-weight.—AC. Stentiford (Halton) knocked out AC. Pringle (Henlow) in the second round.

Swimming in 'Iraq.

The R.A.F. ('Iraq) Swimming Championships were held at Hinaidi on Sept. 25 in the presence of Air Vice-Marshal Sir Robert Brooke-Popham and a large number of enthusiastic spectators.

The officials were:—Referee and Starter: Flt. Lt. V. G. A. Bennett; Judges: Sq. Ldr. G. Stevens, O.B.E., Sq. Ldr. J. W. Woodhouse, D.S.O., M.C., and Flt. Lt. E. S. C. Davies; Timekeepers: Flg. Off. O. H. D. Jackman (Hon. Secretary of the Association in 'Iraq) and Flg. Off. S. R. Sherman; Whips: Flg. Off. P. McK. Terry, Sjts. McCombe and Abbinnett; Recorders: Flt. Lt. G. T. H. Pack, Cpls. Robinson and Currie; Water Polo Referee: Flt. Lt. V. G. A. Bennett; Press Representative: Sjt. J. Chart.

The winners of the various events were:—

100 *Yards Free Style*: AC. Cherriman, No. 70 (B) Sqdn. (1 min. 10 2/5 sec.).

100 *Yards Breast Stroke*: AC. Hood, "D" Sqdn. (1 min. 30 2/5 sec.).

220 *Yards Free Style*: AC. Cherriman, No. 70 (B) Sqdn.

Inter-Unit Relay Race: No. 70 (B) Sqdn. (3 min. 8 sec.).

100 *Yards Back Stroke*: Cpl. Hedges, No. 203 (FB) Sqdn. (1 min. 33 1/5 sec.).

Diving Championship: Sjt. Jones, No. 55 (B) Sqdn.

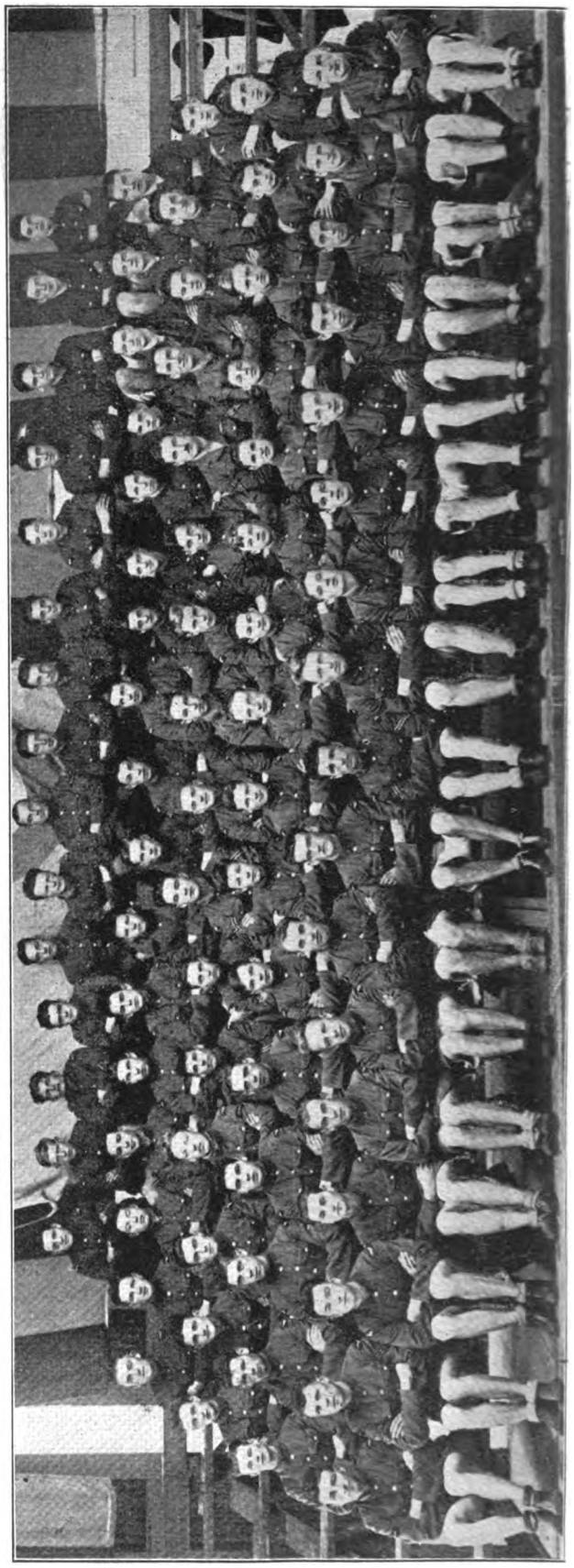
440 *Yards Free Style*: Cpl. Meagor, No. 70 (B) Sqdn. (7 min. 14 sec.).

Plunging Championship: AC. Penney, A.C. Reserve (distance, 59 ft. 11½ in.).

Water Polo Final: No. 70 (B) Sqdn 2, "B" Depot Sqdn. 2. The teams were: *No. 70 (B) Sqdn.*—AC. Soper, AC. Board, Flt. Lt. Davies, AC. Cherriman, AC. Rees, Cpl. Meagor and AC. Robertson; *"B" Sqdn.*: AC. Munns, AC. Gavin, AC. Gilbert, AC. Jenkins, AC. Valentine, AC. Warren and AC. Saffery.

The final placings for the Command Cup were No. 70 (B) Sqdn., 35 points; A.C. Reserve, 21 points; "D" Sqdn., 6 points; No. 203 (FB) Sqdn., A.C. Wing, and No. 55 (B) Sqdn., 5 points each; "C" Sqdn., 4 points.

The following cups won during the season were then, together with the remaining prizes, given away by Air Vice-Marshal Sir Robert Brooke-Popham, K.C.B., C.M.G., D.S.O., A.F.C., President of the R.A.F. ('Iraq) Swimming Association:—*Command Championship Cup*, No. 70 (B) Sqdn.; *Hinaidi Water Polo League Cup*, No. 70 (B) Sqdn.; *Aggregate Cup*, No. 70 (B) Sqdn.; *Inter-Unit Relay Race Cup*, No. 70 (B) Sqdn.



BOXING NOVICES.—A group of the competitors in the Contests for Novices for the Sir Charles Wakefield Trophies, at Henlow Camp, on Oct. 30 and 31.

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FUTURE SCHNEIDER TROPHY CONTESTS.

The Air Ministry announces:—

The Government have had under review the future policy in regard to the Schneider Trophy contest in 1931 and subsequent years. After careful consideration, it has been decided that a Royal Air Force team will not again be entered, thus leaving British participation to private enterprise under the auspices of the Royal Aero Club.

Two main considerations influenced this decision:—

(1) That, owing to Government participation in recent years, the contest has assumed a character not in accordance with the intentions of M. Jacques Schneider, its originator and the donor of the Trophy.

(2) That, although the entry of a Royal Air Force team was calculated to give a much-needed impetus to the development of high-speed aircraft—and did so notably in the two latest contests—sufficient data have now been collected for practical development in this direction, and the large expenditure of public money involved by Government participation is, therefore, no longer justifiable.

This decision should not, of course, affect the entry of British machines in future contests. Convincing proof has now been furnished of what the British aircraft industry can do, and the wide public interest displayed should make it possible for our pilots and machines to compete in what is intended to be a sporting International event on a basis of private enterprise.

A Comment.

This announcement is particularly interesting in view of the statement made by the Prime Minister, Mr. Ramsay MacDonald, in the s.s. *Orford*, after the Schneider banquet on Sept. 7, when he said quite definitely "we are going to do our level best to win again."

In all the history of England there has probably never been a politician or statesman who as an individual is more scrupulously honest and truthful than is Mr. MacDonald. Therefore nobody can imagine that when he used that phrase he meant anything else. The only difficulty is to tell what he did mean.

The pronoun "we" may have meant the British Nation, or it may have meant *any* British Government, or it may have meant the Labour Party only, or it may have meant the Air Ministry, or it may have meant simply those of us who were assembled in the s.s. *Orford* at that moment. Anyhow, the Air Ministry has evidently made up its mind for Mr. MacDonald and is not going to play any more.

With its first reason none can argue. But its second reason is sheer nonsense worthy of the worst type of reactionary English technical man. Actually there are good reasons for not competing for the Schneider Trophy under existing conditions. And there are dozens of reasons why the Air Ministry should not compete.

The contest certainly is not at all in accord with the intentions of the late Mr. Jacques Schneider. The types of aircraft which have been developed owing to the deliberate twisting of the rules are nothing at all like seaplanes.

The original rule said that the Contest was to be flown over the open sea. And it never has been flown over the open sea. It has always been flown over land-locked water, or over comparatively sheltered bays. And the qualifying tests have always been done on protected water.

On the other hand, the existence of this competition has spurred the different nations on to produce machines which have travelled at speeds which would never have been reached on ordinary land machines.

There is no aerodrome big enough or smooth enough to allow an aeroplane to get off and alight as these Schneider machines do off and on water. And whatever scientists may calculate about the possible speeds of those same machines if they had wheels instead of floats or if they had retractable under-carriages, the only thing which cuts any ice in an argument with non-aeronautical people is the actual speed which has been done by an existing aeroplane with a man in it.

Therefore we may all be justifiably convinced that what has been done up to the present has been well worth while in the interests of aviation in general. And the results of the last Contest have been particularly well justified for British aviation in particular, for we can now tell the world that not only *can* we make but we *have* made the fastest aeroplanes in the world besides having, ever since the beginning of aviation, made the best aeroplanes in the world judged purely by material and workmanship.

On the other hand, the idea of governments ever taking a hand in a contest of this kind is altogether wrong. Poor Jacques Schneider put up his trophy to encourage the improvement of aircraft. And the competition was always between manufacturing firms of one nation and of another until the U.S. Navy stepped in and made a government affair of it.

In a good many contests although trade firms competed, the cost was practically borne by one individual. For example when we won the second Contest at Monaco Mr. T. O. M. Sopwith practically paid for the whole thing out of his own pocket, because he was the sole proprietor of the Sopwith Company. And in the same way when the Supermarine Company won the Trophy at Naples in 1921 Mr. Hubert Scott-Paine practically paid for the whole thing.

When the U.S. Navy came in on the game naturally the other players had to call for more money to back their hands. And so the Italian Government and British Government came in on it. And now very likely the time has come when governments should cut out of the game and leave it either to rich manufacturers or rich sportsmen.

Regular readers of The Aeroplane know that personally one has no particular respect for the rich sportsmen or the rich manufacturers of this country, because although the list of patrons of the Royal Aero Club has at one time or another included a good many millionaires, not one of them, with the exception of Sir Charles Wakefield, has ever put his hand in his pocket for the good of the sport of aviation or for the good of the advancement of our aeronautical prestige.

In the first Schneider Contest after the War several manufacturers did take a hand, including the Supermarine Company, the Avro people, the Fairey Company and the Hawker Company. After that the Supermarine people were the only firm to build machines for which the Government did not pay. And in land contests the Gloster people were the last to compete in any big International speed event.

Thus, as may be seen, the trade has competed in our sole remaining classic event, and the Air Ministry has competed, and one quite agrees that the time has now come when rich sportsmen ought to compete in it.

With the work that has already been done by the Government and by the trade, any well-to-do sportsman ought to be able to put up a couple of Schneider racers the next time our possession of the trophy is challenged at no more cost to himself than if he had taken it into his head to run a horse-racing stable in that particular year.

People think nothing of giving £10,000 or £20,000 for a horse which does not win the Derby or any other big race, and a stable full of decent horses cannot well cost less than £100,000 in the year, what with buying the horses and paying for their keep and training and so-forth. Two or three Schneider racers complete with pilots and mechanics ought to cost a good deal less.

In this connection the United States seem to have set us an example as they have done so often. The U.S. entrant this year, which did not appear, the Mercury monoplane built for Lieut. Alford Williams, U.S.N., was actually built and paid for by a syndicate of rich young American sportsmen,—of whom one happens to know two personally. Now that our Government has backed out, the chances are that the same syndicate will challenge us for the possession of the Trophy two years hence. So somebody had better start forming a defending syndicate in this country right now.

The second paragraph in the Air Ministry's announcement is typical of the Government scientist. The man who could say "sufficient data have now been collected for practical development in this direction" ought to be made either an Admiral in the Navy or a Senior Permanent Civil Servant at once. Self-sufficiency at any time is bad enough, but national self-sufficiency can only be taken as a sign of incipient cerebro-sclerosis—otherwise hardening of the brain. The truth is that under no circumstances can we ever hope to collect enough data on any subject under the sun to say that we have all we want for practical development of any kind.

The phrase "convincing proof has now been furnished of what the British Aircraft Industry can do" is very nearly as soul-destroying. If that phrase should be taken seriously by the British Aircraft Industry, it would simply mean that on the strength of what the Supermarine Company have done every other firm in the industry could sit back and say to all the foreign nations "we make the finest products in the world, and if you are good we don't mind selling some to you."

That is the favourite attitude of the British manufacturer in every line of business, and that is why the Americans have practically the whole trade of the World in so many industries in which we could excel if, as the Prince of Wales said, our business men were as good as our workmen.

That last sentence ought to have read "One firm in the British Aircraft Industry has produced one aircraft which succeeded in beating an Italian team of two unflyable aeroplanes and one two-year-old aeroplane. The winning aeroplane was very good as was proved by its beating the world's speed records afterwards. And now, if the British Aircraft Industry wants to make the best of the advertisement which Government money has won for it, it must either find the money itself or find some sportsmen to pay for it." In other words, as Mr. Churchill said years ago, "British Civil Aviation must fly by itself." That would have been a thoroughly sound attitude for the Air Ministry to take.—C. G. G.

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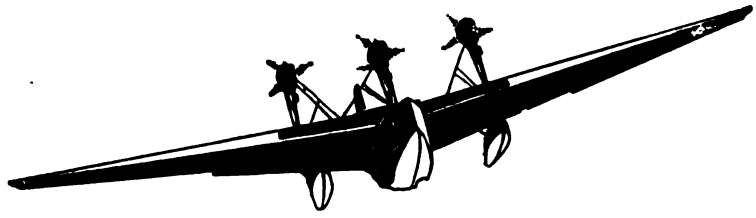

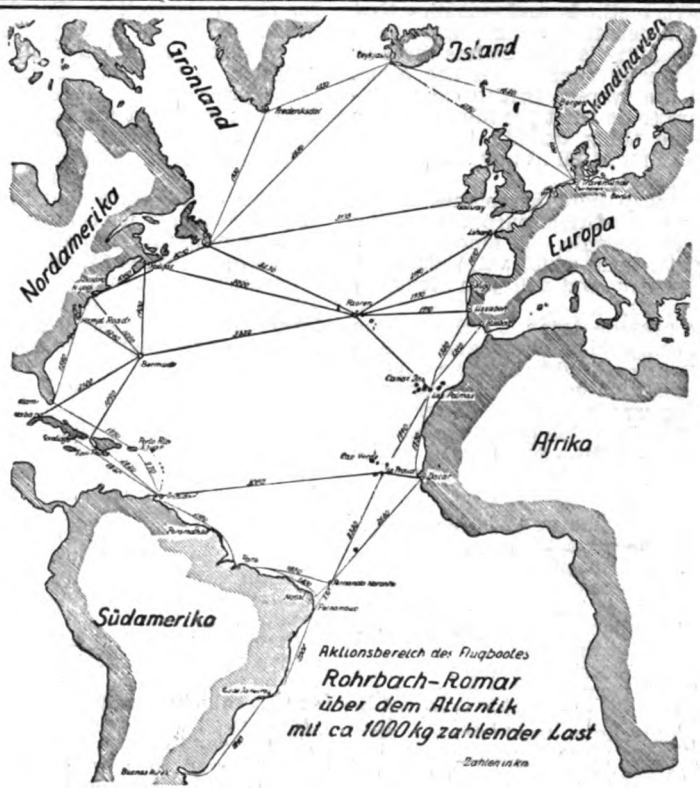

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A MORRIS AERO-ENGINE.

A year or more ago we of The Aeroplane heard on quite good authority that Sir William Morris of Morris Motors Ltd. was seriously considering coming into the aircraft business and showing how to produce a cheap and reliable aero-engine.

A good many months ago, before anybody except the inner circles of aviation were talking about it much, we knew for a fact that at a moment opportune in his judgment Sir William Morris would produce an aero-engine. Since then rumours to that effect have appeared in print, so The Aeroplane may as well say definitely that sooner or later there is going to be a Morris aero-engine.

What it is to be is not known. Possibly Sir William Morris himself has not yet made up his mind what his production type is going to be, though probably by this time he has two or three different types being constructed in his experimental shops.

Knowing something of Morris methods, and assuming that Sir William made up his mind definitely six months ago to build an aero-engine, the probability is that he has three or four experimental engines actually running on the bench at the moment,—seeing that the average British car manufacturer takes about two years to do what the Morris people do in six months. The one thing definite is that Sir William's intention is to build, first of all at any rate, a production engine for light aeroplanes.

That does not necessarily mean light aeroplanes within the limitations imposed for competition purposes by the *Fédération Aéronautique Internationale*. It merely means a thoroughly reliable engine at a price which will reduce the cost of aircraft for private owners, and will give plenty of power for its weight.

The average Moth and the average Avian is well over the weight imposed by the F.A.I. competition limits, and none of our so-called light aeroplanes are orthodox light aeroplanes except those which are too small to be practical transport vehicles. Therefore an engine which is a bit bigger than those which are at present in use will be quite a good proposition provided that the price is right. And that of course is exactly where the Morris people are bound to score.

What Type?

Obviously for such a job the engine must be air-cooled. Nobody is going to bother with the extra expense and weight of radiators, with all their attendant plumbing, on a low-priced light aeroplane. So the choice of a type lies between the radial, the in-line upright, the in-line inverted, the Vee upright, the Vee inverted, and the flat double-opposed, either four-cylinder, six-cylinder or eight-cylinder.

Personally if one had all Mr. Morris' resources at one's disposal one would put in hand a six-cylinder inverted in-line engine as an experiment and one would start on a radial of 120-150 h.p. for immediate production. And in the meantime one would keep more than half an eye turned on the development of swash-plate engines such as the Redrup and the Turner.

One is not making bets on the subject, but if a radial appears as the first Morris aero-engine readers of The Aeroplane need not be surprised.—On the other hand, if something else appears they need not be surprised either.

A Revolution.

Naturally everybody in the Aircraft Industry has been talking about the Morris move for the last few months. Optimists have said that the Morris aero-engine is going to come very near The Aeroplane's ideal of 100 h.p., 100 lbs., £100.

A better proposition now would be 125 h.p., 125 lbs., £100. But if the engine works out at 125 h.p., 200 lbs., and £150 it will still be quite good enough to revolutionise the Aircraft Industry. For, mark you, such an engine does not represent merely one good engine for one good aeroplane. It means that two of it can make a very nice twin-engined job and four of it in tandem pairs can be made just about as good an air-line proposition as anybody is likely to want for a while.

The Critics.

The pessimists, or the anti-Morrisites, have expressed frank disbelief in the idea that Sir William Morris is going to do for the Aircraft Industry what he did for the Motor Trade.

They say that turning out cheap motor-cars which will stand up to pretty good hammering on the road is a job very different from making aero-engines which will stand up to the Air Ministry's type-tests. And they say that even if the first Morris aero-engines pass their type-tests the Morris organisation will find that turning out motor-cars up to their own self-imposed standards will be a very different thing from turning out aero-engines up to the standard imposed by Air Ministry calculations and the demands of the Aeronautical Inspection Department.

Personally one can see nothing in this argument. If the engine passes its type tests Air Ministry calculations count for nothing. And so far as the A.I.D. are concerned one has always found them extraordinarily helpful. They will not pass anything which ought not to be passed, and they are amazingly useful in pointing out ways and means of improving things. In fact a good A.I.D. staff in a factory is the equivalent of having a staff of good consulting engineers at a very low price. The people who have trouble with their A.I.D. personnel are either the people who turn out bad work or the people who do not know how to deal with Government officials.

Some of these critics say that the Morris engine cannot be produced cheaply because it will have to stand the cost of all this Government inspection which Morris cars do not have to stand. Personally one believes that when the Morris engine gets going the output will be so great that the cost of Government inspection will be negligible.

One of the chief troubles in the Aircraft Industry is that so few people have ever laid themselves out from the start for cheap production. People are apt to think that cheap production means mass production. It does not mean anything of the kind. A small output of an article which is designed to be produced cheaply may mean a very much lower price than a huge output of things which are produced in mass but are not designed to be produced cheaply. Morris cars happen to be examples of mass production and cheap production at the same time.

Standing Up To It.

Other critics have said that making a cheap motor-car engine is an easy job compared with making an engine which will stand up to use in an aeroplane. Personally, as a fairly good average rule-of-thumb engineer, one believes that that argument is nonsense.

There is truth in the statement that aero-engines run for longer periods without overhaul than do motor-car engines. But then aero-engines do not have to run in an atmosphere of dirt and mud which either clogs them up or acts as a grinding material and wears them out.

There was a time when aero-engines were called upon to run at full throttle the whole time they were in the air, but that was years ago. The first thing that a pilot is taught in these days is to throttle down and run his engine at cruising speed when once he has reached the height at which he intends to fly. None of our modern aero-engines run at anything like the revolutions per minute that car engines do. And that is one reason why car engines wear out quicker. Judging by one's own experience of Morris cars the Morris aero-engine ought to be rather a startling product.

Some few months ago one took a six-cylinder Morris saloon up to Manchester and back. One had never driven a Morris before and the roads were half wet and half dry, so naturally one went warily. But that car did 120 miles in the first three hours without hurrying. After that, going through the Potteries, in a howling gale and a downpour of rain, we had to slow down, but, having left London after 08.30 hours we were in Manchester for lunch at 13.30.

Coming back the following day that little six-cylinder engine took the saloon up to Buxton and over the Derbyshire hills on top gear without any trouble. And on a fine Sunday afternoon, with the usual Sunday afternoon drivers cumbering the road, it put up an amazing performance. One did not check the exact time and distance, but we were certainly having tea in Lutterworth at 18.00 hours and we were certainly disembarking luggage at Kensington at 20.00 hours, and the distance from Lutterworth to London is not much short of 90 miles.

That engine was the most perfectly balanced piece of mechanism one has ever driven. Running fast or running slow it never quivered. It was more like driving a clock than any kind of internal combustion engine.

There seems every reason why a Morris aero-engine should be equally beautifully balanced and equally capable of keeping up high revs. for hours at a stretch.

Designers and constructional engineers and machinists who are accustomed to doing work of that kind are not going to be particularly embarrassed by having to turn out aero-engines which, although lighter per horse-power, are not called upon to give very much more power for their volume.

When?

When we may expect to see the first Morris aero-engines is another question altogether. One does not profess to know whether the first engine will pass its type tests next week or next Spring or next Autumn.

In his motor-car business Sir William Morris has shown not only that he has a genius for gauging the needs of the market, but also that he has the driving power needed to meet those needs at the right moment, instead of doing what so many English manufacturers in all lines of business do, namely, playing about altering patterns until somebody else has got the market. And reasoning purely along those lines, the Morris engine ought to be on the market well within the next twelve months.—C. G. G.

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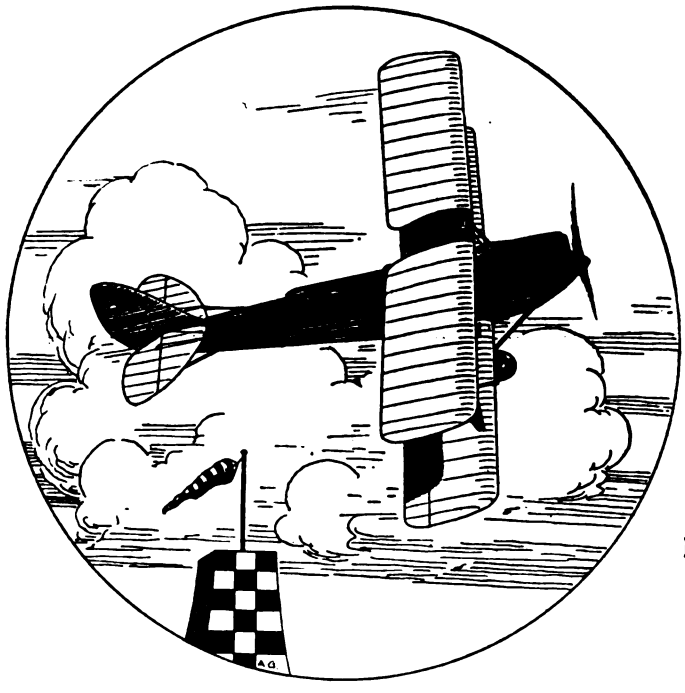

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CREDIT WHERE DUE.

Various readers of The Aeroplane seem to be rather puzzled as to whether the credit for the performance of the twelve Jupiter engines in the great Dornier flying-ship Do.*x* should be given to British or German designers and constructors. Therefore an explanation seems fitting.

The position is that when the Bristol Aeroplane Co. Ltd. produced the highly successful Jupiter engine, the *Société des Moteurs Gnôme et Rhône,* of Paris, acquired the licence for the sale and construction of Jupiter engines to Bristol designs for the whole of the Continent of Europe with the exception of Scandinavia.

The result is that most of the Jupiter engines in use on the Continent have actually been built in France. But certain European Governments who desired to have their Service engines built in their own countries, for strategic reasons, have acquired sub-licences from the Gnôme-Rhône Co. Consequently Jupiter engines are being built under licence to the Gnôme-Rhône Co. in Germany, Italy, Czechoslovakia, Yugoslavia, Hungary, Switzerland, and Belgium. Some of these countries have not yet produced any engines which have flown.

Therefore, where the Do.*x* is concerned, the credit belongs to Bristol design plus German material and workmanship.

There is a story about the first launching of the great Dornier Do.*x*. with her twelve Jupiter engines which seems to be new to so many people right on the inside of aviation that it will probably be new to the majority of readers of this paper.

When the Do.*x* was about to do her first flying trials an enterprising London paper sent a photographer with a pilot in a light aeroplane to Friedrichshafen to get good pictures of the Do.*x*. in the air. As the engines were being started up for her first flight the light aeroplane went up and cruised round, ready to dive on the lumbering monster and get some good close-up pictures. As soon as the wake on the water showed that the Do.*x*. was getting under way the pilot of the light machine put his nose down after it. The Do.*x*. got off the water and the light machine dived after it with the engine wide open. But, to the photographer's annoyance, instead of getting a close-up of the *Do.x*. he could only get a further-away. The harder the light machine dived the further the Do.*x*. flitted, so the photographer gave it up in disgust.

After they had landed, and after the Do.*x*. had come home, they were informed that the big machine had taken off quite comfortably, with only eight engines running out of the twelve, and was cruising very nicely at 120 m.p.h.,—which is a little more than any of our best light aeroplanes can do at the moment.

In this connection our Mr. G. D. makes the brilliant suggestion that the three-engine enthusiasts, who are for ever preaching that three engines are the salvation of aviation in that they give complete insurance against forced landings, ought to buy a Do.*x*. from Dr. Dornier, take out the twelve Jupiters, and put in three Rolls-Royce R. engines of the type used in the Schneider Supermarine S.6s. As a matter of fact they would give just about the same amount of power. The suggestion is offered without hope of reward to the three-engine cranks at the Air Ministry.

AMERICAN COMPETITION ON THE CONTINENT.

The many people who inspected and admired the Ford Trimotor monoplane (three Pratt and Whitney Wasp engines), which was shown at Olympia in July, will be interested to hear that this machine has now been sold to the Ministry of Public Works of Czechoslovakia. Mr. Leroy Manning, the chief test pilot of the Ford Motor Co., who has flown the machine all round Europe, says that it is to be used on the Czechoslovakian air line between Prague, Uzhorod, and Bucharest.

The conditions of sale were that the machine should prove itself capable of the performance which was advertised at Olympia. These figures were all exceeded, and the ship has now been officially accepted.

Prior to doing these acceptance tests the machine was demonstrated in the following cities, in the order given: London, Paris, Cologne, Berlin, Koenigsberg, Danzig, Riga, Smolensk, Moscow, Warsaw, Posen, Dessau, Travemunde, Copenhagen, Malmo, Rotterdam, Amsterdam, Manchester, Brussels, Antwerp, Geneva, Zurich, Friedrichshafen, Munich, Prague, Vienna, Belgrade, Budapest, Bucharest, Constantinople, Sofia, Salonika, Athens, Brindisi, Naples, Rome, Venice, and Milan.

Several of the bigger cities were visited two or three times during the Summer. The total distance covered was 8,915 miles between the various cities. Besides this, 3,757 passengers were carried on demonstration flights.

Mr. Manning and his crew will go back to America with a high opinion of European weather. During the whole of that trip they were only delayed by bad weather for four hours. They had no mechanical difficulties whatever to interfere with their schedule. The engine was not overhauled, but one cylinder had to be changed. No work was done on the machine itself except for the changing of one tyre. With those exceptions, all the work done was routine cleaning, inspection, and service.

Of course, compared with our British air-line machines the Ford Trimotor does not carry anything like the load for its horse-power. It carries fewer passengers, and it has neither the capacity nor the weight-lifting ability to carry as big a load of baggage or freight. On the other hand it is a great deal faster than any of our machine, and it is certainly more comfortable to sit in. So the buyer of aircraft merely has to pay his money and take his choice.

On the other hand, no big British air-liner has been sent on a tour of Europe with the idea of selling more of its type to Continental buyers. And no British air-liner has been built to compete with the Fokker and the Ford and similar American-built ships. So we cannot blame our Czechoslovak friends for not bothering to "Buy British."

—C. G. G.

THE GOVERNMENT AND AERODROMES.

In the House of Commons, on Oct. 29, in reply to a question by Mr. Louis Smith, the Under-Secretary of State for Air said that grants had been made in certain cases by the Unemployment Grants Committee in connection with work on municipal aerodromes.

As regards the encouragement of flying clubs, some of the subsidised clubs had decided to become affiliated to National Flying Services, Ltd., and would thus benefit from the grants made to that organisation when they ceased to be eligible for the existing subsidy. It was hoped that others would be self-supporting by the time that their present agreements with the Air Ministry came to an end.

ITALY AND THE SCHNEIDER TROPHY.

A Central News message from Rome dated Nov. 2 says that Italy's official participation in future Contests for the Schneider Trophy is unlikely. The Italian Aero Club will be free to organise the Italian entries for such contests.

The message goes on to say that private firms such as Fiat, Isotta Fraschini and Caproni are quite competent to provide entries for such Contests and that there is a satisfactory supply of private pilots.

Some think, however, that only Governments can foot the enormous bills run up by the Schneider Trophy and if the piper is not paid he plays no tunes.

HERE WE ARE AGAIN.

M. Lawrence Santoni, whose name will be remembered as one of those connected with the pre-War British Deperdussin Company, and since the War with the Italian Savoia and the French C.A.M.S. companies, has formed a company known as the *Compagnie Internationale de Taxis Aériens et d'Aviation Légère.*

The objects of the company are to organise and to operate aerial taxi services, construct, sell, and act as agents for light aircraft, operate garages and service stations for light aircraft, etc.

Among the well-known names associated with the organisation of the company are MM. Louis Bleriot, Sadi-Lecointe and Faillant.

A SAUNDERS-ROE APPOINTMENT.

A new accession to the technical staff of Saunders-Roe Ltd. is Flt. Lt. S. D. Scott, R.A.F. (symbol E). Flt. Lt. Scott was a pilot of the Far East Flight, R.A.F., and Technical Officer responsible for the maintenance of the aircraft and engines of the flight between overhaul bases.

Before joining the Service he was with leading engineering firms in the capacity successively of fitter, tester, draughtsman, and engine-inspector. The firms included Acer Ltd., and Napier and Sons Ltd., J. I. Thornycroft Ltd., Bristol Tramway and Carriage Co., Wolseley Motors Ltd., Austin Motor Co. Ltd., Vauxhall Motors Ltd., Lanchester Motors Ltd., and Clement Talbot Ltd.

Later he was fitter and tester at the R.A.F., Farnborough, and engine examiner in the A.I.D.

In May 1916 he was a Flight Sub-Lieutenant, R.N., and was later posted as seaplane instructor to Calshot. He was promoted to Flight-Lieutenant, R.N., in the following year and became Chief Instructor at Lee-on-Solent, and was again promoted to Flight-Commander, R.N. Late in the year he was commanding No. 10 Group, Repair Depot, Calshot, and in April of 1918 became Captain, R.A.F. He commanded the R.A.F. Seaplane Station, Torquay, in 1918 and 1919. He left the R.A.F., but rejoined in 1922 with a short-service commission.

From 1922-1926 he was a flying instructor (seaplanes) at Calshot, carrying out the Kingston and Southampton flight trials, and making night flying-boat trials continuously. From January 1926 until joining the Far East Flight he commanded the Seaplane Training and Reconnaissance Flight at Calshot.

Flt. Lt. Scott's Service flying totals 1,700 hours, and his flying-boat experience should prove extremely valuable to Saunders-Roe Ltd.

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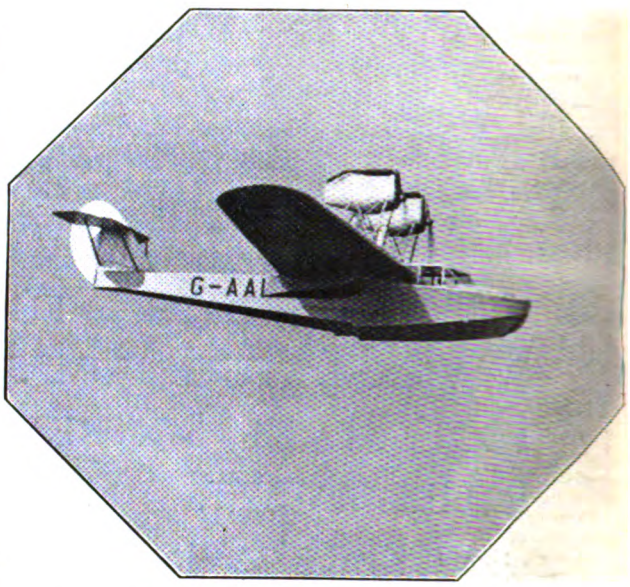

THE Cutty Sark is designed as a cabin flying-boat suitable in every respect for commercial air-routes, private ownership, fire patrol, etc., but is readily convertible to amphibian principles.

Equipped with one, two, or three engines, the smaller model accommodates 4 cabin passengers, the larger type seating eight people. The twin or triple-engined machines fly level even with one unit out of action.

Every auxiliary is likewise produced by Saunders-Roe, the range embracing refuelling tenders, petrol and oil scows, amphibian gear, floating docks, and general servicing units.

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

ROUND THE WORLD ON 20 HORSE-POWER.

On Aug. 12, 1928, the Baron von Koenig-Warthausen left Berlin in a Klemm monoplane (20 h.p. Mercedes engine), flying in an easterly direction, and on Oct. 27, 1929, he arrived at Detroit, Mich.

He has flown across Europe and Southern Asia to Singapore and from San Francisco to Detroit. He covered the intervening distance between Singapore and San Francisco by boat.

Before leaving Germany he had only about 25 hours' flying experience. He intends to continue to the east coast of the United States and return to Germany by boat.

His route was by way of Berlin, Moscow, Rostov, Baku, Teheran, Bushire, Karachi, Allahabad, Calcutta, Bangkok, Singapore, and finally San Francisco, San Diego, Tucson, El Paso, St. Louis, Chicago and Detroit.

Altogether it is an amazing flight for a comparatively inexperienced pilot on such a low-powered machine.

SWEDEN—THE CAPE.

On Oct. 25 Mr. Gosta Andree, who is well known to many aeronautical people in this country, arrived at the Cape in a D.H. Moth from Sweden. He covered the distance of 9,320 miles in 26 stages.

THE HAMPSHIRE AEROPLANE CLUB.

The flying time for the month of October was 147 hours 50 minutes, consisting of 72 hours 25 minutes dual instruction, 21 hours 15 minutes solo flying, 46 hours 15 minutes by "A" pilots, and 7 hours 55 minutes Instructor's solo and passenger-carrying.

Five new pilot-members joined the Club during the month and two of them have made successful first solo flights.

Messrs. Lipscomb, Capon, Blake, Allinson and Brownell, and Sir Robert Clayton-East have done the tests for their "A" licences.

The President, Lord Louis Mountbatten, is back in this country and is taking a course of instruction.

THE BRISTOL AND WESSEX AEROPLANE CLUB.

October weather was unkind to the Bristol Club and flying was considerably curtailed. The club expects to escape a good deal of local fog when it moves to the new Bristol Aerodrome. Lt. Comdr. P. H. G. James, R.N., and the Hon. G. E. Dutton passed their "A" licence tests.

On Oct. 4 the club held the first of the four Winter Season Dances at the Grand Spa Hotel, Clifton. It was a very cheery party, attended by over 150 members and their friends. The next dance is on Dec. 6.

All were sorry to say good-bye to Mr. L. A. Egglesfield, who has acted as Assistant Instructor for six weeks. His enthusiasm reflected itself in the keenness of members. The best of luck to him with National Flying Services.

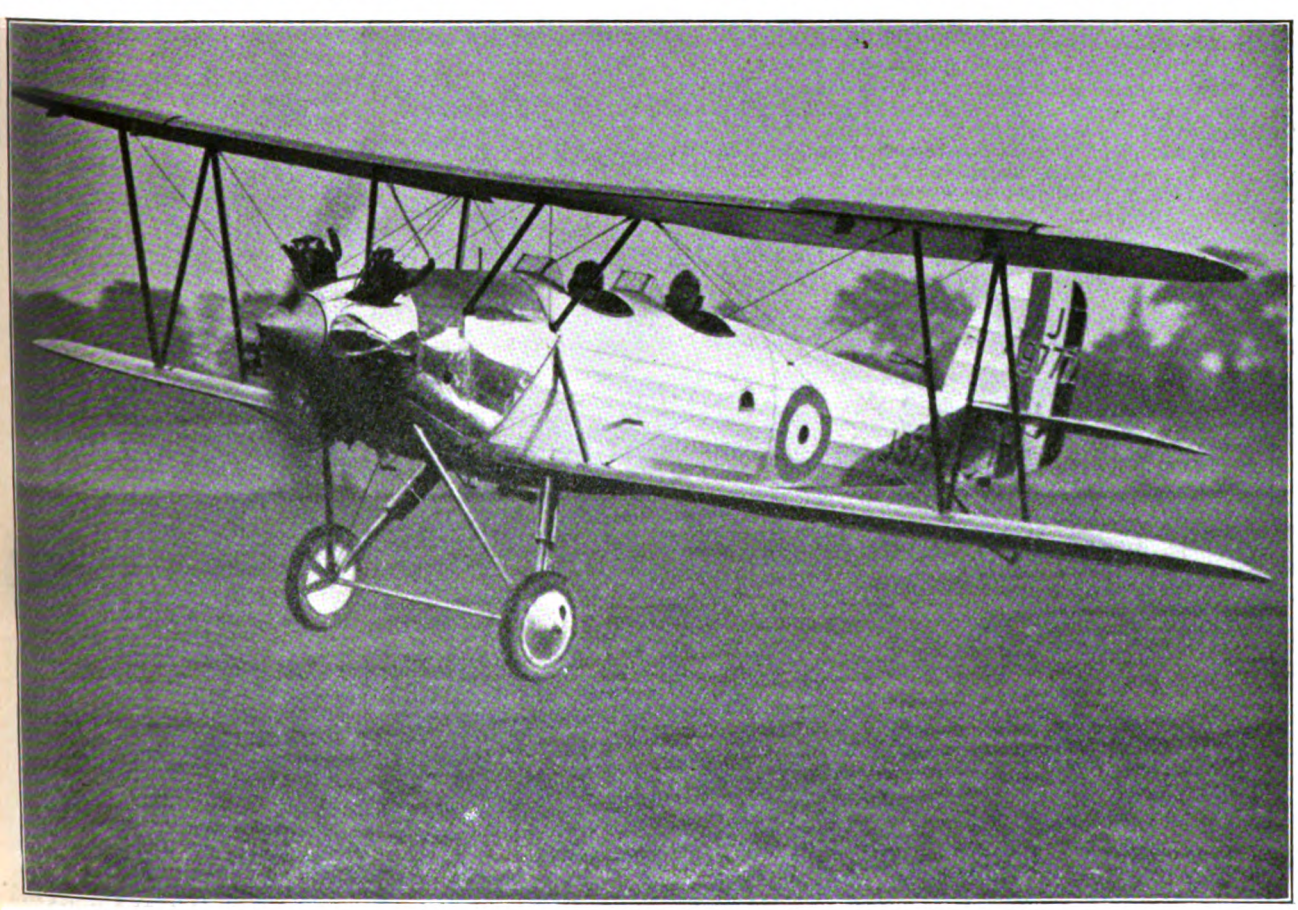
Two machines were in commission during the month and the total flying time was 65 hours 30 minutes. This consisted of 38 hours 30 minutes with pupils (16) under instruction, 9 hours 45 minutes by soloists (6), 12 hours 15 minutes by licensed pilots (15), and 1 hour 30 minutes in passenger-carrying.

IN DEFENCE OF LYMPNE.

Mr. Dallas-Brett, Secretary of the Cinque Ports Club, writes in defence of Lympne Aerodrome as follows:—

Sir,—I cannot let your remarks on the subject of Lympne Aerodrome in page 1024 of THE AEROPLANE issue of Oct. 30th, pass without objection. Judging from your hair-raising description of this "criminal" Air Port, with its downward air-waves and vertical up-currents, an uninstructed reader might well gain the impression that any attempt to aviate in its vicinity would result in certain disaster, and remarks of this nature are calculated to do this Club a considerable amount of harm by frightening away prospective members. One would have no valid objection to the remarks if they represented the true state of affairs, but in this case they do not.

I should be grateful if you would allow me to point out to you, and your readers, especially to those of them who contemplate learning to fly at Lympne with this Club, that the aerodrome at Lympne is undoubtedly one of the very best and safest of the aerodromes used



A NEARLY-LIGHT AEROPLANE.—A Hawker Tom-Tit (120 h.p. Armstrong Siddeley Mongoose engine) taking off from Brooklands for delivery to the R.A.F. The type may soon be available for the private owner, as a vehicle in the luxury class.—(*"Aeroplane" photograph.*)

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A MANX MONOPLANE.—The tail-less Soldenhoff-Langguth piloted by Herr Espenlaub, the famous glider.

by the Flying Clubs, and visiting pilots from other Clubs are continually congratulating us on being able to use it.

The surface is excellent and is kept in very fine condition. The slight slope of the ground of which you make so much is of very little account as far as light aircraft are concerned owing to the immense area of landing surface.

It is true that there is usually a bump over the edge of the cliff at a distance of between 200 and 600 yards from the Southern boundary of the aerodrome, but I should like an opportunity of assuring your readers that up to the present time, this bump is regarded purely in a friendly spirit by our members, and no member has as yet suffered the discomfiture of having the wings nearly fetched off his aeroplane!

I myself have encountered a down-draft in the neighbourhood of Lympne, but never during a period when the prevailing wind was blowing. This down-draft occurs only when the wind is in the North, and is not apparent unless the aircraft is flying low down, down-wind, and therefore does not affect take-offs.

Your remarks as to the lack of food and drink on the aerodrome are true as regards the general public, but I can assure your readers that members of this Club can obtain a limited amount of food and an almost unlimited supply of drink in our Club lounge in No. 1 hangar.

The only part of your remarks with which I heartily agree are those relating to the total lack of sanitary arrangements, which are as you so justly remark, "a disgrace to a so-called civilised community." (Signed) R. DALLAS-BRETT.

[One need only add that there is all the difference in the World between bouncing off the ground in a lightly-loaded light aeroplane with a couple of gallons of gasoline in the tank and hauling an air-taxi or an air-liner up that same hill when it has full tanks, a full cabin and a full freight-box. If such a machine unsticks in time to clear the telegraph-wires and the trees it gets a jolt from that up-current that makes it groan all over, whereas a light aeroplane merely goes up like a lift and the sensation is rather jolly.—C. G. G.]

CROYDON — THE CAPE — CROYDON.

Mr. Roy Tuckett, a member of the Port Elizabeth Light Aeroplane Club, has bought a slotted Gipsy Moth from Phillips and Powis Aircraft, Ltd., of Reading.

This machine, which is of the standard wooden fuselage type, will have an extra 20-gallon tank in the front cockpit and an extra 20-gallon tank in the rear luggage locker. Short exhaust-pipes will be fitted in the place of the usual long silencing pipe.

Mr. Tuckett will attempt to fly from Croydon to Cape Town and back. The trip will be done in stages.

AIR TOURING TO EGYPT.

The Royal Aero Club warn air tourists contemplating flights to Egypt that they should in the first instance apply to the Air Ministry, who will take the necessary action to secure from the appropriate Department permission for flights to Egypt.

Application should *not* be made direct to the Egyptian authorities.

A NEW GLIDING RECORD.

A new gliding record has been established at Rhön-Rositten by Lt. Dinor of the Ortelsburg Jaeger battalion who remained in the air for 14 hrs. 44 min. This flight is claimed to have exceeded by 35 minutes the record established in 1927 by the late Ferdinand Schultz.

Most of Lt. Dinor's flight was done during the night as he took off in the early afternoon and landed the following morning.

FRANCE—MADAGASCAR.

On Oct. 27, MM. Goulette, Marchesseau, and Bourgeois who left Paris in a Farman F.91 cabin monoplane (230 h.p. Salmson air-cooled engine) on Oct. 17 to fly to Madagascar, arrived at Antananarivo.

They completed the journey in ten stages, as follows: Le Bourget—Las Alcazares (1,400 kms.); Los Alcazares—Ksabi (950 kms.); Ksabi—Adrar—Reggan—Tanezrouf (950 kms.); Tanezrouf—Gao—Niamey (1,150 kms.); Niamey—Zinder (860 kms.); Zinder—Fort Lamy—Fort Archambault (1,300 kms.); Fort Archambault—Bangui—Coquilhatville (1,000 kms.); Coquilhatville—Leubo—Kanda-Kanda (1,050 kms.); Kanda-Kanda—Elizabethville (750 kms.); Elizabethville—Broken Hill—Quilimane (1,450 kms.); Quilimane—Majunga—Antananarivo (1,600 kms.).

The total distance of 12,460 kms. (roughly 7,700 miles) was covered in ten days, or about 775 miles per day, which probably meant between eight and nine hours' flying per day.

OVER THE ROOF OF THE WORLD.

According to Reuter, Baranoff, a Soviet airman, has flown across the Pamir. This is the first time that the range has been crossed by air.

A RIVAL OF THE PTERODACTYL.—The Soldenhoff-Langguth monoplane, a two-seat tail-less low-wing machine with a Bristol Cherub engine.

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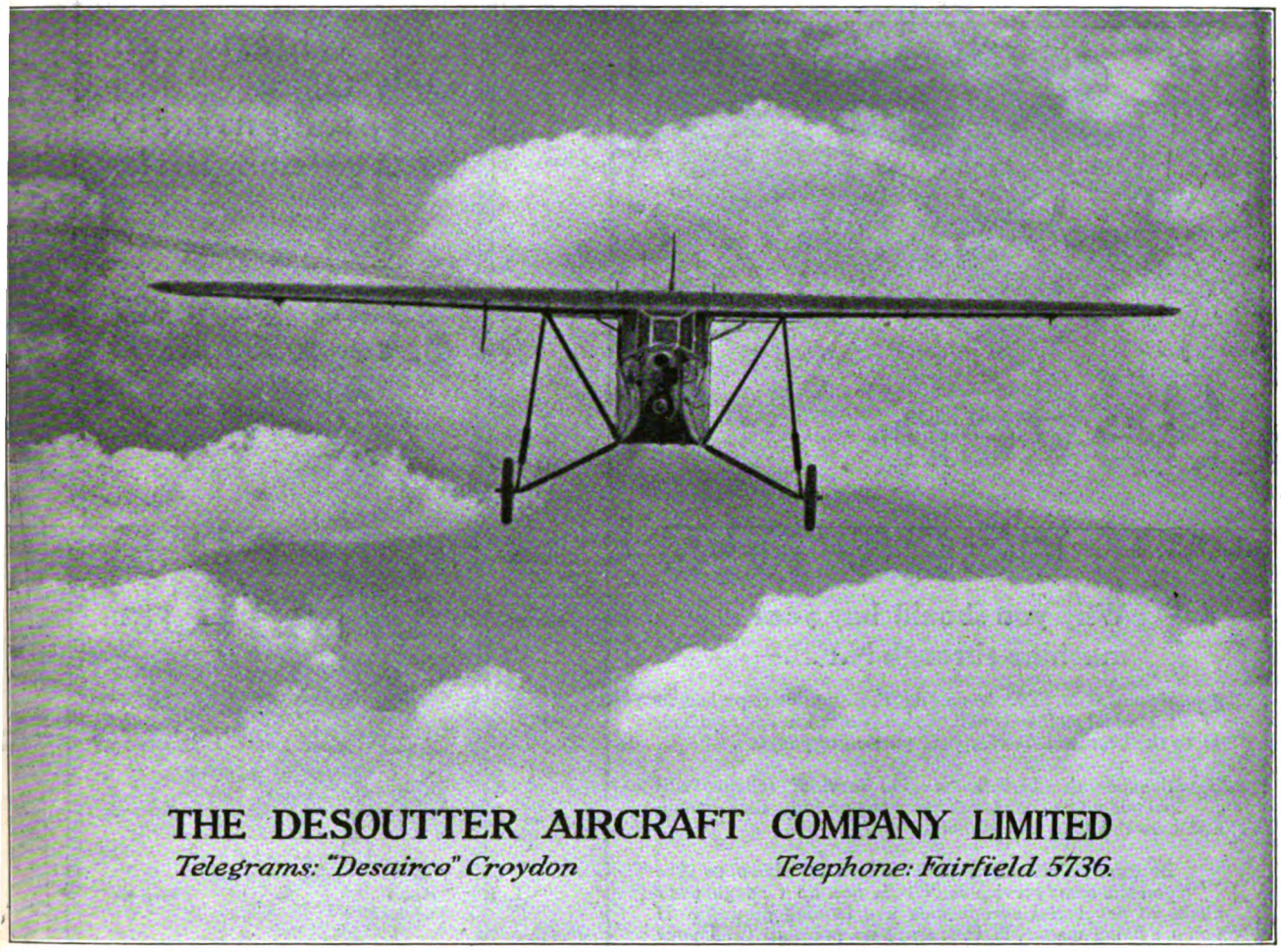

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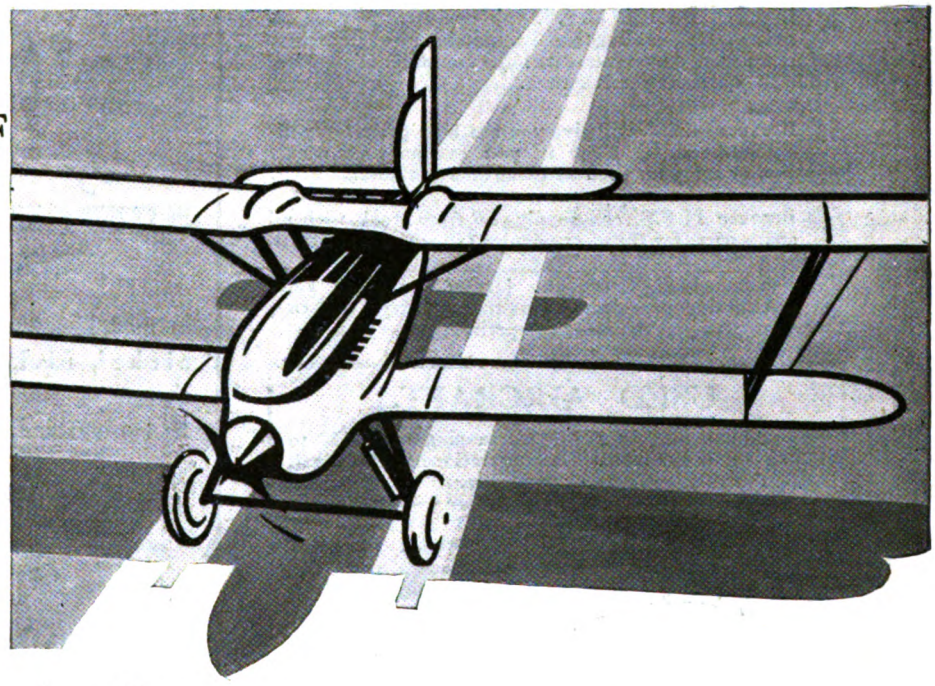

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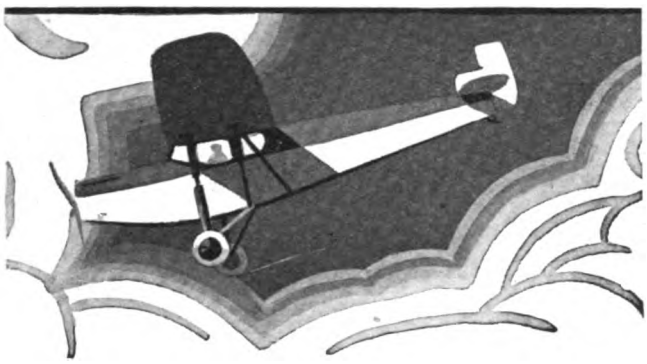

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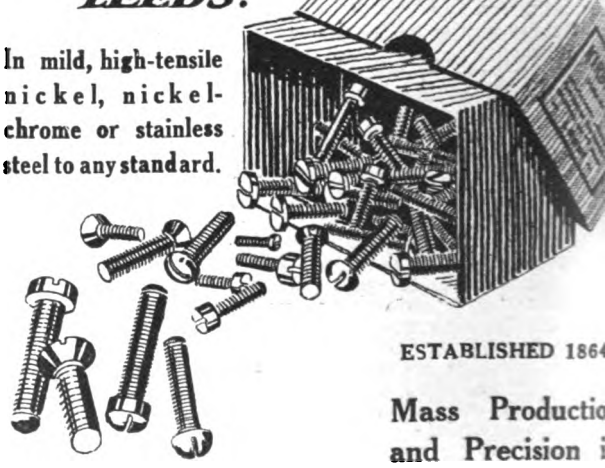

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COMMERCIAL AERONAUTICS.

CLASSIFICATION OF AIRCRAFT.

Classification of aircraft on the lines of ship classification has now become a matter of practical interest to the Industry, and both the British Classification Societies have taken it up seriously. Nearly three years ago the British Corporation Register of Shipping and Aircraft formed an Aviation Committee which included men of established position in Aviation circles. They drew up guidance rules for surveys, organised a staff, and started business. Now the importance of aircraft classification is emphasised by the announcement that Lloyd's Register of British and Foreign Shipping have formed an Aviation Committee and are apparently following the same track.

Not long ago the Press announced that the Air Ministry had authorised not only the British Corporation, but also the British Aviation Insurance Group, to do surveys for renewal of Certificates of Airworthiness on certain types of aircraft, subject, of course, to certain safeguards in regard to the standard of surveys, etc.

The situation arising through such authority being handed over to commercial interests was the subject of comment at the time and doubts were expressed as to the wisdom of such a course. Apparently this view has been accepted, for now the announcement is made that the authority accorded to the B.A.I.G. has been transferred to Lloyd's Register, and thus the other ship classification Society and not the B.A.I.G. is entering the field of aircraft classification.

The position is perhaps a little confusing to aviation people, and so this may be a useful opportunity of explaining the objects and significance of this classification.

As yet there is no possibility of saying much about the aviation activities of Lloyd's Register, as there is nothing to go on except the newspaper announcement, but one can appreciate what classification means by studying the work which has already been done by the British Corporation Register.

In the first place, there is a Register Book which gives particulars of registered and civil aircraft in all countries and, in addition, there is a separate "British Empire" section which gives a comprehensive list of civil aircraft registered in the Empire.

The aviation work of the British Corporation is under the control of a representative Aviation Committee, which provides a satisfactory safeguard for the interests of all concerned, and Major R. H. Mayo acts as technical consultant to the Society.

In accordance with the regulations and the practice actually followed, a Club or private owner of a light aircraft who elects to class his machine is entitled to have it examined four times a year (*i.e.*, every three months). One of these examinations is the Annual Survey for the renewal of the Certificate of Airworthiness.

Since the recognition of the British Corporation Register by the Air Ministry, this has meant that the annual C. of A. Survey and three Quarterly examinations have been done for an inclusive fee of five guineas, which is the same fee as that charged by the Air Ministry for renewal of C. of A. alone. Obviously, the additional three surveys by accepted specialists are a guarantee of maintenance which was lacking formerly, and the proposition is thus worthy of consideration, especially by private owners.

For some time Lloyds Underwriters have engaged the specialists of the British Corporation to survey and report upon damage to insured aircraft, and, according to the announcement by Lloyd's Register, the fact appears that their staff will also be available for this purpose. This is another way in which the classification Societies can help aviation interests. And there is the further possibility that better maintenance will enable Underwriters to reduce insurance premiums as the business of Aircraft Underwriting develops.

There is another aspect of the British Corporation's activities which will appeal to aircraft owners who are likely to fly abroad. The British Corporation has trained representatives in many parts of the Empire, and has made arrangements in various foreign countries also which will enable owners of classified aircraft to obtain reliable technical assistance in case of need.

AN IDEA FOR OUR PETROL FIRMS.

Mr. R. N. Thompson, of the Newcastle Club, whose opinion, as a successful business man, is worth having, recently wrote suggesting that the petrol companies were not doing their fair share to develop aviation. He now writes as follows:—

"Since I mentioned the matter I have thought more about it. Now, looking at the subject from the petrol companies point of view, I would say to myself: Here is a vast potential market for my goods, petrol and oil. Already I have and well and completely organized service for distribution. All that is required is a little extension or development of the service already established.

"I would map the country out with the assistance of a useful fellow like Rose (stout fellow, Tom, he was in our squadron overseas), and, just where I or we thought it advisable, would select suitable fields—preferably adjoining main roads and always with an eye to future developments.

"I would lease each field with an option of renewal or purchase. Having made my landing-ground complete with sausage, I would mark the name in large white letters *due east and west* across the drome, and if I did not feel the position warranted a permanent staff of *at least one*, I would arrange immediate communication with the nearest local garage for the necessary supplies. I would, of course, make the necessary arrangements with the right type of local man to see that he did his best to afford the visiting pilot every attention.

"I would not expect an immediate huge increase in my sales. But I would have the common sense to know that I was increasing the efficiency of my present sales and service organization, and laying the foundation for the future development of aviation.

"Actually the above development could be carried out without increased cost to any petrol company. All they need to do is to transfer the amount expended on the hideous enamelled sign and hoardings which serve no useful end.

"This then is R. N. Thompson's scheme for the immediate service of a delightful sport and an important and vast field of commercial interests, to get on with it. Of course, it is quite obvious to your good self that the above scheme could very readily be adopted by the Automobile Association and R.A.C., who already have telephone-boxes and scout-service and patrols scattered around the country.

"I certainly think the petrol companies are short-sighted in their policy in sitting waiting for developments instead of seeing what they can do to increase their sales. Hang it all, no body of persons has more to gain from aviation than the petrol magnates.

"Personally, I have never had any trouble with farmers. Wherever I have landed I have always found them real sports. In fact, one even went to the trouble to cut down a hedge to get the machine into a better field for me. But always when making a landing in a strange place there is the doubt or anxiety as to the reception by the farmer. I certainly think the rapid and satisfactory development of flying is very largely bound up in the question of landing-grounds."

IMPERIAL AIRWAYS SERVICES.

In the House of Commons, on Oct. 30, in reply to a question by Lieut.-Cmdr. Kenworthy, the Under-Secretary of State for Air said that as regards the Air Service to the Cape, the proposals had now been agreed with the various Governments concerned, and a survey party, consisting of representatives of Imperial Airways, Ltd., and an Air Ministry official, had left this country for Cape Town for the purpose of visiting the countries on the route and settling details of ground organisation in consultation with local officials. [Mr. F. Tymms, who made a journey through this area a year or two ago, and Captain Gladstone, who made the pioneer flights over it, have just left on this mission.—ED.]

As regards the England-India air service, proposals for its early extension from Karachi to Calcutta were now under consideration by the Government of India, and estimates for the further extension of the service to Singapore and Australia were being examined. Mr. Montague added that the service half-way from Alexandria would be in operation by June of 1930, and the rest within six months of that date, or the very latest by April 1, 1931.

TWO VIEWS.

A French journal known as *Le Journal de L'Aviation Française* publishes the following:—

Les Anglais annoncent avec satisfaction que, en 1928, *leurs avions ont parcouru* 1,600,000 *kilomètres et transporté* 27,659 *passager sans accident.*

Pour 1929, *ils n'oublieront pas le "City of Ottawa" du service Londres-Paris.*

Such a spiteful remark as contained in the last paragraph seems quite uncalled for. Great Britain, unlike most other countries, has always announced particulars of all its accidents (including those in the Royal Air Force) and no secrecy is maintained as to the types of aircraft involved in these accidents. Apart from Air Ministry announcements to the Press, and the findings of Courts of Inquiry, which are available for all to see, the Department of Civil Aviation publishes an Annual Report, which gives full information concerning accidents in Civil Aviation.

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It is only within the last few months that the newly constituted *Ministère de l'Air* has been prevailed upon to publish particulars of French aircraft accidents, and even now certain sections of the French Press studiously avoid mentioning even the types of aircraft involved in any accidents, apparently for fear of losing the advertising of their clients.

Perhaps the journal in question will gloat over the recent misfortunes of Imperial Airways in connection with its two accidents on the England-India route.

There is comfort in noting that journals of bigger circulation, and apparently of greater standing in France, do not hold a similar outlook.

With reference to the "City of Rome" disaster *Les Ailes* offers its sympathy to Great Britain in the following words:

C'est un grand malheur qui s'abat sur l'aviation britannique et nous concevons parfaitement l'émotion qui a agité le pays à l'annonce de cette nouvelle.

Nous dirons donc à nos amis anglais que tous les aviateurs sont solidaires devant le destin et que toute l'aviation française a été douloureusement frappée par ce coup du sort. Elle offre à sa camarade britannique le réconfort de sa sympathie attristée.

For these kindly and courteous words all British aviators will tender grateful thanks to *Les Ailes*.

"THE CITY OF ROME."

The following letter which appeared in *The Times* of Nov. 1 makes interesting reading in connection with the disaster at Genoa:—

Of all things that float—excepting the seaplane—a flying-boat is the most difficult to pick up and take in tow. Should the tow-line break she will drift to leeward, like a balloon, at a rate depending on the strength of wind and the state of the sea. This is because she is a non-displacement craft, and because she has such immense wind surfaces.

In bad weather the attempt either to come alongside a flying-boat or to pass her a tow-line is a task of appalling difficulty; at night-time these difficulties are, of course, much increased.

Regarding the competence and courage of seamen of other nationalities, I should like to add a personal word. It has been my misfortune when piloting flying-boats to have been twice forced down in the Mediterranean, once by engine failure and once by stress of weather. In one instance we owed our lives to Italian seamen who risked theirs to save us; and on the other occasion we were picked up in a heavy sea by the lifeboat's crew of a Portuguese tramp.—Mr. John Scott Hughes, 112, Church Street, Kensington, W.8.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day:—Sunday, 11; Monday, 20; Tuesday, 30; Wednesday, 30; Thursday, 24; Friday, 20; Saturday, 20.

Imperial Airways Ltd.:
London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 51, passengers 407, freight 29¼ tons. India Route: Inward, passengers 0, mail 0 lbs.; outwards, passengers 0, mail 633 lbs.

Air Union:
Paris—London: Machines 44, passengers 198, freight 19¼ tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 19, passengers 96, freight 5¾ tons.

Sabena:
Brussels—London: Machines 8, passengers 9, freight 2¼ tons.

Deutsche Luft Hansa A.G.:
Amsterdam—London: Machines 27, passengers 51, freight 6¾ tons.

Miscellaneous:
British machines 5, passengers 0.
Foreign machines 1, passengers 1.
Total number of trips by British machines, 56, carrying 407 passengers. Foreign machines 99, carrying 355 passengers.

COMPARATIVE FIGURES.

Week ending Nov. 2:
Machines, 155; Passengers, 762; Crews, 380; Total personnel, 1,142.
Corresponding week, 1928:
Machines, 102; Passengers, 526; Crews, 101; Total personnel, 627.
Corresponding week, 1927:
Machines, 88; Passengers, 352; Crews, 159; Total personnel, 511.
Corresponding week, 1926:
Machines, 69; Passengers, 208; Crews, 81; Total personnel, 289.
Corresponding week, 1925:
Machines, 67; Passengers, 183; Crews, 80; Total personnel, 263.
Corresponding week, 1924:
Machines, 85; Passengers, 285; Crews, 106; Total personnel, 391.
Corresponding week, 1923:
Machines, 71; Passengers, 167; Crews, 107; Total personnel, 274.
Corresponding week, 1922:
Machines, 45; Passengers, 160; Crews, 73; Total personnel, 233.
Corresponding week, 1921:
Machines, 67; Passengers, 96; Crews, 99; Total personnel, 195.
Corresponding week, 1920:
Machines, 52; Passengers, 79; Crews, 63; Total personnel, 142.

CROYDON NOTES.

Passenger figures for October this year in and out of Croydon Aerodrome are distinctly better than the previous year. In October 1928 the figure was 3,046, as against 4,342 for October 1929.

The Deutsche Luft Hansa A.G. Winter programme began on Nov. 1, when several services were cancelled. Nevertheless, 14 services are still flown daily (except Sundays) from and to Berlin, and the day's mileage of the firm has been increased this Winter from 4,375 miles to 7,250.

The London—Berlin Winter service of Luft Hansa is comfortably flown in one day. The section Hannover—Berlin is specially illuminated for night flying and regularly flown in darkness throughout the Winter, as the Berlin plane leaves Croydon at 09.55 and reaches its destination at 18.15.

The latter half of the London to Berlin journey must be most attractive to passengers unaccustomed to night flying, who, from the comfortable, well-heated cabin of a Junkers or Rohrbach three-engined machine can look down upon the well-lit air route, and see the lights of Berlin from the air just before they arrive there. All Luft Hansa planes on this line carry pilot, flying mechanic and wireless operator.

A prominent New York citizen was being shown the Aerodrome recently. On the tarmac were a large number of little wooden boxes with red seals on them, all by themselves in the sunshine.

On being informed that the boxes contained the sort of stuff Britain pays its War Debts with, namely, Bar Gold, the American nearly swallowed his cigar with surprise and his eyes popped so much that they nearly fractured the lenses of his horn rimmers.

In America, he explained, and especially in Chicago, dollars lying around loose like that would be guarded by marines, machine-guns, armoured cars, cops, airplanes, tear-gas squads, ex-prize fighters and, in fact, all the panoply of peace, and he finished up by guessing we Britishers probably hadn't got a darn policeman within miles of the stuff.

"Oh, yes we have," said his British guide indignantly, "and there he is"—pointing to a 70-year-old police pensioner, remarkably agile for his age, considering he had bunions on one foot, and an impediment in the other, who was sheltering semi-comatosely in a doorway 200 yards away from the bullion and who doubtless supposed the boxes to contain Melton Mobray pork pies, if he had any ideas at all on the subject.

The K.L.M. London—Copenhagen—Malmö line, which was run in conjunction with A.B.A. Sweden last Summer, showed 100% regularity in both directions during August. K.L.M. was running eleven services during August, or 22 journeys per day, some of which were scheduled to arrive at their destinations at a very late hour, yet the regularity figure for that month on all lines was as high as 99.2%.

Swedish schnapps is a fiery fluid. After a no-heel-tap bumper of it an expert is still able to give a faint, melodious whistle, a custom which perhaps originated in a desire to warn the bloke responsible for the next round that it was time to get on with it. Anyhow, all good Swedes do whistle after a mug of the national beverage, and the point is that the unaccustomed foreigner is more likely to go blue in the face after a non-stop sup of Swedish schnapps and make a noise like a police rattle.

One of our Aerodrome heroes, a true Briton, of course, was challenged to go through this whistling business in a select Swedish restaurant in Paris not long ago. If the Swedes expected to see our hero flinch they were out of luck. Not only did the potent beverage slip down like water on an oily windscreen, but, when he whistled afterwards a gentleman at the next table, who received the full blast, had his soup blown clean out of his plate, and the chef in the back premises of the restaurant rejected an egg on the grounds it had whistled deafeningly and insultingly at him.

A well-known Trades Union leader who travels by air quite a lot is met at this end by a shiny saloon car with knobs on. The outfit is worthy in all respects of the first duke in the land but for the subtle fact that the chauffeur wears a soft-felt hat instead of a uniform cap, and so a decent democracy is maintained even when running over a member of the ignorant working classes. We could mention names, . . .—but we never says nowt about owt.—Spry.

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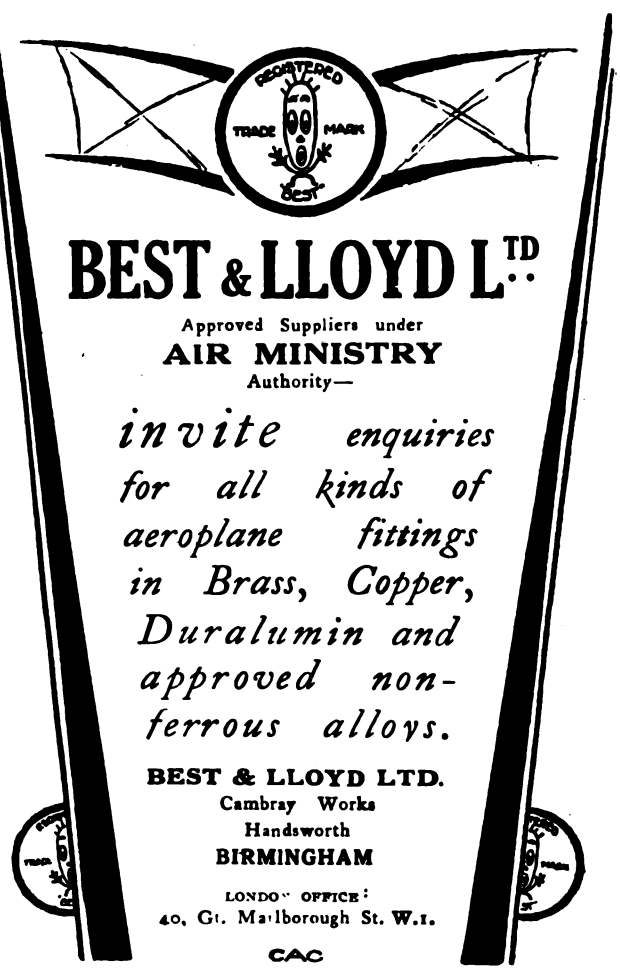

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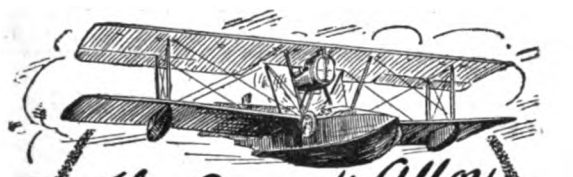

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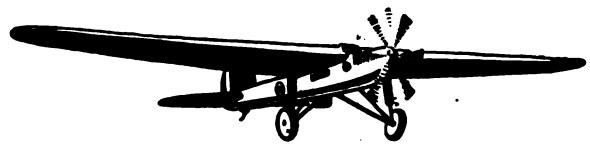

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THE INDIA AIR-MAIL TROUBLES.

Imperial Airways have suffered a series of misfortunes in the last few months and apparently their run of bad luck has not yet worked itself out. Besides losing the Calcutta off Spezia, Imperial Airways lost the use of another Calcutta off the African coast. This machine had its bottom stove in while taking-off. The remaining machine of the same type had its chine-struts damaged. Fortunately this is not serious, and by the time this appears in print the damage will have been rectified.

The Karachi correspondent of *The Daily Mail* states that after Nov. 12 the homeward-bound mail will leave Karachi on Tuesdays instead of Sundays.

There have been rumours of such a change for some time. It has the advantage of allowing the outward-bound mail to be answered by return instead of having to wait a week.

THE INDIAN AIR MAIL DELAY.

The Postmaster-General announces that owing to the damage to Imperial Airways marine aircraft on the Mediterranean section of the England-Indian Air Mail route the homeward Indian Air Mail which left Karachi on Saturday, Oct. 26, is being conveyed from Alexandria to Genoa by steamship and will not reach London before next Tuesday afternoon.

Until further notice, the air mail will be carried from Croydon on an air route *via* Cologne-Nuremberg-Vienna-Budapest-Belgrad-Uskub-Salonika, instead of *via* Genoa, to Athens, whence the normal route to Karachi will be followed.

The service from Karachi will follow the same route. The scheduled times of arrival at Athens and beyond by the outward service are substantially the same as at present. A further announcement will be made regarding the timing of the inward service.

THE WINTER AIR MAIL SEASON.

The Postmaster-General announces that a new edition of the Air Mail Leaflet, giving particulars of the winter services, is now available. It contains two maps, showing the principal Continental and oversea services used, and also an inset with a map and details of the direct service to India.

Apart from the usual temporary suspension of certain services during the winter, the most important alteration shown in the leaflet is the reduction, as from November 4, of the air fees for countries served by the England—India Air Mail Service. These air fees, which are additional to the ordinary postage charges, will be as follows:—

Egypt and Palestine:—Air fee, 2d. per half oz.; ordinary postage, 1½d. first oz., then 1d. per oz.

'Iraq:—Air fee, 3½d. per half oz.; ordinary postage, 2½d. first oz., then 1½d. per oz.

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Correspondence for Persia can now secure accelerated delivery in Persia by air services from Baghdad to Teheran and from Bushire to Shiraz and Ispahan. The air fee of 5d. per half-ounce in addition to ordinary foreign postage covers transmission by the England—India air route to Baghdad or Bushire as the case may be, and thence by air into Persia. Correspondence sent by the England—India air route prepaid at the full Indian rate can now overtake the ordinary mail for Australia, New Zealand, and the Far East, despatched from London on the previous Thursday evening.

The leaflet also shows:—

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PERSONAL NOTICES.

DEATHS.

WARD.—On Oct. 29, in Hong Kong Harbour, as the result of a flying accident, Albert Ross Ward, Flg. Off., R.A.F.

Mr. Ward entered the R.A.F. with a short-service commission in July, 1926, and underwent flying training at No. 4 F.T.S., Abu Sueir, and at No. 5 F.T.S., Sealand. He was then posted to No. 441 (Fleet Reconnaissance) Flight in H.M.S. *Argus*. He was promoted to Flying Officer in January, 1928, and was posted to No. 442 (Fleet Spotter Reconnaissance) Flight, Kai Tak, China, in November, 1928.

WILSON.—On Oct. 28, in the Firth of Forth, as the result of a flying accident, AC.2. Robert Henry Wilson, R.A.F.

MARRIAGE.

STOCKBRIDGE—CROSSLEY.—On Oct. 30, at Elloughton Parish Church, Brough, Yorks, John B. Stockbridge (Flg. Off., R.A.F.O.), flying instructor of the North Sea Aerial and General Transport Ltd., to Miss Alice Crossley.

BIRTHS.

ATTWOOD.—On Oct. 16, at Karachi, to Margaret, wife of Flt. Lt. E. H. Attwood, R.A.F.O.—a daughter.

GREEN.—On Oct. 24, at Felixstowe, to Dorothy Mary (*née* Hennessy), wife of Flg. Off. G. D. Green, R.A.F.—a daughter.

MOODY.—On Oct. 29, at Cranwell, to the wife of Flt. Lt. H. M. Moody, M.C., R.A.F.—a daughter.

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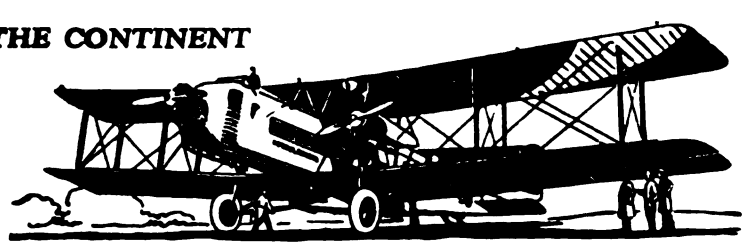

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ON SOME RECENT ACCIDENTS.

There has been such a crop of aeroplane accidents lately at, although we of THE AEROPLANE believe in treating r accidents more or less as a matter of course like street cidents and railway accidents, there seems to be good ason, or even a need, to discuss some of them in the light what is known about them, in the hope that by doing other accidents may be avoided in future. Also, some conderation may be given to the question of the qualifications nd training of pilots who are to be licensed to carry pasngers for hire or reward, either as air-line or taxi pilots as instructors at flying-schools.

Hitherto we have all believed that any pilot who has left he R.A.F. with a good record of freedom from accidents must be the best pilot to be had. But there is reason to believe that pilots trained in the R.A.F. may not be by any means the best pilots for the purposes of air transport, that, at any rate, pilots out of the R.A.F. would be the better for instruction in the handling and operation of civil aircraft.

Before starting to consider these accidents readers will do well to remember that actually the number of flying accidents to British aircraft with British pilots, and in British aviation as a whole, is very much lower in proportion to the total amount of flying done than it is in any other country. With the possible exception of the Netherlanders, our pilots are steadier and more careful than those of any other nation, our motors are rather more reliable and are kept in much better order, and our aircraft are better built and better maintained. And, even though their speed is poor and their design is archaic, some of our aeroplanes and seaplanes lift a better pay-load than do those of any other nation.

So far as accidents are concerned the British manufacturer has probably a finer record of freedom from failure in his structures than has any manufacturer in the world. Although there is plenty of reason for criticising the British manufacturer for his lack of business enterprise in refusing to produce what the market needs and for not going out to sell such stuff when it is produced, nobody can say that British workmanship is not the best in the world. The Prince of Wales was right when he suggested that our business men are not worthy of our workmen.

In discussing accidents we may leave out of the argument the two R.A.F. pilots who collided in the air near Croydon recently, and came down safely,—thanks to their standard service Irving parachutes. They were practising fighting, and that is always somewhat hazardous.

Apparently one pilot got into the slip-stream of the other and fell into a spin. As he recovered from the spin he somehow got the other machine into his blind spot while his own machine was in the blind spot of the other pilot. It was just one of those happenings which even the best of pilots cannot avoid, like that in which Squadron Leader Longton and Major Openshaw were killed at Bournemouth. Only this time both pilots were high enough to get clear of their machines.

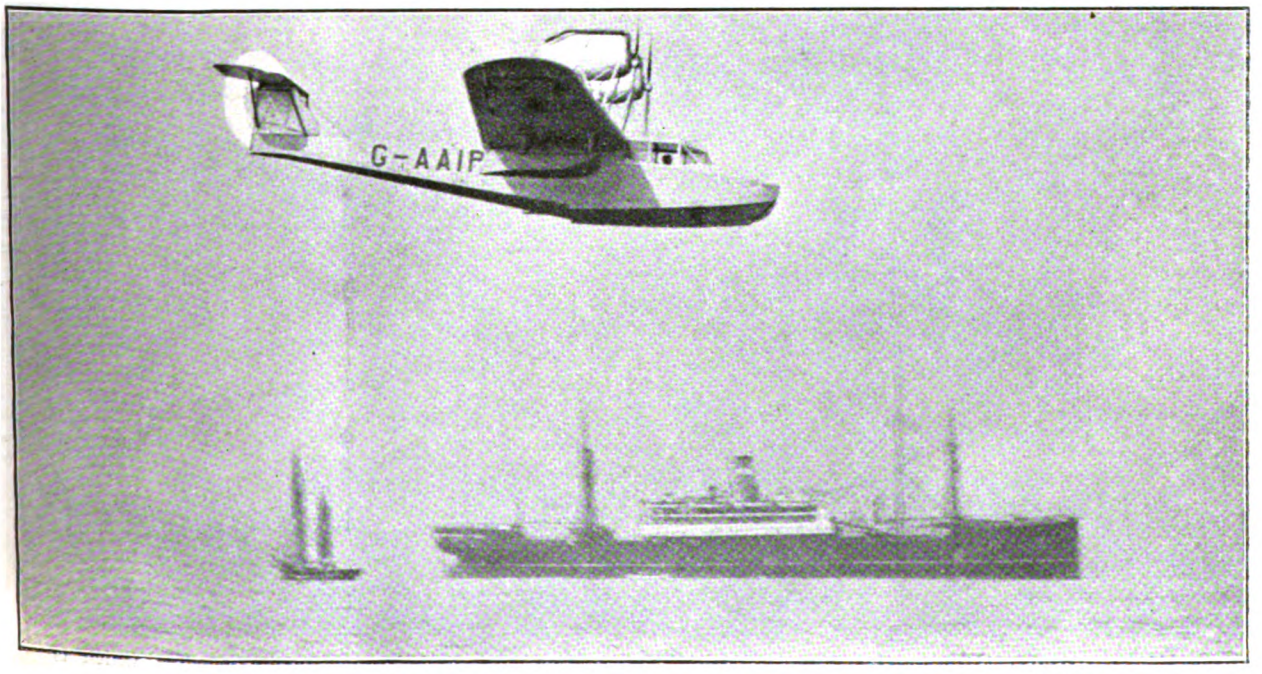
Where they were lucky was that they both landed practically unhurt on soft ground, although the area into which they fell is quite thickly inhabited. One of the greatest dangers of descending in a parachute is that it may fall on the roof of a house and the parachutist may fall off the house and be killed by falling into the street, as happened to a woman parachutist in Coventry some thirty years ago.

THE JUNKERS ACCIDENT.

The Junkers accident near Godstone certainly deserves discussion. The remarkable escape of Lieut.-Commander Glen Kidston, R.N., and the death of Prince Eugen of Schaumberg-Lippe, who died, apparently from sheer shock, after escaping from the machine, only shows how narrow is the margin between a fatal accident and an accident which may afterwards be treated as quite a good joke.

Apparently Commander Kidston, seeing that a crash was coming in any case, hung onto the luggage-rack, took the shock on his arm in tension, and got out after the crash and before the fire came. The other passengers seem

**"NOW THE GREAT WINDS SHOREWARD BLOW,
NOW THE SALT TIDES SEAWARD FLOW."**—*(Matthew Arnold.)*



A REAL PLEASURE CRAFT.—The Saro "Cutty Sark" (two Cirrus Hermes engines).

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to have been shot up into the front of the machine by the impact with the ground, stunned by shock-loading in compression, and then burnt—very much in the same way as the passengers in the Handley Page which came down in the Channel were flung into the front of the machine and stunned and drowned while those who were at the back of the cabin were able to get out.

Obviously the cause of the Junkers accident was simply that the pilot was flying too low. This seems to be a common fault among *Luft Hansa* pilots, unless other similar incidents of which one has heard were all due to the same pilot who was killed at Godstone.

Some few weeks ago an Englishman who has a great deal to do with aviation was coming from Berlin to Cologne in a Junkers when the machine ran into low clouds, or high fog. The pilot kept low, and every now and then when the fog was a bit thinner this passenger could see that they were flying quite close over the tree-tops of a forest. Suddenly the machine gave a heave to one side, and, as the wing on his side went up, he looked out of the window and saw the top of a pine-tree just brush through what one might call the arm-pit of the machine,—that is to say the angle between the wing and the fuselage. They scraped along like this for miles and miles, and eventually got to Cologne, as he said, more by God's Grace than by good judgment.

Another English passenger going to Berlin said that the machine ran into heavy rain and darkness an hour before they got there. They finished the journey just over the roofs of the houses in Berlin and actually *below* the neon lights on the various towers which are lit-up at night for the guidance of aircraft.

Other English passengers have also told strange stories of barely escaping mountain sides and tree-tops while flying in *Luft Hansa* machines.

On the other hand an experienced English pilot, who is now a high official of one of our greater aircraft concerns, came back from Berlin not long ago in a three-engined Junkers which travelled nearly all the way over the clouds, took its direction by wireless at about 5,000 ft., and finally came down through the clouds into clear air at 1,000 ft. just over Ostende. Consequently the probability seems to be that certain *Luft Hansa* pilots have had this bad habit of tree-scraping in fog, presumably without the management of the firm being aware of it. And possibly this last unfortunate accident will scare other pilots off making a similar mistake.

Presumably all the *Luft Hansa* aircraft now carry proper wireless equipment, and so can navigate properly over clouds or through them without taking such appalling risks. Personally, on a fine day and flying against the wind, one prefers hedge-hopping to any other method of progress. There is quite a lot of interest to be got out of watching the cars on the road and the cows in the fields and the old ladies hanging the washing out to dry. But, if one *must* fly in fog, then any pilot who flies lower than the top of the highest hill within fifty miles is just a plain natural-born fool.

The Spezia Loss.

We may now turn to considering the wreck of the *City of Rome,* off Spezia in the Gulf of Genoa. What was the real cause of the accident will never be settled. We know from the wireless message that one engine failed, but even so the Calcuttas fly quite well on two engines. So the machine could at any rate have reached the shore some fifteen or twenty miles away or could even have finished the journey quite well on two engines, in spite of the gale.

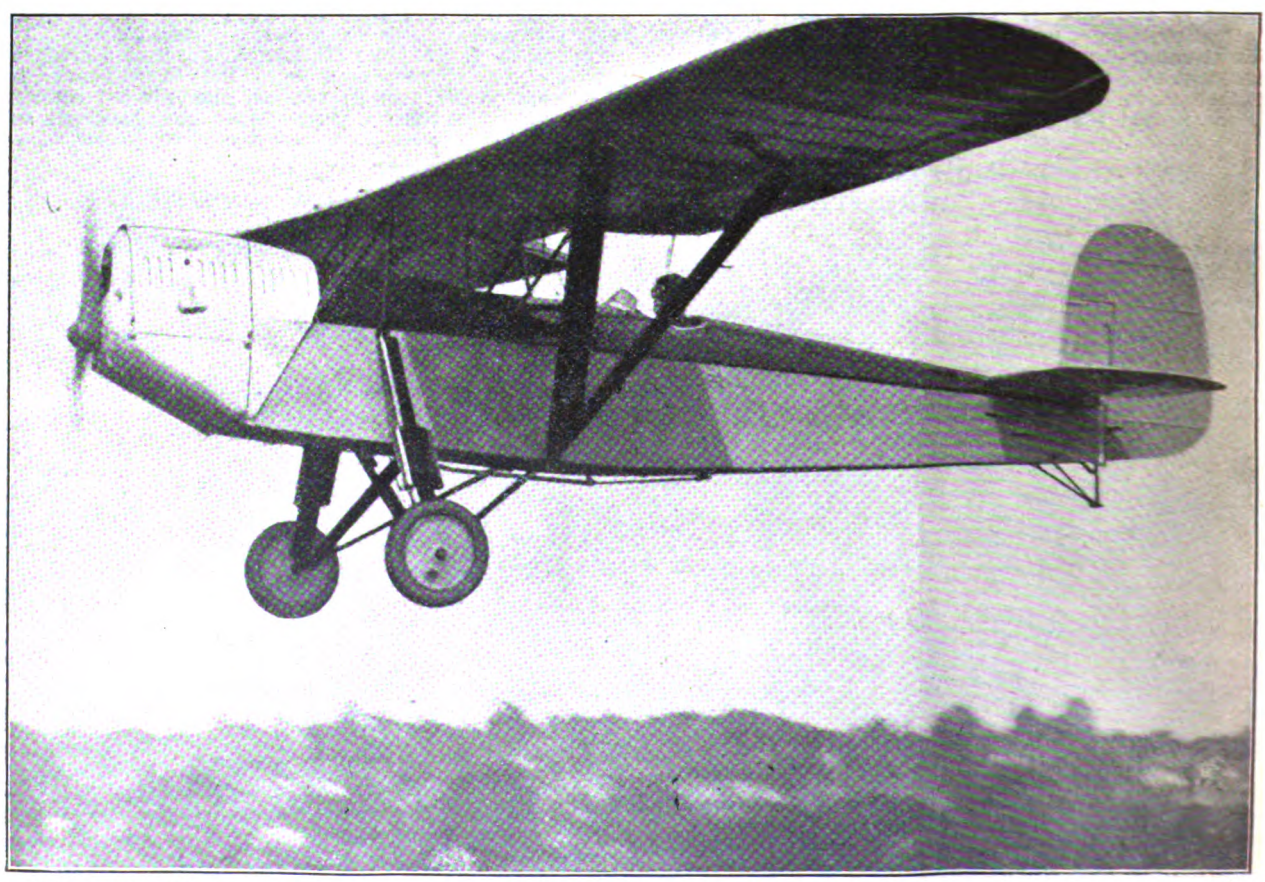
One theory is that in the middle of the gale a line-squall struck the machine and forced her down. Another is that driving the two engines full out, to do the duty of three, over-stressed one of them and so forced the machine down.

The real point is whether, when once it was down in such a gale, any flying-boat could have lived. When one first referred to this accident one said that the blame rested on those who sent people to sea in un-seaworthy boats. Lest there should be any misunderstanding, one would like to make clear that this phrase did not refer either to the constructors of flying-boats, or to the management of air lines or other commercial services which have to use flying-boats. As was said at the time, the development of flying-boats has been disgracefully neglected by all nations, and though we in England happen to have the finest flying-boats in the World, we are still a long way from having ocean-going flying-boats at all as they should be. The people who force others to put to sea in unseaworthy boats are the Governments of all nations who have not given enough encouragement to the designers and builders of flying-boats.

Possibilities of Flying-Boats.

The possibilities of flying-boats are enormous. There is in fact no reason why we should not have a flying-boat service between Europe and the United States within the next few years, other than the fact that the development of flying-boats has been so much hampered by lack of money.

The first serious attempt to build a flying-boat on the heroic scale is the Dornier Do.X. But even that, gigantic as it seems at present, would not stand up to a first-class gale with its wings on it. It would certainly ride out a bigger sea than any existing flying-boat, but even so it is not a sea-worthy boat.



ONE OF THE BEST.—An all-metal Widgeon with the Hermes engine and its new cooling-cowling which is sold by the Cirrus Co. with the engine.

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1922 A Napier-engined Supermarine flying-boat regained the Schneider Trophy for Great Britain at a speed of 149 m.p.h.

1922 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 180 m.p.h.

1923 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 192.4 m.p.h.

1926 The first non-stop crossing of South Atlantic Ocean carried out by Commandante Franco flying a Dornier flying-boat with two Napier engines.

1927 Schneider Trophy won by a Napier-engined Supermarine-Napier seaplane flown by Flight-Lieut. S. N. Webster, A.F.C. Speed 281.669 m.p.h.

1928 Capt. H. S. Broad, flying D.H. Hound, fitted with Napier engine, secured three World's speed records whilst carrying loads of 500 and 1,000 kilogrammes.

1928 The greatest formation flight ever carried out was made with four Supermarine-Napier Southampton flying-boats, each fitted with two Napier engines. The machines flew from England to Australia, round Australia and back to Singapore, covering 180,800 engine miles without mechanical trouble.

1929 The first non-stop flight from England to India was carried out with a Fairey monoplane fitted with Napier engine. 4,130 miles in 50 hrs. 38 mins.

Land—1929 The highest speed ever attained on land was made by Major Sir Henry Segrave when he drove his Irving-Napier car over one mile at the amazing speed of 231.36 m.p.h.
Capt. Malcolm Campbell set up world's land speed records at Verneuk Pan with his Napier Arrol-Aster as follows :—over 5 miles, speed 211 m.p.h.; over 5 kilometres, speed 216.53 m.p.h. They both used Napier engines.

Water—1929 The world's motor-boat speed championship was won at Miami by Major Sir Henry Segrave, driving Sir Charles Wakefield's Napier-engined "Miss England."
Sir Henry Segrave at the Lido with the same boat made six runs over the measured mile, averaging a speed of 92.8 m.p.h.
At this meeting, competing against the best from Italy and America, Sir Henry Segrave won all trophies, including the Duke of Piedmont's cup and Count Volpi's cup.

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Although the idea has been described as fantastic, there is no engineering reason why we should not have what has been so long advocated in this paper, namely, a perfectly good motor life-boat attached to a separate unit consisting of wings, tail and aero-engine plant, to which it can be attached or from which it can be detached in a moment. There are dozens of ways in which the job could be done by any first-class mechanical engineer with very little addition to the weight or cost.

Remembering that one hammered away at the Air Ministry for something like five years before they adopted parachutes, which have already saved thirty lives in the R.A.F., one expects to have to hammer away for another five years at the Air Ministry before they produce flying life-boats.

Actually our best hope of progress is that some of our great shipping companies will begin to take a live interest in aviation and, with their knowledge of sea work, will insist on having flying life-boats and not the things which we call flying boats. They will have to pay a bit more for the first one or two, but then shipping companies are used to thinking in millions, and a mere £40,000 or £50,000 or £60,000 for an experimental flying-boat is not going to frighten them.

There are in fact more opportunities for flying-boat lines linking up parts of the British Empire with the rest of the World than there are for land lines. People insist on thinking of a line from England to the United States as our first necessity, just as people have always insisted on thinking of a line from London to Paris as being the obviously necessary air line. But, just as there are a hundred miles of air line in Australia for every ten miles of British air line in Europe, so there are a hundred or perhaps a thousand miles of sea-going air line in the British Empire for every ten miles on the trans-Atlantic passage.

Actually we could probably run a high-speed mail line to the Cape by flying-boat quicker than we could run it by the land route through Egypt and Central Africa. And we have enough possessions on the West Coast of Africa to make a mail line of this kind worth while, even though there might not be enough passengers to make it pay as a passenger line. Such a line could quite well be all-British, except that perhaps we might make Lisbon, the capital of our oldest European ally, Portugal, our first stopping place.

From that route we might run an off-shoot to South America. Already the French have an excellent mail service to South America, but it crosses the South Atlantic by boat. And as the World's greatest seafaring nation, here is our great opportunity to maintain our reputation by putting a flying-boat line across.

Undoubtedly the stretch from Singapore to Australia should be done by flying-boats. And so should the stretch from Calcutta to Singapore. And then there are opportunities for another great flying-boat line from Singapore up to Hong Kong.

There is enough mail carried on all those routes, and enough business done on them, to make them all pay simply as mail lines. So all we have to do is to build the right sort of boat for the job. But if we try to run them with boats of any existing type we shall merely get a bad name for air-transport.

Seamanship.

In a recent article on airports, air-parks and aerodromes, one pointed out that a pilot of seaplanes or flying-boats has to be a great deal cleverer than a pilot of land machines, for he has to contend with tides and currents running contrariwise to the wind. But, apart from mere cleverness, a seaplane pilot ought to have quite a good training as a seaman.

Although no official statement has been issued as yet, there seems no reason to doubt the story of the skipper of the *S.S. Famiglia* which tried to salve the *City of Rome*. His report stated that having got to windward of the *City of Rome* he floated down a lifebuoy with a grass-line attached, which line was made fast to a heavier cable—which a sea-going correspondent calls a towing-pendant.

The pilot, or somebody else in the *City of Rome*, picked up the grass-line, which he secured to the boat and then waved to the skipper of the *Famiglia* to tow. The skipper is reported to have said that owing to not knowing English he could not make the pilot of the flying-boat understand that he should haul in the grass-line and make fast the heavy towing-pendant, so he had no option but to try to tow on the grass-line, with the obvious result that it soon parted.

Now the point is that any seaman would have known that the grass-line was merely used to float down the heavier line. Naturally the towing pendant could not be made fast direct to the lifebuoy as the weight of it would have sunk the buoy. A grass-line floats and that is why it is used in this way.

One report says that the skipper of the *Famiglia* saw two or three people standing on the wing of the flying-boat. If this statement is right, then there seems a probability that one of the wing-floats had carried away, as has often happened to flying-boats under similar circumstances, and people were out on the wing trying to keep the wing-float on that side in the water.

When the grass-line parted very likely the boat swung round, dipped a wing into the water, and turned clean over. That would account for the fact that the *Famiglia* was unable to find any trace of the boat when she turned to search for it after the parting of the line.

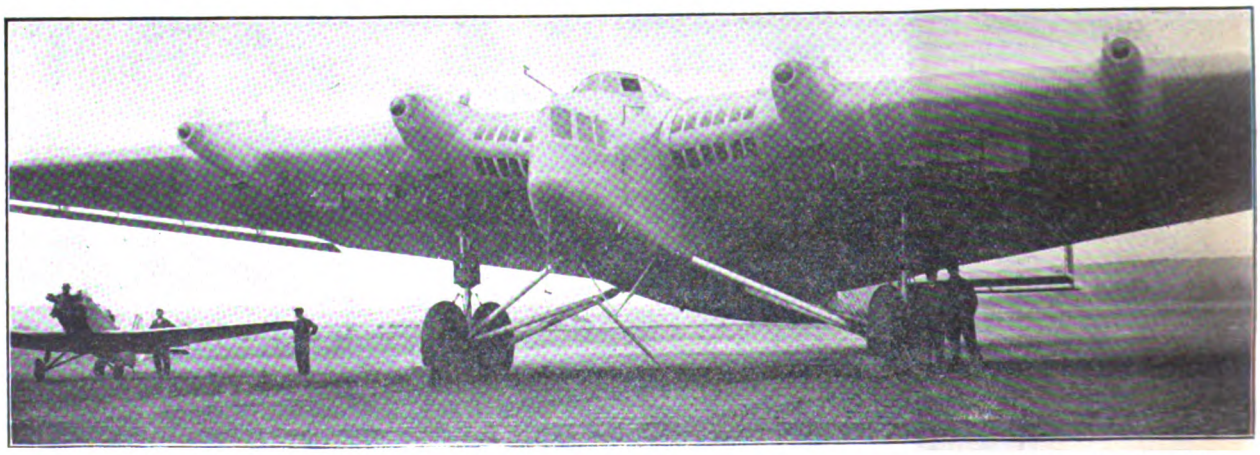
The S.O.S. Question.

Another point which seems worth mentioning in this connection is the failure of the S.O.S. As was reported at the time, the S.O.S. from the *City of Rome* was jambed at Spezia by a ship in the harbour which was doing some wireless practice on its own account. But the signal was picked up by Antibes and broadcast to the Mediterranean.

The *Famiglia* had no wireless, and found the flying-boat by sheer chance just when darkness had set in. The Calcutta had then been afloat in that gale for several hours, which shows at any rate that as flying-boats go in these days the Short Calcutta is as seaworthy a boat as exists.

Whether the signal from Antibes ever got to Spezia or not has not been stated officially. If it was picked up at Genoa or Naples, probably they would assume that Spezia had had it also and would not take the trouble to telephone to Spezia about it. So far as can be gathered the first information Spezia had was the arrival of the *Famiglia* to report that she had lost the *City of Rome* in the dark. What time she arrived is not known, but apparently the first ship to leave Spezia Harbour, at about 11 p.m., was an Italian destroyer, and she put back because of the bad weather.

There is of course the chance that if the S.O.S. had been received at Spezia when the *City of Rome* came down, something out of Spezia Harbour might have found her before dark. But remembering that during the War 1914-18, two destroyers of our Royal Navy in Kingstown Harbour took about an hour to get out of harbour and reach the Royal Mail Steamer *Leinster*, which had been torpedoed less than twenty miles away and well within sight of the harbour, with the result that a large number of lives were lost, perhaps we should have been asking too much of the Italian Navy to have expected them to have rescued the *City of Rome*.



SOMETHING LIKE AN AIR LINER.—The new big Junkers, with passenger accommodation in its wing, which is 8 feet deep. The "landing stick," under the nose of the fuselage, and the balance of the ailerons is noteworthy.

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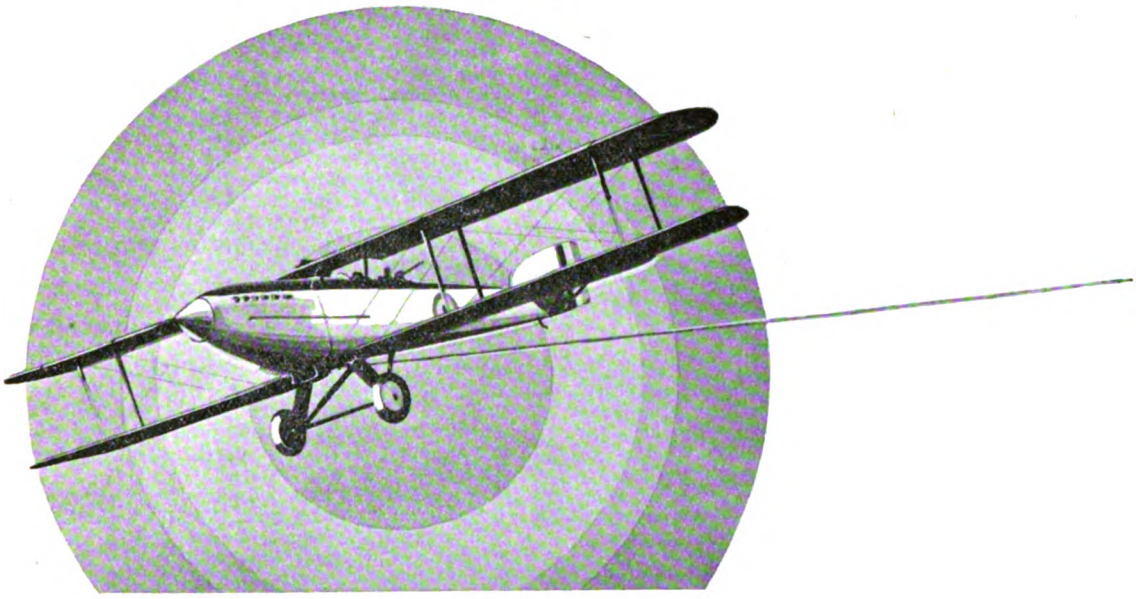

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Anyhow, the point is that the S.O.S. did not work, and the S.O.S. has not worked, so far, in the English Channel although several aircraft have been into it. In each case the passengers and/or crews have been rescued by boats that happened to be near. The probability is that when the next Imperial Airways Argosy or 40-seater falls into the Channel we shall again hear stories of the failure of the S.O.S.

Some few years ago, one believes, Imperial Airways made an experiment with a flying-boat. The pilot's instructions were to fly over the Channel, send out an S.O.S., come down on the sea and await developments. He waited four or five hours. Nothing happened, although tugs and so forth are supposed to be instantly ready to dash out when the S.O.S. comes in.

There is only one way of keeping this service efficient and that is for a regular S.O.S. routine to be maintained at Channel ports. Once a month this routine should be exercised. An R.A.F. seaplane or flying-boat could easily send out an S.O.S., and alight on the sea, just as Imperial Airways' pilots would alight, or perhaps rather better than some pilots have done.

To avoid unnecessary disturbance of merchant shipping, the standard S.O.S. could be modified so that the aircraft relief service only would come into operation.

After several months' practice of this sort we ought to be able to depend on a certain amount of efficiency. At present the whole thing seems to be run on the hit-or-miss principle.

Obviously aircraft will go on falling into the Channel as long as they fly over it. But we do not want to wait till one of the new 40-seat Handley Pages falls in. That would mean an unpleasantly large death-roll.

How Things Happen.

Some readers may think that other recent accidents have been caused by inherent defects in either our seaplanes or our land planes, apart from the fact that all aircraft in the World are considerably worse than they should be simply because of the natural slowness of human nature to make progress as it should. Therefore something must be said about the reason for the official statement that the England-to-India mail will in future go from Salonika to Alexandria instead of from Genoa as it has hitherto.

Only three Calcuttas were bought by Imperial Airways, Ltd., with which to start this service. One of them, the *City of Rome*, was sunk, as everyone knows. Another one was run on a rock, because the pilot tried to take off with too short a run out of the lagoon at Mersa Matruh. The third was put out of action because the boat fouled a buoy and knocked out one of the struts under the wing between the wing and the chine of the hull.

Another accident to which reference may be made with advantage is that which happened at Jask some months ago. That also seems to have been due entirely to misjudgment by the pilot.

The aerodrome there is about three miles long and a mile wide, and the surface, as Sq. Ldr. Bert Hinkler said some time ago, is of baked mud which looks like smooth cement. Naturally, especially at night, the height of a machine from this mud flat is about as difficult to judge as is the height of a machine from dead smooth water.

Apparently the pilot of the Hercules was coming to land, and, instead of landing perfectly straight and taking his level from the paraffin flares which had been lit for him, he tried to turn, probably with the idea of coming to rest near the supply-base, or whatever it is, instead of landing straight ahead and running some distance from it.

Whatever the cause of his turning may have been, while turning he touched the ground with the particular wing-tip on which his flare was burning. The wing crashed under the weight of the machine and caught fire, and the survivors got out before the fire reached them, just as Lieut.-Commdr. Kidston got out of the Junkers the other day.

Skill and Caution.

During the last few weeks one has discussed accidents of all kinds with a number of American friends. In the States, just as here, far more accidents happen through errors of judgment, or often through sheer carelessness by pilots, than happen either through defects in the aircraft or engine failure or weather.

In all businesses or sports calling for personal skill, the possession of considerable skill is apt to bring that familiarity which breeds contempt. People who do a thing well are too apt to trust their own cleverness to get them out of a tight corner. All the same, the really clever pilot is not the pilot who is so clever in getting out of a tight corner, he is the man who is too clever ever to get into a tight corner.

At present whenever a firm or an individual wants to employ a pilot, practically the only possible source of supply is the number of pilots who leave the R.A.F. each year on the expiry of their Short Service commissions. Very few men can afford to learn to fly as civilians and afterwards put in enough flying to qualify for their "B" licences.

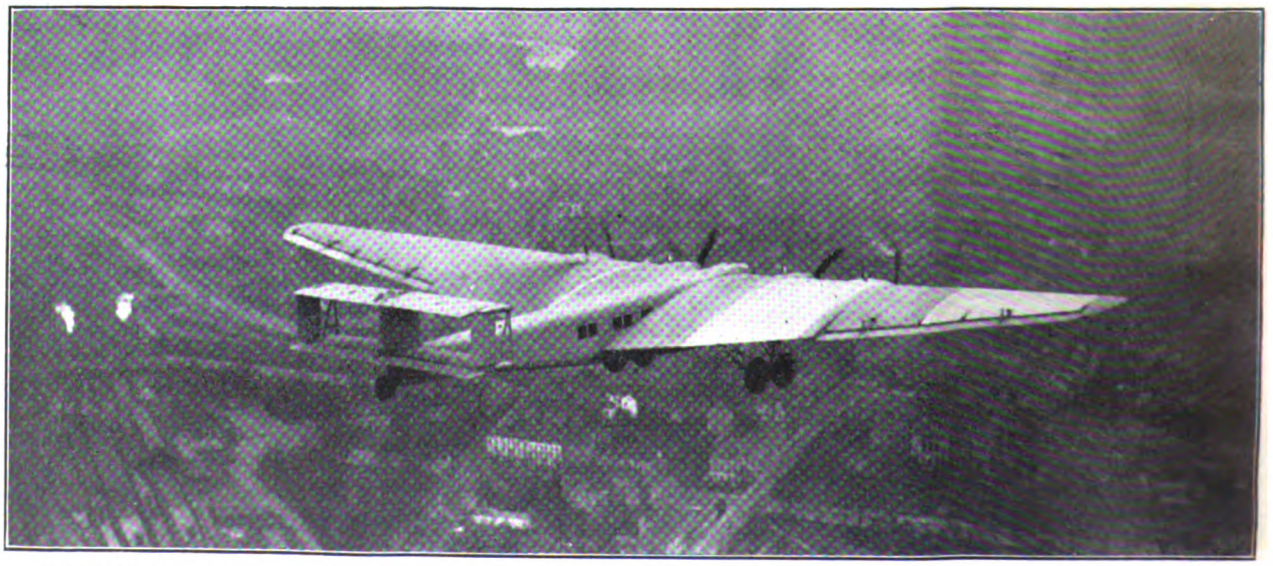
The worst of the R.A.F. system of training is that it is apt to give young men entirely wrong ideas on the subject of flying. In the first place they do not have to pay for breakages themselves, and unless they are extraordinarily unlucky or clumsy they do not get hauled over the coals badly for breaking Government property. Also Service flying, even in time of peace, naturally involves dangerous flying to a certain extent.

The Service pilot who always took Safety First as his watchword, as every good civil pilot should, would very soon get himself the name in the R.A.F. of having cold feet. And in fact a pilot who always flew for safety on Service machines would find himself in time of war in very bad practice for air fighting.

Also, R.A.F. pilots are accustomed to flying machines with heaps of spare power, and many of them with wonderful oleo undercarriages, with the result that they get into the habit of pulling machines off the ground without really having to fly them off. Likewise they get into the habit of slamming machines onto the ground anyhow without the need for making the kind of landing which any passenger-carrying aeroplane ought to make.

In fact, to put it quite bluntly, unless he happens to be a man with real intelligence and with great self-restraint, who is deliberately training himself to be a civil pilot, the ordinary R.A.F. pilot is apt to become slap-dash and ham-handed and a trifle careless. He is apt to think on the lines of one of our earliest Naval ratings to take a hand in aviation, who used to say, whenever a machine was crashed or any unusual extravagance happened: "Ah, well, the Navy's a big firm, Sir, and it won't notice it."

The result is that when he gets into a civil machine of



HER HOME TOWN.—The Junkers J.38 over Dessau,—she has a span of 107 feet, has 2,400 h.p., weighs 20 tons, and has a speed of 124 m.p.hr.

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Extract from "The Times Engineering Supplement." 9/11/29

"The latest type of Cirrus engine, Mark III, has been standardised by National Flying Services for all their aircraft. This decision is the more interesting as the company are using several kinds of light aeroplane for their club, instructional and training work. There are obvious advantages from the operator's point of view in standardisation, and no doubt the long record of reliability which the various Cirrus engines have set up played its part in the decision"

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any sort, even though he may have a particularly good record in the R.A.F. for freedom from accidents, he is quite apt to handle his machines in a way which an old experienced civil pilot would regard with horror.

RULES AND SENSE.

In this connection one of the greatest jokes one has come across concerns a young civil pilot who learned to fly almost immediately after the War when he was barely old enough to have a pilot's certificate. He happened to have only one effective eye—the other had been damaged when he was a child. Consequently he is only accustomed to seeing everything with one eye. But because he only has one effective eye the Air Ministry refuses him a licence.

In those early days after the War he flew the most extraordinary aeroplanes, some of them antique Avros which were falling to pieces and others machines of types which in these days nobody would ever think of flying and many people *could* not fly.

So far he has never had an accident of his own making. Once in swerving to avoid somebody on the aerodrome who had run out after he had landed he pulled a machine to one side and damaged a wing-tip or something. Another time he ran into a hedge in a forced landing or something of that sort. In spite of his excellent record, he cannot get a "B" licence, though there is a regulation which says that defective eyesight shall not be a bar to anybody who flew prior to a certain date and whose eyes have not dis-improved since that date.

Not very long ago this particular pilot was working with a certain firm which was doing joy-riding. As he holds an "A" licence he could take the machines out and test them, but as he had not a "B" licence he is not allowed to take up passengers for hire or reward. Consequently his firm had to engage some pilots who had quite recently left the R.A.F.

When they came to fly joy-ride Avros their ideas were a trifle too modern. They were quite good pilots on anything with plenty of power, but the rotary-engined Avro sank them on the spot. The result was that they had to have a little dual instruction from our unlicensed one-eyed friend before they, the fully qualified "B" licence pilots, were quite comfortable in their new jobs.

FIND THE MEN.

There seems to be more than a doubt whether after all the Short Service pilot is really the best type for Civil Aviation. Apart from his flying methods he is not always quite serious about his job when he gets it. There is, in fact, a definite need in this country for a training school for civil air-traffic pilots, like the *Deutsche Verkehrsfliegerschule* in Germany—which turns out men who are more serious about their work than are the majority of R.A.F. pilots who are looking for jobs. A properly run school, with ruthlessly strict instructors, and with a management which would stand no nonsense, would soon get for itself such a name that graduates from it would be sure of getting jobs as air-transport pilots and as flying-instructors. And the time seems ripe for starting such a school now.

The one thing which is more difficult than finding a good job for a good man when he is out of work is finding a man to fit a job when a job is vacant. One may find a man who is capable of doing the job, but what is far more difficult is finding a man who is willing to work at the job for the sake of doing the job, and who is willing to take orders and advice from those who know more about it than he does. A combination of genuine ability and keenness and willingness to work for the sake of the work, is about the most uncommon attribute of mankind. And it is the only way to success.

If air transport is to become a sound business proposition in the future pilots of aircraft cannot be allowed to treat it as a joke. There is no use in having reliable engines and reliable aeroplanes if they can be piled up by pilots who treat their job with undue levity, or on the other hand by pilots who are too self-confident to be careful.

One of the best pilots in this country remarked the other day, when one asked him why he had landed in a certain way on a certain spot, that he had been flying long enough to treat every aeroplane with respect. He was quite right. Until pilots learn that even the best of aeroplanes are liable to turn round and bite if they are not treated with respect we shall not attain to that standard of safety which must be reached if aviation is to be recognised as a regular and profitable method of transport.—C. G. G.

ON SOME SERVICE PIONEERS.

The extract from *The London Gazette* which is published this week makes known the retirement of four distinguished senior officers of the Royal Air Force. Though the fact that they were going has been known for some time, their loss will be none the less deeply regretted, for all of them have in their different ways won the high regard of those who served with them,—and all of them are among the pioneers of Service Aviation. Consequently some short reminiscences of their Service career seems justified, and under the circumstances perhaps one may be forgiven for recalling some facts about them which would not be published if they were merely moving from one exalted position in the Service to another.

AIR COMMODORE T. C. R. HIGGINS.

Air Commodore Thomas Charles Reginald Higgins, C.B., C.M.G., was born in 1880 near Bedford, and was educated at Burney's, Gosport, and in *H.M.S. Britannia*. So, like several distinguished soldiers, he began his Service career in the Navy. He transferred to the Army in 1900 and was gazetted to The King's Own Regiment, with which he served in the South African War. Thereafter he served with the West African Frontier Force in Nigeria until 1911.

In that year he learned to fly on a Farman biplane at Hendon. His Royal Aero Club Certificate, No. 88, is dated May 16, 1911. And so, though he learned to fly for sport at his own expense, and though he did not join the Royal Flying Corps till the War 1914-18 had been in full blast for more than a year, he deserves to be ranked with the earliest of Service Pioneers, for actually he became a pilot before any but four of the Navy's aviators.

He was gazetted to the Royal Flying Corps as a Flying Officer on Sept. 14, 1915, when he had already been gazetted Major in his regiment on the first of that month. He was made a Flight Commander on Oct. 19, 1915, and a Squadron Commander on Jan. 3, 1916.

On June 25 of that year he was promoted to command a Wing with the rank of Lieutenant-Colonel and as such he did valuable work in France, with the result that on Jan. 4, 1918, he was promoted to command a brigade of the R.F.C. with the temporary rank of Brigadier-General. As such he commanded the R.A.F. Brigade which did such valuable service round London under Major-General Ashmore,—G.O.C., the London Air Defence Area.

Up till the end of 1917 he was still a Major in the Army, but on Jan. 1, 1918, he was promoted Lieutenant-Colonel by Brevet.

After the Armistice he commanded No. 7 Group, Andover, from July, 1919. In September, 1922, as an Air Commodore, he was appointed Director of Training at the Air Ministry. In April, 1926, he was appointed Chief Staff Officer in the 'Iraq Command under Sir John Salmond, and in April, 1928, he was appointed to command No. 10 Group, Lee-on-Solent.

Although he was 35 years of age when he joined the R.F.C., and had done little flying after qualifying for his Certificate in 1911, Major Higgins, as he then was, proved himself to be an unusually good pilot. Naturally, after taking over a Squadron in 1916, he had little opportunity of flying on active service. But one has a very distinct recollection of his arriving late one night at Sir John Salmond's headquarters beside Velu Wood about ten days before the Armistice, having flown over from England in a Sopwith Pup. The German air raids on London were then over, the Allies were advancing rapidly across France, and there was, one gathered, some question of his Brigade coming to France to help in making that advance quicker,—so apparently he had flown over to see the G.O.C. about it and thus save official correspondence.

He had landed practically in the dark on some sort of a temporary landing ground in the middle of the devastated area a few miles from Advanced G.H.Q. That may give some idea of his quality as a pilot. And incidentally that was certainly the last Sopwith Pup ever flown in France.

As a senior officer Air Commodore Higgins has always been noted for the excellence of his staff work and he has been highly esteemed for his intellectual ability.

AIR VICE-MARSHAL C. A. H. LONGCROFT.

Air Vice-Marshal Charles Alexander Holcombe Longcroft, C.B., C.M.G., D.S.O., A.F.C., was born in 1883 at Llandisilio, Aberayron, Cardigan, and was educated at Charterhouse and the Royal Military College. He was gazetted to The Welch Regiment in 1903.

He learned to fly on a Bristol biplane at Brooklands, and his Royal Aero Club Certificate, No. 192, is dated Mar. 5, 1912.

One has a vivid recollection of him as a pupil. As he soon became one of the finest pilots in the R.F.C., and to this day is as good a pilot as anybody in the Air Force, one can say that he is the outstanding example of the apparently hopelessly bad pupil who suddenly becomes a brilliant pilot. Admittedly the box-kite was not an ideal aircraft. It was easy to stall, and it was liable to fall over in every direction for it was utterly without stability. And so it was difficult.

One has a very clear remembrance of young Mr. Longcroft in his period of pupilage standing a box-kite on its front elevator and hitting the ground with his face before any of the rest of the aircraft hit the ground. Yet, very soon afterwards, when the R.F.C. was formed, and the original No. 2 Squadron was sent to Montrose under Major Bourke, Captain Longcroft was one of the most brilliant of a particularly brilliant group of pilots.

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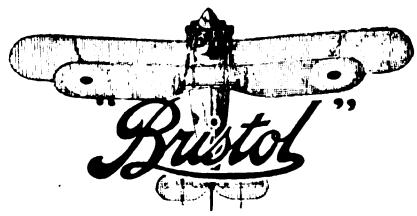

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Actually he joined the Air Battalion, Royal Engineers, on its formation in April, 1912, at Farnborough, and took part in the Army manœuvres of September, 1912,—the first in which aircraft were used seriously.

Three of his flights soon after that period are notable. First there is his great flight, which at the time was the World's Distance Record, from Montrose by way of Farnborough to Portsmouth and back at Farnborough non-stop, 445 miles, in a B.E.2. For this flight he was awarded the Britannia Trophy for the most meritorious performance by a British aviator in that year,—1913.

Another was his landing of a B.E.2 at Montrose in a line-squall which swept the whole of England from end to end and did an immense amount of damage. Capt. Longcroft was up over the sea when the squall came in from the West. By diving with his engine full on he just managed to get into the aerodrome, and his machine remained stationary over one spot on the aerodrome flying full out at a height of a few feet until a number of mechanics ran out, got hold of the wing-tips and hauled it onto the ground. As the speed of those machines was somewhere between 70 and 80 m.p.h. the strength of the wind may be judged.

Somewhere about the same time No. 2 Squadron went to Ireland on manœuvres. Getting out of one of those tiny stone-walled fields in the County Limerick Capt. Longcroft's machine was a bit sluggish, with the result that it hit the top of a wall which removed the tip of each of the four blades of its airscrew and the whole of its undercarriage. Instead of falling over the wall into the next field as most pilots would have done, Capt. Longcroft flew a complete circuit and put the machine down neatly on its belly, precisely on the spot from which he had started.

On the outbreak of War he flew to France with No. 2 Squadron and did a number of the first reconnaissance flights in the War. During the retreat from Mons he set out on reconnaissance and on returning to the aerodrome from which he had started made one of his usual excellent landings. Unfortunately the British Army was by that time some distance South, and German troops were already on the aerodrome. In those days no soldier knew one aeroplane from another, and a number of German soldiers ran out to the machine. Seeing that they were Germans Capt. Longcroft, who luckily had not stopped his engine, calmly took off again. The story at the time said that he waved his hand in a friendly way to the Germans, and so they did not fire at him. And thus he got away to become one of the greatest of the leaders of the R.F.C., instead of being either a prisoner-of-war or a casualty.

During the War he won the respect and affection of everybody who served with him. Not only was he one of the most inspiring, and at the same time considerate, of Commanding Officers, but the junior officers thought particularly highly of him because he was such an unusually fine pilot.

So far as one can recollect, those who served under him in France had only one grievance against him, and that was because of one very bad habit which he formed when he commanded a Brigade. He used to treat himself to a few hours' leave from Brigade Headquarters and go down to one of his squadrons and borrow one of their best single-seaters in which he used to go out over the lines looking for enemy aircraft. Thus he deprived the squadron temporarily of an aeroplane and entailed the risk of their losing their beloved Brigade-Commander.

His decorations give some idea of the work which he did during the War.—His first decoration, acquired in August 1915, was the Russian Order of St. Stanislas, with Swords. The R.F.C. at the time used to say that this Order carried with it in Russia the *ex officio* duty of Inspector of Seminaries for Young Ladies. But that one believes was purely a legend.

In July 1917 he was awarded the Cross of the Legion of Honour of France.

On Jan. 1, 1918, he was gazetted to the Distinguished Service Order for service in the Field. And on Jan. 1, 1919, he was awarded the Air Force Cross.

As most readers know, the Distinguished Flying Cross and the Air Force Cross were invented on the formation of the Royal Air Force in April 1918. The D.F.C. is to the Air Force what the D.S.C. is to the Navy and what the M.C. is to the Army. The A.F.C. is for those who fly with distinction not actually against the enemy. As someone has neatly put it, the D.F.C. is awarded for flying in the face of the enemy and the A.F.C. is awarded for flying in the face of Providence.

General Longcroft, as he then was, insisted on flying on every possible occasion and made many flights entailing considerable personal danger. In his rank he was not supposed to fly officially against the enemy and so he was given the A.F.C. for flying as he did.

At the end of January 1919 he was made a C.M.G. in recognition of his services during the War. And in January 1923 he was made a C.B. He was promoted Brevet Major early in the War and Brevet Colonel on Jan. 1, 1917. And he was mentioned in Despatches five times.

On Aug. 5, 1919, he was promoted Air Commodore and on Nov. 1 of that year he was appointed to a post which will for ever make his name memorable in the history of the Royal Air Force even after his gallantry in the War and the stories of his exploits have become mere legends. On him was then imposed the task of organising the R.A.F. Cadet College at Cranwell.

As the founder of that institution and its first Commandant he assumed a responsibility the results of which must always persist. The tone which is set and the spirit which is inspired in the beginning of an institution of such a kind must necessarily extend throughout the Service which it supplies with junior officers, and from the very beginning, thanks to Charles Longcroft and the Staff which he collected round him, Cranwell has lived up to the highest traditions of the King's Fighting Services.

After establishing Cranwell and commanding the College for four years Air Commodore Longcroft was appointed Director of Personal Services at the Air Ministry in December 1923. On July 1, 1925, he was promoted Air Vice-Marshal. And in November 1926 he was appointed to command the Inland Area.

His ability as a pilot, even in that rank may be gauged by his flying of a D.H.53 (a small low-wing monoplane with a two-cylinder engine) in the Air Ministry Inter-Departmental race at the Air Force Display in that year. And since then he has habitually flown single-seaters of all types.

Still more may his judgment be measured by the fact that some two years ago, when the Directorate of Technical Development was puzzled by the contradictory reports from expert test-pilots on the Handley Page slots, Air Vice-Marshal Longcroft was haled forth from his office by the

MODERN TRAINING.—The Hawker Tom-Tit, a two-seat light training biplane with the Armstrong Siddeley Mongoose engine, with fog-flying training-equipment and Handley Page automatic slots.

—("Aeroplane" photograph.)

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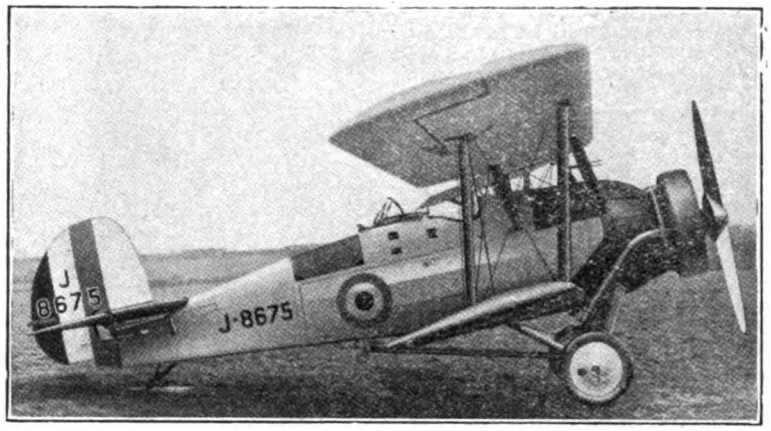

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Approx. total weight	4000 lbs	4115 lbs.	Time to 5000 ft.	5.25 minutes	4.25 minutes
	1820 kgs	1870 kgs	" " 10000 ft	12 5 "	10.5 "
Speed at ground level	143.5 m.p.h.	149 m.p.h.	" " 15000 ft.	26 "	21.75 "
	231 km.p.h	240 km.p.h.	" " 1000 mtrs.	3.5 "	2.5 "
" " 5000 ft	139.5 m.p.h	145 m.p.h.	" " 3000 "	12.5 "	10.25 "
" " 10000 ft	134 m.p.h	140 m.p.h.	" " 5000 "	34 "	27.5 "
" " 15000 ft.	125 m.p.h.	131 m.p.h.	Absolute Ceiling	19000 ft.	19100 ft.
" " 1000 metres	226 km.p.h	236 km.p.h		5800 metres	5830 metres
" " 3000 metres	216 km.p.h	225 km.p.h.	Service Ceiling	17300 ft.	17700 ft.
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Air Ministry and made to fly a Bristol Fighter so fitted, despite his protests that at his advanced age he should not be given a test-pilot's job to do.

No officer in the Air Force could cause greater regret by his retirement than does Air Vice-Marshal Longcroft. His outstanding characteristic has always been his loyalty to those under whom he served and those who served under him. And at all times he has been blessed by a sense of humour. Somehow these two qualities of his have always seemed to be excellently illustrated by a hitherto unpublished incident which one would never dare to publish but for the fact that he is now leaving the Service. On a certain night a week or so before the Armistice, in a Nissen hut which was his Brigade Headquarters, one saw him put a perfectly good Lieutenant-Colonel in the fire for speaking disrespectfully of Charterhouse.

Many generations of R.A.F. officers to come will find that the name of Air Vice-Marshal Longcroft will be held up to them as the highest standard which they can hope to reach. And those who attain to the standard which he represents will be a credit to the Service.

He is still a young man, as officers of his rank go, and there should be a great career before him when someone in a high position gives him an opening in which his strength of character can find a full outlet.

Air Commodore C. R. Samson.

Air Commodore Charles Rumney Samson, C.M.G., D.S.O., A.F.C., was born at Cheetham, Lancashire, in 1883. He was educated at Hemel Hempstead, and at the R.N.C. in H.M.S. *Britannia*. He joined the Royal Navy in 1898 and was promoted Lieutenant in 1904. Before taking to flying he served in Somaliland and in the Persian Gulf.

Apart from his notable war service the name of Air Commodore Samson has a prominent place in the history of British aeronautics. He was the senior officer of the first four officers allowed by the Admiralty to learn to fly. The others were:—Lieut. Reginald Gregory, R.N., who recently died in China, Lieut. A. M. Longmore, R.N. (now Air Commodore, C.B., D.S.O.), and Lieut. E. L. Gerrard, Royal Marine Light Infantry (now also an Air Commodore and a C.M.G. and D.S.O.).

All three were benevolently allowed to draw pay and allowances while living at Eastchurch and being taught to fly by Mr. G. B. Cockburn, a member of the Royal Aero Club, on Short biplanes lent free of charge to the Admiralty for the purpose by Mr. Frank McClean of the Royal Aero Club, at the Eastchurch Aerodrome which had been lent to the Royal Aero Club by Mr. Frank McClean (now Sir Francis).

Lieut. Samson soon became a particularly brilliant pilot. His Royal Aero Club Certificate, No. 71, is dated April 25, 1911.

Besides being a brilliant pilot he showed energy and initiative of a high order. In October 1911 he persuaded the Admiralty to buy two aeroplanes and to send to Eastchurch twelve naval ratings as the basis of a naval flying school. He also persuaded the Admiralty to sanction the building in Chatham Dockyard of a platform with a trackway from which aeroplanes could start from the decks of ships. This platform was set up on H.M.S. *Africa*, and early in December 1911 Lieut. Samson made from that platform the first successful flight in Europe from a ship.

Thereafter with the help of the late Mr. Horace Short he worked out a design for a seaplane. This machine was finished in March 1912 and on it he flew altogether about 150 hours without damaging anything. During this year he was a member of the Technical Sub-Committee which prepared a detailed scheme for the formation of a British Aeronautical Service to be known as the Royal Flying Corps. And early in 1912 he was appointed to command at Eastchurch, pending the establishment of the Central Flying School.

At the end of 1913 he was already doing experiments in night flying. And in the same year he flew an aeroplane off H.M.S. *Hermes* during naval manœuvres. In 1912-13 he was experimenting with bomb-dropping at Eastchurch, and in 1913 he commanded a flight of aeroplanes at the Review of the Royal Navy by the King at Spithead.

On the outbreak of War in 1914 he was ordered to establish a base at Skegness and to take charge of the patrol of the coast from the Humber to Cromer, but shortly afterwards he flew to Ostende with his Eastchurch Squadron, where they made reconnaissances over Belgium. Thereafter, when the German Army were in process of occupying the South and West of Belgium he organised a fleet of armed and armoured motor-cars and performed exploits with them which unhappily came back to the London newspapers and made him a hero of the Press. From this early popularity he has never been able to free himself, and throughout his Service career, no matter how carefully he might guard his movements, he has always been unwillingly in the newspaper spotlight.

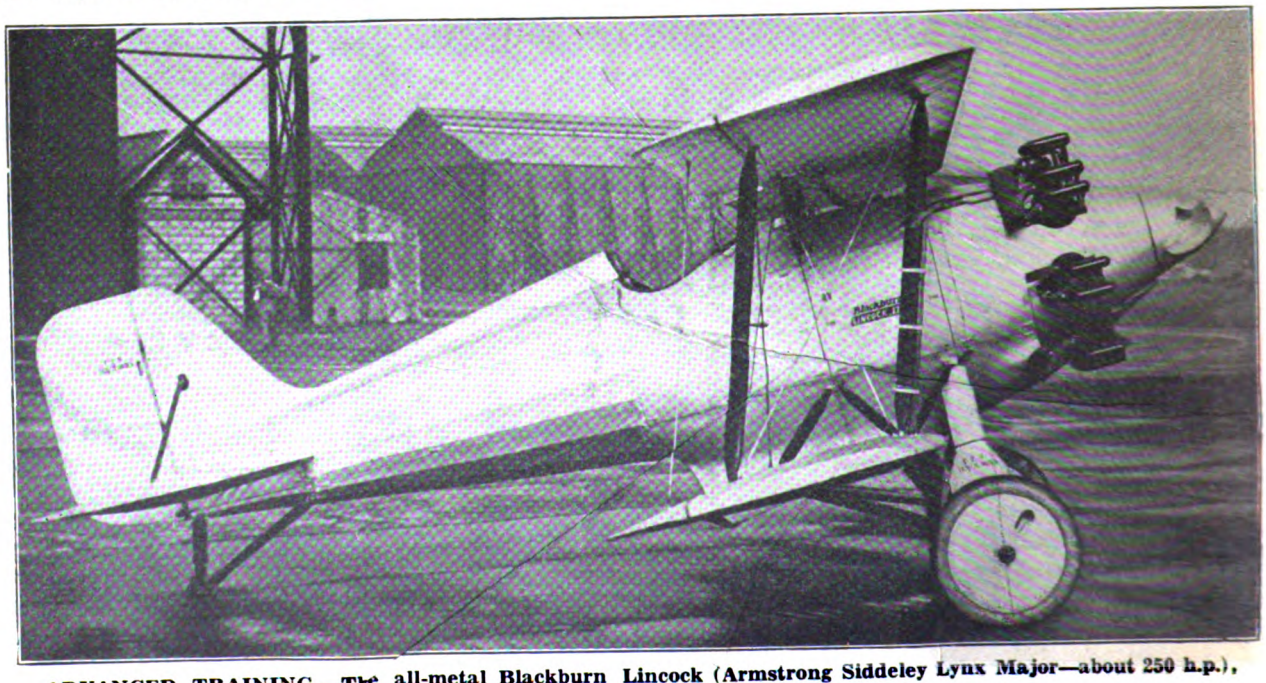
Certainly, no man ever better deserved to be a hero among those who served under him. Charles Samson was not only one of the finest pilots during the War but he was one of the bravest, for, unlike some pilots who have acquired fame by their exploits, he knew fear and overcame it, which is at once the penalty and the reward of having an imagination.

After serving at Dunkirk until February 1915 his Unit was withdrawn to Dover and he was there ordered to organise a fresh Unit to help the Fleet and the Army in the Dardanelles,—where no Army aircraft were then available. For his services in Flanders he had already been made a Companion of the D.S.O.

His Unit arrived at the Dardanelles just at the time of the first landing and led by him did extraordinarily fine work.

Later, in the aircraft-carrier *Ben-my-Chree*, which he took over from Commander l'Estrange Malone, he did equally notable work with seaplanes, till his ship was unfortunately sunk by Turkish field guns in the harbour of Castellorizo. Thereafter he took over the aircraft carrier *Raven II* and explored the Indian Ocean with seaplanes in search of German submarines which were laying mines in the mouths of the Indian harbours.

In November, 1917, he was appointed to command the Naval Air Station at Great Yarmouth, and all who served at that station during his command can tell unlimited stories of his personal gallantry and of his curious but highly effective methods of inspiring his men. Something of his work is told in *The Story of a North Sea Air Station*, by Mr. Snowden Gamble.



ADVANCED TRAINING.—The all-metal Blackburn Lincock (Armstrong Siddeley Lynx Major—about 250 h.p.), a light single-seat fighter with a high performance.

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In October, 1918, he was appointed to command a Group at Felixstowe as a Group Captain. In January, 1921, he was promoted Air Commodore. In 1920 he was Chief Staff Officer at H.Q., Coastal Area, and in 1921 he was appointed to command the R.A.F. in the Mediterranean. In 1922 he was posted to No. 6 Group Kenley, and in June, 1926, he was appointed Chief Staff Officer, H.Q. Middle East, at Cairo.

In September of that year he himself led the Service flight of Vickers Victorias which made a notable cruise from Heliopolis to Aden and back. In May, 1927, he led the annual flight of Fairey biplanes from Cairo to the Cape and back.

In August, 1927, he was placed on the half pay list. Since then he has had a very severe illness from which he has made an extraordinary recovery,—but when one last saw him on the day of the Schneider Contest he was still looking very unlike the robust fighting man who led so many of the R.N.A.S. in desperate undertakings.

Decorations are not always a measure of the gallantry of the individual, but the decorations won by Charles Samson rather under-rate than otherwise his exceptional gallantry. A list of them may well be placed on record. Beginning with the African General Service Medal with a clasp for Somaliland 1908-10, and the three regular medals for the War 1914-18, he was appointed a Companion of the D.S.O. in 1914. He was made an officer of the Legion of Honour, France, in January, 1916, and in March, 1916, he was awarded the Croix de Guerre. In January, 1917, he was given a Bar to his D.S.O. And in January, 1919, he was awarded the A.F.C. Lastly he was created a C.M.G. in June, 1919. But there are many men who have been given the Victoria Cross for individual acts of less bravery and there are few men who have continually set such a high standard of gallantry.

As a Commanding Officer from his earliest days Charles Samson never asked an officer or a man to take a risk which he did not take in a greater degree himself. In his earliest days he flew strange aircraft of unknown habits, many of which were distinctly dangerous. When seaplanes were first built he flew them before asking anybody else to take the risk. In action, whether over land or over sea, he himself was always in the most dangerous place. His natural gift for leadership is best proven by the fact that to-day there is hardly a man who served under "Sammy," as he was familiarly called behind his back, who would not turn out and follow him again if physically capable of doing so.

Air Commodore Samson is still young, and he has "enterprise and shrewdness,"—as an Official Despatch of September, 1914, said of him. His many friends in the Service will hope that these qualities may bring him success in whatever business he may choose to follow.

Air Vice-Marshal Sir Oliver Swann.

Air Vice-Marshal Sir Oliver Swann, K.C.B., C.B.E., was born in 1878 at Wimbledon. He was educated at Elstree, and in *H.M.S. Britannia*, and at the Royal Naval College. He joined the Navy in 1895.

As a Commander, R.N., he was appointed in 1910 to help in the construction of the Navy's first rigid airship, built at Barrow-in-Furness, which was known derisively as *H.M.S. Mayfly*. While in this appointment he began to take a lively interest in heavier-than-air craft. In 1911 he bought from A. V. Roe and Co. Ltd., one of their earliest biplanes with a small Green engine and had it fitted with floats.

Although he was not a qualified aviator, he pluckily tried to fly it off the water at Barrow. The machine left the water but unfortunately slid backwards into it and was wrecked. Thus he acquired the distinction of being the first British aviator to leave British water in a seaplane.—though the manner of his descent deprived him of the honour of being the first Naval aviator.

Nevertheless, to him belongs the credit of being the first private owner of a seaplane and certainly of being the first Naval officer to get off the water in a seaplane.

Quite undefeated by the mishap to his seaplane and by the failure of the airship, Commander Schwann, as he then was, learned to fly on a Bristol biplane over Salisbury Plain. His Royal Aero Club certificate, No. 203, is dated April 16, 1912.

About that period he was appointed Second in Command to Captain Murray Sueter, Director of the Air Department of the Admiralty. And so he was one of the prime movers, first of all in the formation of the Naval Wing of the Royal Flying Corps, and later of the Royal Naval Air Service, which came officially into being on July 1, 1914.

In the early days of the War Commander Schwann came near to losing his life at the hands of British troops. Not long before the War the R.N.A.S. had bought from the Mars Flugzeugwerke of Leipzig a biplane of considerable promise. In this machine Commander Schwann and Lieutenant Collet, R.M., were flying up to Scotland on some business connected with the Grand Fleet, when they were forced by engine failure to land at Scarborough Race Course.

The Race Course was at that time occupied by a detachment of Territorial Infantry, all of whom were firmly convinced that the German Fleet was to land the German Army at Scarborough within the next hour. The whole country at the period was crazy with spy-mania, and anything that suggested German origin was liable to be destroyed at sight.

The mental state of the country was, as usual, perfectly indicated by *Punch* when it announced that the name of "Jermyn Street" was *not* to be changed.

When the Mars biplane landed it was promptly surrounded by Territorials, with their fingers twitching on their triggers. The occupants of the machine descended. They spoke perfect English, but they wore leather coats over blue uniforms,—and all Germans were known to wear blue uniforms. A territorial officer arrived. He saw the damning name "Mars Flugzeugwerke, Leipzig" in German on a brass label on its side.

One of the captured officers claimed to be a Commander in the Navy, and to prove his case presented to the Territorial officer a card bearing the name Commander Oliver Schwann, R.N. There was very nearly a double death on the spot. But the Territorial officer was persuaded to keep them under arrest till investigations had been made.

At that time there happened to be in Scarborough a young amateur aviator named Gaskell Blackburn who had tried to get himself accepted for the Royal Naval Air Service and had been refused. Being a native of those parts he knew several of the authorities in Scarborough, and he also happened to recognise the machine which had come down on the Race Course. So he dashed up to the Race Course and found what had happened

He added his arguments to those of the captured officers, and in due course was able to communicate with the Scarborough authorities, who enabled them to communicate with their headquarters in London, and so their lives were saved.

Young Mr. Gaskell Blackburn is now quite well known as a Wing-Commander, R.A.F., for he managed to get himself accepted for the R.N.A.S. and afterwards distinguished himself in East Africa and in Mesopotamia. Then or thereabouts Commander Schwann, like so many other people who bore names with a German appearance, changed his name and henceforth was known as Swann.

In April 1915 Captain Oliver Swann, R.N., as he had then become, took over command of the aged Cunard Liner *Campania*, equipped her with about a dozen seaplanes and joined the Grand Fleet at Scarborough. There was a legend in the Grand Fleet that the old *Campania* was chiefly held together by her successive coats of paint,—but hold together she did and managed to do some very good work. Owing to an unfortunate accident the *Campania* did not take part in the Battle of Jutland but she and her seaplanes did a great deal of valuable scouting work in the North Sea.

Early in 1918 Captain Swann took command of the *Icarus*, which was also used as a seaplane carrier. In April 1919 he commanded the R.A.F. Mediterranean Area, with Headquarters at Malta. In 1921 he was Director of Personnel at the Air Ministry and in 1922-23 he was Air Member for Personnel on the Air Council.

In November 1923 he was appointed Air Officer Commanding Middle East at Cairo, which post he held until November 1926. Since then he has been on the half-pay list,—and now retires automatically.

THE DO.X.

Dr. Dornier gave some interesting figures relating to the Dornier Do.X during the 18th meeting of the German Scientific Association for Aviation in Berlin on Nov. 6.

Dr. Dornier stated, according to *The Times*, that the Do.X offered the best prospects of profit in its present form if employed on stretches between 1,000 and 1,500 kilometres (roughly 600 and 900 miles). Dr. Dornier calculated the running costs, inclusive of everything save capital outlay, at two marks per ton-kilometre on a 1,000-kilometre run, with a yearly aggregate of 75,000 kilometres (45,000 miles).

He gave examples of routes on which such a machine could be profitably employed; for instance, it could carry about 12½ tons of useful load on the 120-mile stretch between New York and Atlantic City; nine tons, or 95 passengers, on the 450-mile run between Marseilles and Algiers.

The tons mentioned are probably metric tons (2,205 lbs.) The figure of two marks per ton-kilometre is equivalent to about 3s. 3d. per ton-mile.

ITALY'S GIFT TO BRAZIL.

On Nov. 9 the Rome correspondent of *The Times* stated that the Italian Government had decided to present the Savoia S.64 to the Brazilian Government.

This is the monoplane with the 550 h.p. Fiat A.22 on which Capt. Ferrarin and Major del Prete made a World's record by flying from Rome to Natal on the Brazilian coast, a distance of 5,062 miles. The date of the flight was July 3-5, 1928.

The recent flight of Costes and Bellonte from Paris to Manchuria has surpassed this distance, and is likely to receive homologation as the new record for distance.

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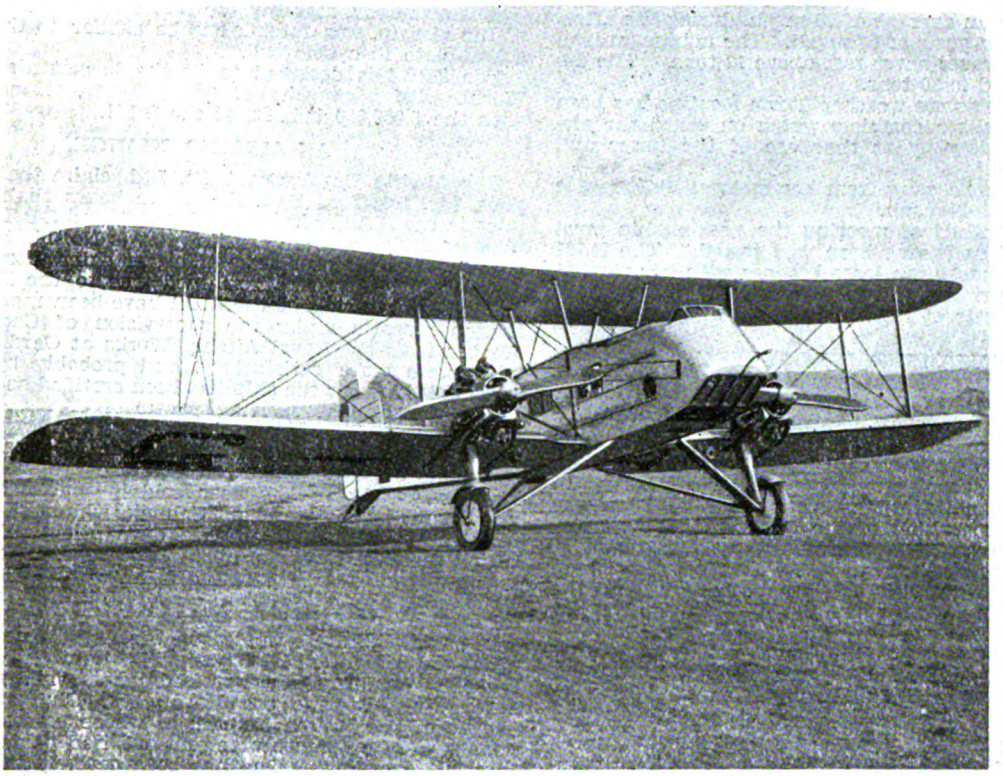

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AIRSHIP NEWS.

R.101.

On Nov. 9 the R.101 made her fifth test flight. This was remarkable for the fact that 82 people were on board. This is the largest number ever carried by a British aircraft, and is half the number recently carried by the Dornier Do.X flying-boat. The passengers were mostly technical people from the Air Ministry.

THE VINDICATION OF THE R.101.

During the gale of Nov. 11 which continued during the night to Nov. 12, the R.101 rode at her mooring-mast quite satisfactorily.

The wind rose to an average of 70 m.p.h. during the afternoon of Nov. 11 with gusts of 83 m.p.h. The maximum load on the coupling however never rose above 12 tons. The designed breaking load is 30 tons.

During the recent severe weather Storm Routine has been in force. This entails a complete watch on board the airship, another standing by at the base of the tower and another within call.

When the R.33 broke away from her mast at Pulham the wind did not exceed 45 m.p.h.

The improved method of mooring the new airship must now be considered as having been well tested. The R.101 was better at the mast than loose because with her present engine equipment working full out she would have progressed backwards in the gale of Nov. 11 at speed of from 3 to 13 m.p.h.

A PARLIAMENTARY LOTTERY.

Eighty places for a flight in the R.101 were recently allotted to the House of Commons. There was a certain amount of Parliamentary excitement over this adventure, and 159 members applied for seats. As a result of this enthusiasm, and presumably so that honourable members might not be seen queueing up for a seat or attempting to become stowaways, a ballot was arranged. The draw was made under the supervision of the Speaker on Nov. 6.

Forty of the successful applicants are Labour members, thirty-one are Conservatives, and nine are Liberals. There are three women, Lady Astor, Dr. Ethel Bentham, and Dr. Marion Phillips. Mr. Montague, the Under-Secretary for Air, also won a place.

One can only hope that R.101 may not emulate that famous Italian triplane which, during the War 1914-18, took up a load of 12 or 18 Italian journalists and shed its wings at 5,000 ft. or thereabouts.

THE COST OF THE AIRSHIPS.

In the House of Commons on Nov. 6 in reply to a question by Sir J. Power, the Under-Secretary of State for Air said that the cost of the R.101 had been given in the Air Estimates as £527,000. The figures of the actual cost were not yet available but would probably slightly exceed this total. The contract price of R.100 was £350,000 with an option of re-purchase to which a precise money value could not be assigned. He was not in a position to state how much the contractor had spent on her construction.

AIRSHIP PROSPECTS.

In the House of Commons on Nov. 6, in reply to a question by Mr. Malone, the Under-Secretary of State for Air said that until the Airship R.101 had completed her preliminary trials he was not in a position to give any definite date for the projected flight to India.

In reply to a further question by Mr. Malone, Mr. Montague said that assuming that the airships R.100 and R.101 passed their trials satisfactorily, they should prove suitable (subject possibly to some minor modifications) for experimental operation and demonstration flights to the Dominions. A regular service could not be established with only two airships.

AIRSHIPS AND PARACHUTES.

In the House of Commons on Nov. 6, in reply to a question by Mr. Day, the Under-Secretary of State for Air said that fifty parachutes had been carried on the trial flights of H.M. Airship R.101. The officers and crew had been fully instructed in the use of these parachutes and although it was not possible, for obvious reasons, similarly to instruct passengers, no real difficulty should be experienced in the use of the parachutes by anyone.

[Mr. Montague's reply was somewhat ambiguous. In the first place what is the use of the officers understanding the use of parachutes if the passengers do not? What are the "obvious reasons" which make it impossible to instruct passengers in the use of parachutes? One does not have to do a practice jump to understand the mechanism of the thing. The official instructions given to civilians travelling in Service aircraft are roughly: "Here is the ring. On the command 'Jump' you get over the side, jump, count three, and pull the ring." Even journalists are not required to do a practice jump. Further to this, if parachutes are really needed, or would be any use in airships, they should be worn, or at least the harness should be worn, with the pack in an easily accessible spot, by every member of the crew and by every passenger. The harness of the parachute has to be adjusted to fit the individual before it can be buckled on. At sea any passenger can pick up any life-belt and put it on, but heaven help the outsize passenger who, in case of emergency tries to get into the parachute harness of the smallest-sized passenger.—C. M. MCA.]

THE FIRST RIVET.

On Nov. 7, at the works of the Goodyear Zeppelin Company in Akron, Ohio, Rear Admiral Moffett fastened a gold rivet in the largest ring of the new American airship ZRS.4.

This ceremony, marking the first step in the construction of the airship, was intended to be similar to the laying of a keel-plate in a shipyard.

The ZRS.4 is designed to be the largest airship in the World, with a capacity of 6,500,000 cub. ft., as compared with the 5,000,000 cub. ft. of the R.101.

AN AIRSHIP CHANGE.

The Airship Development Co. Ltd. claim that their new pilot, Mr. Beckford Ball, flew more hours than any other pilot in the R.A.F. airships of the S.S. and S.S.Z. types. His pilot's certificate as an airship pilot is No. 14. Many of his contemporaries took charge of bigger ships after qualifying as pilots, but Mr. Ball remained true to the Blimp.

Air Ministry trials of the A.D.1 have been made at Cramlington recently under the supervision of Captain G. F. Meager from the Royal Airship Works at Cardington. The trials were quite satisfactory, and probably by the time these notes appear the ship has been certified as airworthy.

A LITHUANIAN ZEPPELIN HANGAR.

The Zeppelin hangar which the German military occupants of Lithuania erected on the present site of the Kaunas Aerodrome has been sold by public auction. It was bought by the merchant Salmuk, who paid Lits. 155,000 for it. Mr. Salmuk intends to dismantle the hangar and to sell the iron contents, about 1,800 tons, for remelting.

HONOUR WHERE DUE.

In some preliminary notes on the Aerodrome Conference which was organised by Sir Alan Cobham and Sir Charles Wakefield on Nov. 5 one expressed doubts whether the Royal Aeronautical Society, the Royal Aero Club and the Air League of the British Empire, in whose names the invitations of the Conference were sent out, had paid for so much as a postage-stamp. One has been severely taken to task for having these doubts, or at any rate for putting them into print.

Closer investigation has produced the assurance that in fact all the preliminary letters to municipal authorities referring to the proposed Conference were sent out by the Royal Aeronautical Society on the printed note-paper of that Society. And as in fact such communications were sent to about five hundred individuals the amount of paper, envelopes and postage-stamps must have been quite considerable.

Considering that a copy of THE AEROPLANE and a covering letter were sent to each of those same individuals from this office we here are able to sympathise with the Royal Aeronautical Society.

Apart from such routine work as was done by his staff, the Chairman of the Royal Aeronautical Society, Colonel the Master of Sempill, did an enormous amount of work in connection with the Conference. He acted as Chairman at the Conference, and conducted the proceedings with his usual tact and judgment. Also he deputised for Sir Sefton Brancker in welcoming the visitors. And in many other ways he helped forward the good cause.

On the other hand, one regrets that one cannot recall seeing at the Conference many of those important personages whose names figure so impressively in the Society's publications, although quite a fair number of them appeared afterwards at Sir Charles Wakefield's banquet. One cannot help feeling that if more of the important people in British Aviation had absorbed mental sustenance from the excellent papers which were read at the Conference, even at the cost of denying themselves the pleasure of Sir Charles Wakefield's hospitality, if their time was too valuable to allow them to attend both functions, we might in future have looked forward to their helping the development of British Aviation with a better understanding of the problems before it.—C. G. G.

A BACK NUMBER WANTED.

Will any readers who have copies of THE AEROPLANE of August 28, 1929, which they no longer need send them to the Editor, THE AEROPLANE, 175, Piccadilly, W.1, as this issue is out of print and several readers urgently require copies of that number.

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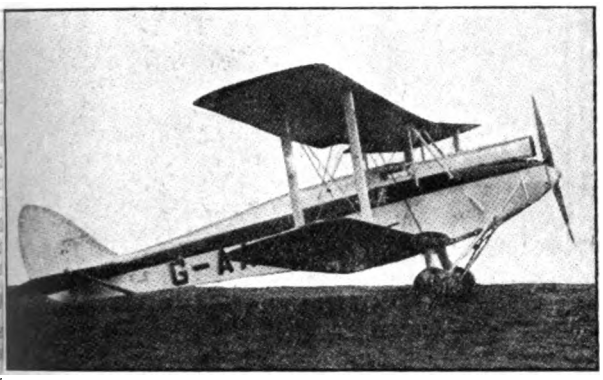

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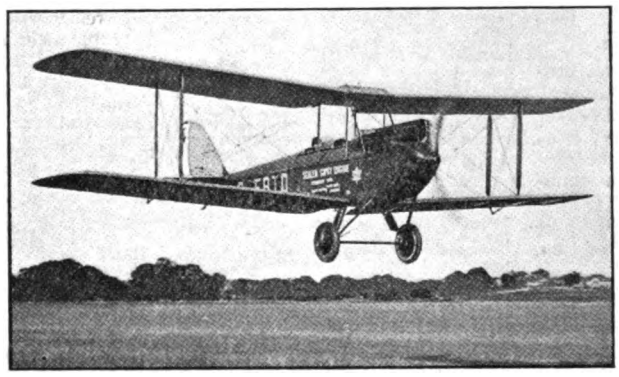

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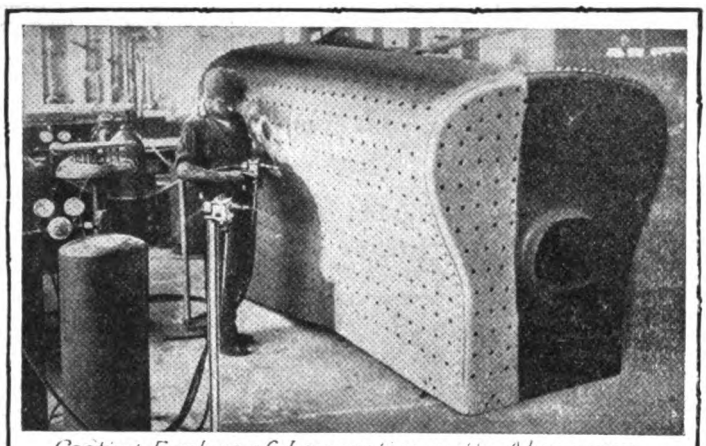

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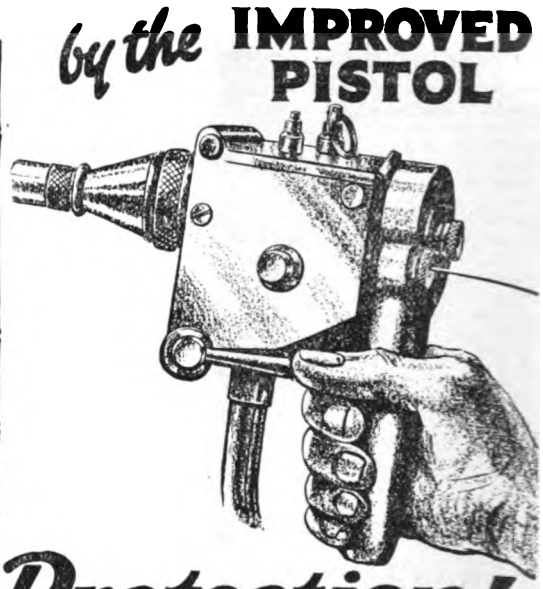

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THE ROYAL AIR FORCE.

The London Gazette.

Air Ministry, November 5.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—Flt. Lt. G. H. Stainforth (Lt. The Buffs, R.A.R.O.) is granted a perm comn. in this rank (Oct. 1). The following Plt. Offs. are promoted to the rank of Flg. Off.:—D. B. McGill (with seniority of June 9) (June 16); J. A. Harris, C. P. Hanlon, L. H. Snelling (Oct. 8); H. H. Chapman (Oct. 13); M. N. Oxford (with seniority of Oct. 13) (Oct. 20).

The following Plt. Offs. on probation are confirmed in rank:— B. A. Blythe, A. L. Brain, C. M. D. Chambers, H. R. Collins, F. A. McNeill, G. O. St. J. Morris, K. W. Pell, A. F. Powell, R. A. R. Robinson (Oct. 2); A. H. Abbott, F. S. Barron, A. G. M. Cary, C. B. Field, E. G. Granville, H. L. McCulloch, R. M. Messiter, G. F. P. O'Farrell, R. W. Wallace, T. E. Whittome (Nov. 2).

Air Vice-Marshal A. E. Borton, C.B., C.M.G., D.S.O., A.F.C., is restored to full pay from half pay (Nov. 1).

Flg. Off. J. B. Mackenzie takes rank and precedence as if his appointment as Flg. Off. bore date Oct. 1. Reduction takes effect from Oct. 7.

Air Vice-Marshal Sir Oliver Swann, K.C.B., C.B.E., is placed on the retired list (Nov. 2).

The following are placed on the retired list at their own request:— Air Vice-Marshal C. A. H. Longcroft, C.B., C.M.G., D.S.O., A.F.C. (Nov. 2); Air Commodore T. C. R. Higgins, C.B., C.M.G. (Nov. 1); Flg. Off. L. J. Booth (Oct. 11).

Air Commodore C. R. Samson, C.M.G., D.S.O., A.F.C., is placed on the retired list on account of ill-health (Nov. 6).

Flg. Off. L. A. Egglesfield is transferred to Reserve, class A (July 8). (Substituted for the notification in the *Gazette* of July 9.) Plt. Off. on probation R. R. Maxwell-Channell relinquishes his S.S. comn. on account of ill-health (Oct. 29).

Plt. Off. B. S. Bramble is cashiered by sentence of General Court Martial (Oct. 9); Plt. Off. J. D. Robertson is dismissed the Service by sentence of General Court Martial (Oct. 26).

MEDICAL BRANCH.—W. S. Stalker, M.D., D.P.H., is granted a temp. comn. as a Flt. Lt. with effect from and with seniority of Oct. 21. The S.S. comns. of the following officers are antedated to the dates stated:—A. L. St. A. McClosky (Sept. 1, 1926); R. Thorpe (Sept. 2, 1926); L. O'Connor, M.B. (Aug. 2, 1927); J. C. Neely, B.A. (Nov. 11, 1927); P. B. L. Potter, M.B. (Mar. 5, 1928); J. L. Groom (April 2, 1928).

Flg. Off. L. O'Connor, M.B., is promoted to the rank of Flt. Lt. (Aug. 2); Flt. Lt. (Acting Sq. Ldr. Hon. Wing Cdr.) J. N. MacDonald is promoted to the acting rank of Wing Cdr., with pay, whilst so employed (April 1); Flg. Off. A. L. St. A. McClosky is promoted to the rank of Flt. Lt. (Sept. 1, 1928) (substituted for the notification in the *Gazette* of Feb. 5); Flg. Off. R. Thorpe is promoted to the rank of Flt. Lt. (Sept. 2) (substituted for the notification in the *Gazette* of Mar. 5); Flg. Off. E. A. Wilson, M.D., relinquishes his S.S. comn. on account of ill-health (Oct. 17); Flg. Off. V. G. Pedley (Temp. Lt., General List, Army, Dental Surgeon) relinquishes his temp. comn. in the R.A.F. on completion of service (Oct. 18).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—C. Langley is granted a comn. in Class A as a Plt. Off. on probation (Oct. 21). The following are granted comns. in Class A as Flg. Off. on probation (Sept. 10):—E. K. Wallis, J. W. Rayner. The following are granted comns. in the Special Reserve as Plt. Offs. on probation (Oct. 14):—R. A. Hall, W. F. Pharazyn.

The following Flg. Offs. are promoted to the rank of Flt. Lt. (Nov. 1):—C. H. A. Farnan, H. M. Schofield, E. H. Fielden, A.F.C., A. L. Macmillan, A. D. McDowall, C. S. Staniland, I. W. C. Mackenzie.

The following Plt. Offs. are promoted to the rank of Flg. Off.:— G. R. De Havilland (Oct. 30); E. P. Swallow (Nov. 2). Flg. Off. E. V. Culverwell is transferred from Class A to Class C (Nov. 5); Flt. Lt. M. Ballard is re-employed with the Regular Air Force for a further year (Nov. 1).

Armistice Day.

A detachment of the Royal Air Force formed part of the Guard of Honour at the Armistice Day Ceremony at the Cenotaph, Whitehall, on Nov. 11. Trumpeters of the Royal Air Force sounded the Last Post at the end of the Two Minutes' Silence.

Marshal of the Royal Air Force Sir Hugh Trenchard, Chief of the Air Staff, laid a wreath on the Cenotaph on behalf of the Royal Air Force.

The representative detachments of ex-Service men and women present at the Ceremony included a contingent of the Women's Royal Air Force. A wreath was laid, on behalf of the W.R.A.F. Old Comrades' Association, by Miss Spinney.

The Royal Air Force Memorial.

A short ceremony to celebrate the anniversary of the signing of the Armistice was held at the R.A.F. Memorial, Thames Embankment, on Nov. 10.

A wreath was laid on the Memorial on behalf of the R.A.F. Memorial Fund by Air Marshal Sir John Higgins, K.C.B., K.B.E., D.S.O., A.F.C. Other representative wreaths were from the Government and People of Australia, the Royal Canadian Air Force, the Permanent Air Force of New Zealand, the South African Air Force, and the Women's Royal Air Force, Old Comrades' Association.

Foreign Decorations.

His Majesty the King has given authority for the wearing of the following decorations conferred upon officers of the British aircraft-carrier *Eagle* by the King of Spain in recognition of valuable services:—

ORDER OF NAVAL MERIT.

THIRD CLASS.—Capt. Noel Frank Laurence, D.S.O., R.N.

SECOND CLASS.—Cdr. Humphrey Maurice Robson, D.S.O., R.N.; Wing Cdr. Roger Martin Field, R.A.F.; Eng.-Cdr. William Frederick Paffett, R.N.

FIRST CLASS.—Lt. Robert Rule Graham, R.N.; Lt. Ian Mackenzie Martineau, R.N.; Lt. Anthony Cuthbert Guy Ermen, R.N.; Lt. Brian Harold Maule Kendall, R.N.; Flt. Lt. Bryan Vernon Reynolds, R.A.F.; Flt. Lt. Harold Hunter Down, R.A.F.; Flg. Off. Edward George Lambert Russell, R.A.F.; Flg. Off. Arthur Pakenham Fitzhardinge Murray Berkeley, R.A.F.; Lt. Hugh Percival Brister, R.N.; Lt. Edward Owen Unwin, R.N.

The Royal Air Force Staff College.

In the House of Commons on Nov. 4, in reply to a question by Major Pole, the Under-Secretary of State for Air said that the numbers of Indian Army and Dominion officers who had received training at the R.A.F. Staff College were as follows:—

Indian Army, 1926, 1; 1927, 1; 1928, 1. Royal Canadian Air Force, 1926, 2; 1927, 2; 1928, 2. Royal Australian Air Force, 1926, 2; 1927, 2; 1928, 2; South African Air Force, 1928, 1.

No charge was made against the Government of India in respect of Indian Army Officers trained at the R.A.F. Staff College in view of the provision by that Government of reciprocal free training at the Staff College, Quetta. Payment was made by His Majesty's Governments in Canada and in Australia at the rate of £400 a year in respect of each officer under training. The actual receipts during the period covered by the three financial years beginning on April 1, 1926, and ending Mar. 31, 1929, had been as follows: Australia, £2,350; Canada, £1,358; South Africa, £496.

The World's Fastest Aircraft.

The Supermarine-Rolls-Royce S.6, in which Flg. Off. Waghorn won the Schneider Trophy and Sq. Ldr. Orlebar broke the World's speed record, is now on view at the Science Museum, South Kensington.

Since the contest the machine has been used to advertise a newspaper and the public who paid for the machine have been charged by that newspaper to see it.

At South Kensington admission is free daily, and a large number of people have already seen the S.6 there. It is immediately inside the entrance in Exhibition Road and is mounted at the end of a gallery opposite the Wright biplane.

It will remain in London until the end of the year.

The Schneider Trophy.

In the House of Commons on Nov. 6, in reply to a question by Lt.-Cdr. Kenworthy, the Under-Secretary of State for Air said that the decision of the Government to leave the entry for the Schneider Trophy to private enterprise had been taken on grounds of principle and policy and not on a calculation of the probability of private entries. He would point out that until 1927 the responsibility for British participation had been undertaken by private enterprise. The Government felt that the existing conditions created by two British successes should make the resumption of the former tradition quite practicable.

The Kenley Collision.

Two Gloster Gamecocks of No. 23 (Fighter) Squadron, R.A.F., collided over Wallington (Surrey) on Nov. 7 in the course of fighting training operations. The accident occurred at 14.30 hours at a height of about 5,000 feet and the pilots of both machines, Flg. Off. R. S. Collins and Sjt. S. L. White, escaped by parachute and landed without injury.

One of the machines fell onto a house in Ross Road, Wallington, and set it on fire. The other machine fell onto a shed at the back of a shop in Desmesne Road, Wallington, and did comparatively little damage. Both machines caught fire on striking the ground.

The Armoured Cars in Palestine.

In the House of Commons on Nov. 5, Brig.-Gen. Brown asked the Secretary of State for War whether, seeing that the mechanised armoured car squadrons of the Cavalry and Royal Air Force, used recently for the restoration of law and order in Palestine, were handicapped by punctures, which were practically the cause of all their breakdowns, a satisfactory tyre had yet been found to stand the weight of these cars in rough country or were they still being shod

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with the same tyres. Mr. Shaw said that as a result of the experience of the mechanised armoured car squadron recently in Palestine, steps had been taken to re-equip that squadron with a type of tyre less susceptible to puncture.

[Perhaps Brig.-Gen. Brown will explain what a non-mechanised armoured car would be like.—C. G. G.]

Another Auxiliary Squadron.

Colonel G. H. Stobart, D.S.O., speaking at a meeting of the Durham County Territorial Army Association, recently, said that the Association had been approached by the Air Ministry with a view to raising a Squadron of the Auxiliary Air Force. Colonel Stobart said that the Association was to be congratulated on having been entrusted with the task of forming the Squadron and would proceed with the work on receipt of Air Ministry authority. The town headquarters would be in Sunderland and the aerodrome would probably be on the old war-time site at Usworth.

The Air Estimates for 1929 allowed for an increase of three Auxiliary Squadrons during the financial year which ends in March, 1930.

Central Flying School Categories.

The following officers and airmen have been re-categorised (Central Flying School) as from the dates stated against their names:—

A.2 to A.1:—Flt. Lt. D. M. Fleming, Sept. 19; Flg. Off. E. J. George, Sept. 24; Flg. Off. G. H. W. Selby-Lowndes, Oct. 18; Flg. Off. C. H. G. Brembridge (R.A.F.O.), Sept. 19.

B. to A2:—Flt. Lt. G. C. A. Armstrong, Sept. 24; Flg. Off. L. H. Mason, Sept. 19; Plt. Off. L. R. S. Freestone, Sept. 19; No. 335376 Sjt. Darling, J. T., Sept. 24; No. 326166 Sjt. Bullmore, A. G., Sept. 19.

The following officers have been categorised as "B" instructors as from the dates stated against their names:—

Flt. Lt. T. S. Horry, D.F.C., A.F.C., Oct. 22; Flt. Lt. T. M. Williams, M.C., D.F.C., Sept. 20; Flg. Off. J. A. C. Florence, Sept. 12.

Service Transport for Airmen's Children.

An Air Ministry Order authorises the use, in certain circumstances, of R.A.F. transport for the conveyance of children of R.A.F. personnel to and from school where the school is at a distance from the Station and no public conveyance is available.

All the conditions in the Order having been observed, a charge is made of 2d. per child per day for the return journey.

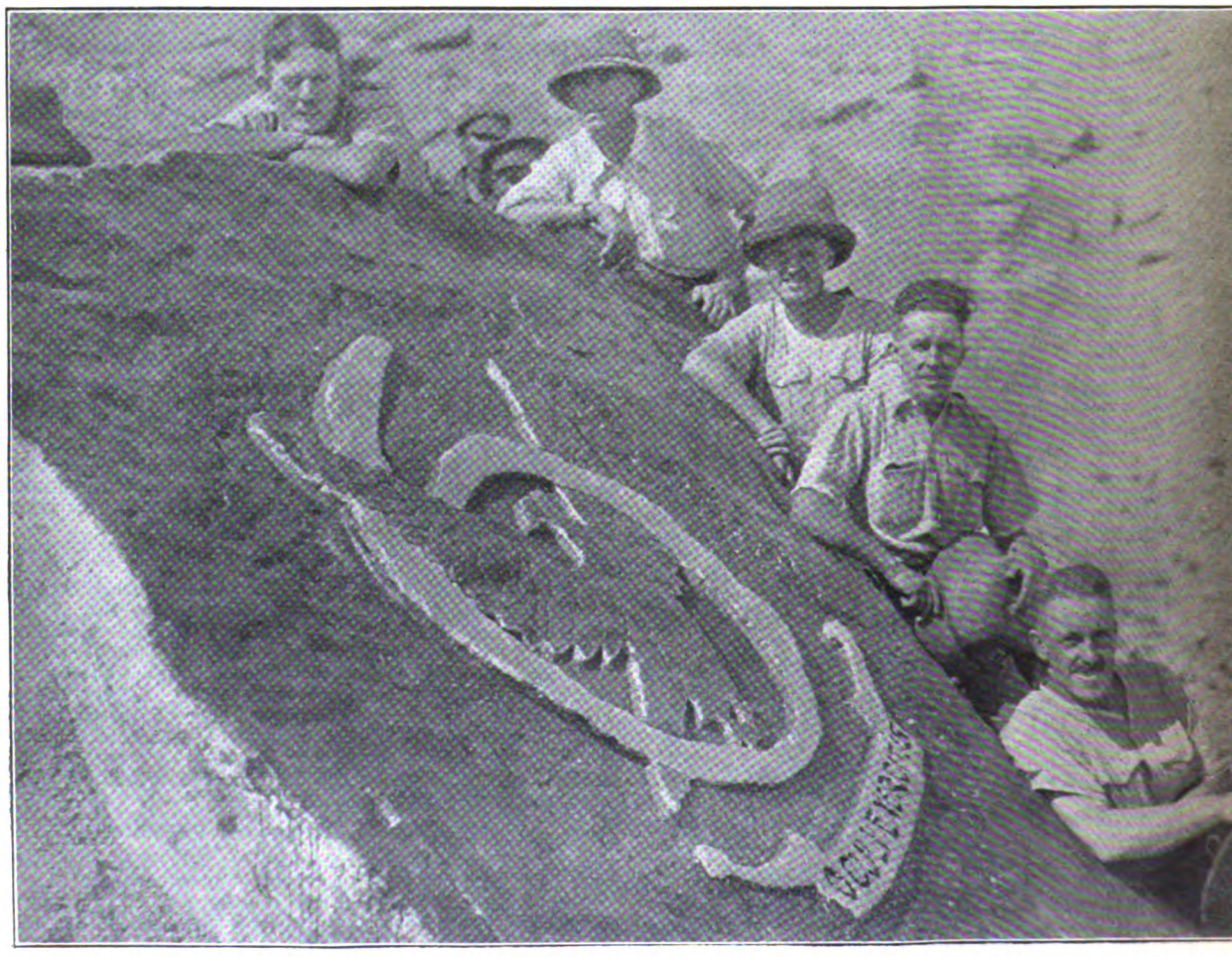
George, the R.A.F.'s Robot.

The story of the American Robot aeroplane pilot in *The Evening Standard* of Nov. 7 has been received with mixed feelings by George, an older member of the Robot family who is at present serving with the Royal Air Force. George has been understood to say that although he has always shrunk from publicity himself and looks with horror on the notoriety which has fallen upon his American cousin, he would like to point out that he himself has been an air Ace for several years. Not only has he flown various types of aircraft for many thousands of miles but he is a flying-boat pilot of no mean order.

Other pilots in the Squadron to which George is attached say that it is quite untrue that George is a qualified air navigator. In fact he has proved himself to be a highly temperamental pilot and cannot be relied upon in an emergency. Replying to this charge in an interview George said that the truth was that when flying metal-hulled flying-boats the rest of the crew would leave him in charge of the controls while they went below to fry kippers on the primus stove. George considered that the smell of kippers, of which he was not offered a share, was bad for navigation and discipline, and accordingly he looped the flying-boat twice with the idea of calling the attention of the crew to their duties.

George added that it was only jealousy on the part of the other pilots that had prevented him from being chosen as the second pilot of the long-range monoplane which flew non-stop to India and is shortly starting off on another attempt to beat the World's record. As George points out he only weighs about 100 pounds and would, therefore, be eminently suitable for the job.

George's opinion of himself may possibly be lowered when he hears of the exploits of his young brother, who disappeared from this country some time ago, and was heard of recently in Southern Arabia, where, apparently, he has been flying for some months. Alfonso, as one believes he is called, needs no human pilot on board as senior officer. He is quite capable of looking after himself. However, being in the R.A.F., and consequently amenable to discipline, he prefers to fly in company with another machine, and to take his orders by wireless from it.



OCULI EXERCITUS.—The crest and motto of No. 6 (Army Co-operation) Squadron, R.A.F., carved in the living rock at Abu Saif on the Tigris just south of Mosul. The work was done by the airmen shown in the photograph, and was finished just before the Squadron left for Egypt after ten years in 'Iraq. No. 30 (Bomber) Squadron is taking over the Mosul Station.

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Sandhurst v. Cranwell.

The annual Rugger match between the Royal Military College, Sandhurst, and the Royal Air Force College, Cranwell, was played at Sandhurst on Nov. 9, and resulted in a win for Sandhurst by two goals and two tries (16 points) to one penalty goal and three tries (13 points).

The Cranwell team are to be particularly congratulated on giving such an excellent account of themselves. They had played a stiff game the week before against a R.A.F. representative team at Cranwell and had beaten the R.A.F. by 24 points to 19

The Sandhurst team were heavier and stronger in the scrum and had an exceptionally fine hooker All of which made Cranwell's task the difficult one of turning every attack into a counter-attack. This they did with hard, close tackling and a lively ability to snatch at unexpected openings.

Ten minutes from the start Coote kicked a goal for Cranwell from a penalty for off-side. Immediately afterwards Coote made ground with a fine burst of speed. He was closely followed-up by Walker, who got over for a try. The goal-kick failed.

A smart movement among the Sandhurst backs sent Lacey away at such a pace that he was just over the line before he was brought down. Cranwell brought the game back into the Sandhurst half and kept it there for ten minutes before Sandhurst got clean away for a scrum and Way ran round to score between the posts. Brooke converted the try. Cranwell kept up the attack until half-time, but failed to score.

In the second half the game became faster and more open, and after ten minutes Coote scored a brilliant try. Sandhurst at this time were getting the ball out of practically every scrum, but the Cranwell tackling was close. An attempt by a Cranwell player to drop a goal went just wide of the post. Way got another try for Sandhurst, which Brooke converted. Just before time Coote scored again for Cranwell, but failed to convert.

Woolwich v. Cranwell.

Rugger enthusiasts are reminded that the annual match between the Royal Military Academy, Woolwich, and the Royal Air Force College, Cranwell, will be played at Cranwell on Nov. 16, starting at 14.30 hours.

Association Football.

R.A.F. v. Hampshire.—Hampshire beat the R.A.F. at Aldershot on Oct. 30 by three goals to one. Hampshire owed their victory to their superiority in attack at the end of the game. The R.A.F. defence was good, but they did not last the game as well as did the County team.

Boxing.

A boxing match between the Imperial Services and the Police of Great Britain and Ireland was held at the Royal Albert Hall on Nov. 6. The R.A.F. fought in three matches and won one. The results were:—

Light-weight.—P.C. Ferguson (F Division) beat AC. Buchanan (R.A.F.) on points.

Welter-weight.—Sjt. Wigmore (A.P.T. Staff) beat P.C. Bone (H Division) on points. Lance-Sjt. Dow (Cameronians) beat P.C. Barnes (K Division) on a casting vote.

Middle-weights.—P.C. Egan (R Division) beat AC. Clapp (R.A.F.) on a casting vote. Garda Chase (Civic Guards, Dublin) beat Lance-Sjt. Jamieson (2nd Batt., Gordon Highlanders) on points. Garda Ford (Civic Guards, Dublin) beat Gdsmn. Pughe (2nd Batt., C.G.) on a casting vote.

Light-heavy-weights.—P.C. Jackson (S Division) beat Lance-Cpl. Kennedy (2nd Batt., East Lancs. Regt.) on points. AC. Munkley (R.A.F.) beat Garda Murphy (Civic Guards, Dublin) on a casting vote. P.C. Allen (P Division) beat Lance-Sjt. Wood (2nd Scots Guards), the referee stopping the contest in the second round.

Heavy-weights.—Lieut. Gregson (R.N.) beat P.C. Titmus (A Division) on a casting vote. Signr. Stuart (R.C.S.) beat P.C. Clifton (Port of London Authority) on points. Gdsmn. Place (Grenadier Guards) beat P.C. O'Driscoll (Dublin), the referee stopping the contest after 1½ minutes as O'Driscoll had sustained a severe cut over the eye.

A SOUTH AFRICAN AIR FORCE DISPLAY.

A Display was given by the South African Air Force at Baragwanath, near Johannesburg, on Oct. 19.

The Display was preceded by a race for light aeroplanes over a course including Baragwanath—Roodeport—Johannesburg—Benoni—Germiston—Baragwanath, for a silver cup presented by the Mayor of Benoni to the Aero Club of South Africa.

The first event of the Display itself was a Message Picking-up competition between No. 1 Squadron, S.A.A.F., the Flying Training School and the Aircraft Depot. The machines used were D.H.9s (230 Siddeley Puma engine). This was followed by a demonstration of Balloon-chasing at a height of 1,000 ft. over the aerodrome.

An air combat between one D.H. 9 and two S.E.5as was the next event. The D.H.9 was armed with two guns and the S.E.s with one each.

A converging bombing exhibition was given by three S.E.5as (200 h.p. Hispano-Suiza engine). The bombs used were the ordinary practice type made of cement. No bomb-sights were used.

The S.E.5a was again brought into use for the Formation Stunting, when three of them looped, rolled and spun in formation.

Lesser events were an attempt to bomb a small car from a light aeroplane (one hopes the bombs were not cement in this case), a height-judging competition and an exhibition of parachute dropping.

Five D.H.9s and five S.E.5as took part in the formation flying. One machine of each type was in reserve. The machines are not fitted with R/T and therefore all orders were signalled by the leader of each squadron.

The 8th Infantry (Transvaal Scottish) co-operated with the Air Force in the Set Piece, which had the usual Arab village, reconnaissance aircraft, local troops, air attack and final bonfire of the rebels' stronghold.

The final event was a fly-past of all the types of aircraft in use in the South African Air Force. They were (1) Avro (Clerget); (2) D.H.9 (Siddeley Puma); (3) Moth (Gipsy); (4) Avian (Hermes); (5) Avian (Genet); (6) D.H.4 (Rolls-Royce Eagle VIII); (7) S.E.5a (Hispano); (8) D.H.9s (Jaguar IV) (9) M'pala (Jupiter VI); (10) Mantis (Jupiter VIII). The M'pala and the Mantis are modifications of other types.

Notes on the equipment of the S.A.A.F. in the Programme state that a definite decision has been made to adopt the Westland Wapiti as standard aircraft in the S.A.A.F. The first machine has already arrived and the type is being put into production in the S.A.A.F. workshops.

THE ROYAL AUSTRALIAN AIR FORCE.

The Times correspondent in Melbourne, in a message dated Nov. 8, states:—

Undeterred by criticism of its suspension of compulsory military training, the Commonwealth Ministry is proposing the discontinuance of the Royal Australian Air Force as a separate unit, contrary to the recommendations of Air Marshal Sir John Salmond after his visit last year to Australia, and without regard to the fact that Great Britain has abandoned the system under which the Army and Navy each had separate air services. This, with other proposals, will be considered by the Defence Council next week. The Ministry again advances the plea of economy.

The reversion to the old system is regarded with the strongest disfavour in the defence forces. It is unlikely that the civil aviation department will be affected, and it is also believed that the changes will not involve the Duntroon Royal Military College and the Jervis Bay Royal Naval College, except for a curtailment of expenditure.

A NEW ZEALAND RE-UNION.

A Re-union Dinner for New Zealand officers in the R.A.F. will be held in London on Saturday, Nov. 30. To ensure the success of this re-union it is essential that all New Zealanders should co-operate. For full particulars write immediately to Flg. Off. Alan Binley, R.A.F., Worthy Down, Hants.

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WAR-TIME IN THE R.F.C.

[*Into The Blue*. By Captain Norman Macmillan, M.C., A.F.C. 231 pages, 9 in. by 5½ in., 11 illustrations. Duckworth. Supplied by The Aeroplane Book Department, Cannon House, Pilgrim Street, E.C.4. 9s. post free.]

Generally speaking, men who fought in the War 1914-18 may be divided into those who kept a diary and cannot or will not write a book, and those who would like to write a book but have never kept a diary. The exceptions are those who, having kept diaries, have written a book which never ought to have been written, and the very few, among whom is the author of *Into The Blue*, who has evidently kept some sort of a diary and has written an excellent book.

Norman Macmillan joined the Royal Flying Corps in December, 1916, after serving for some months in an Infantry Regiment in France. He was posted to Netheravon and learned to fly on a Maurice Farman Longhorn. Now that he is one of the most famous test pilots in the world it is particularly interesting to read his own vivid description of learning to fly, followed by chapters on the course at the Central Flying School at Upavon and later at the fighting and gunnery school at Turnberry.

After about three months' training he was posted to No. 45 Squadron in the Field. The Squadron was on the St. Marie Cappel Aerodrome, eight miles behind Bailleul on the Ypres front. His description of it is interesting:—

"The hangars were of the canvas and wood Bessoneau portable type, the quarters were Nissen Huts and the Mess was built of wood. I was received at the Squadron as every new man is in similar circumstances, with interest and kindliness, but without enthusiasm.

"A war-time aerodrome in France was often difficult to recognise at a casual glance. New pilots, on arrival, have been known to gaze around them at the trees and cornfields, and then ask ingenuously, 'Where is the aerodrome?'

"At which remark several dirty, oily-looking individuals, with faces bearing the unmistakable stamp of men who have been fighting, smile pityingly, and point out a small square field, bounded by two roads, three ditches, and one row of trees and hedge partly hiding the camouflaged hangars."

The Squadron was equipped with "One-and-a-half Strutters," a two-seater Sopwith biplane armed with a Vickers gun in front firing through the air-screw by means of a Ross gear, and a Lewis gun behind on a Scarff gun-ring. The Germans at that time were newly-armed with the Albatros Scout and were inflicting heavy losses on the British artillery-observation and reconnaissance machines.

Captain Macmillan's description of the work of No. 45 Squadron during the greater part of 1917 may be said to be typical of any squadron engaged on similar duties on that Front. With the exception of terse descriptions of certain incidents and some pieces of beautiful descriptive writing he has not stressed the off-duty life of the Squadron. He writes as a man for whom his job was everything. The concentration on the affair in hand, and the strict attention to detail which has made him an international authority on the art of flying, is shown in his descriptions of the organisation of the squadron, of the tactics of the patrols and of individual battles in the air.

One memorable paragraph describes the pilot's field of vision on a clear day. They were flying at 10,000 feet:—

"Straight below—although we were three miles east of the trench lines—lay the silver ruins of old Ypres, its stagnant moat and the stretching canals running ribbons across the country. Ahead was the coast of France and Belgium, with its yellow fringe of sandy foreshore. So close that it looked preposterous was Ostend, while further inland lay Bruges. To the right front the yellow fringe ran north for miles to the islands off the Dutch and German coasts.

"To the left front was the real wonder. There England lay, with that comforting shallow of green sea mirroring between. Her white cliffs stood out in prominence and the land swept away from the cliffs to right and left. To the left, dimly seen, lay the Isle of Wight; to the right the land ran out in a curving sweep around the Forelands before nestling back into the Thames Estuary, where it was lost in the haze which extended from Gravesend Londonwards. In the Channel a convoy of ships moved over the sea, a tiny, black destroyer foaming ahead of them in wide curves.

"The crack of a shell close behind us made me turn quickly. To the south the fighting line lay smeared across the fair face of France like the trail of a giant snail."

Perhaps the most wonderful story in the books concerns Pioneer Smith, who transferred from the Sappers to the R.F.C. as an air gunner. Captain Macmillan describes him thus:—

"From the first Gunner Smith proved a good fellow. His study of the flying journals helped him to recognise the different types of machines in the air. He quickly distinguished the Hun from the friendly, if inquisitive, scout. And, above all, he learned to hold his fire until he had a good target. His nerves were not of a sort which causes a man to blast off at long range to warn the Hun that the bus carried a sting in its tail. When he did shoot he shot straight. He shot to kill.

"He went up with an old and experienced pilot for his first few jobs of work, and very soon he was considered perfectly safe to go up with a new pilot to ensure his safety."

The story of the patrol in which Gunner Smith won the D.C.M. is an epic and to appreciate it to the full it must be read as Captain Macmillan has written it. To attempt to reduce it to the limits of this review would be to spoil it.

In August, 1917, No. 45 Squadron was re-equipped with Sopwith Camels.

"The first Camel was used as a practice mount and the older pilots of the Squadron flew it in rotation. Before anyone flew it the C.O. insisted on his first learning to spin and recover from the spin on the One-and-a-half Strutters, a wise precaution that doubtless played a large part in the complete absence of accidental casualties during the change-over period. The Camel was a fierce little beast. She answered readily to intelligent handling, but she was utterly remorseless against brutal or ignorant treatment."

Captain Macmillan, like many other pilots, learned a lot about flying from the Camel.

In November, 1917, No. 45 Squadron was one of the three British Scout Squadrons selected to reinforce the Italian front after the Battle of the Isonzo. The Squadron flew to Fienvillers where the machines were dismantled and packed. The adaptability of the R.F.C. is well illustrated in the description of the trek into Italy:—

"Two trains were requisitioned for our needs and our planes were loaded on waggons. Small, antiquated carriages provided accommodation for officers and senior N.C.O.s, horse wagons for the men. Our transport and stores were loaded on trucks, and the transport drivers and mechanics travelled in their own tenders and lorries. We installed camp cookers in a horse wagon, which we turned into a travelling kitchen by rigging temporary chimneys through the open doors. We placed the workshop lorry on a convenient truck behind the waggons for the men, wired their waggons and the officers' compartments, and lit them from our own electric plant."

By the end of December the Squadron had settled down on the Caproni aerodrome at San Pelagio and had tested their machines. A few days later they flew to the Istrana aerodrome and became part of the 51st Wing, R.F.C. The weather was bad and the country over which they flew was difficult but on the last day of the year they shot down two enemy Albatros scouts.

On January 6, 1918, Captain Macmillan became a casualty through the explosion of a tin of petrol which burned his face and almost cost him his eyesight. He continued to command his Flight, with a ten days' interval of acting in liaison with the anti-aircraft gunners on the Montebelluno Hill, until orders came for him to return to the Home Establishment.

Although Captain Macmillan left the Squadron he continues its war-time history in the book until its disbandment in December, 1919, and adds that of all the war-time Sopwith-equipped Squadrons, No. 45 holds the records for the greatest number of enemy planes brought down.

After a month's leave Captain Macmillan served at a number of Training Squadrons on the Home Establishment and eventually, in March, 1919, was posted to the new aerodrome at Chattis Hill in Hampshire. Before starting work as an Instructor he went through a course at the Gosport Special School of Flying.

He describes this famous R.F.C. School, which was commended by Lieut.-Colonel Smith-Barry, as the very first which reduced the art of instruction in flying to an exact science. On the methods practised there is based the famous system now in use at the Central Flying School, R.A.F. At the end of the course Captain Macmillan returned to Chattis Hill to instruct. There are some good stories about Chattis Hill. The author's impressions of the War are summed up in the last few lines of his book:—

"It was a good time and a bad time rolled into one, a picnic and a term of penal servitude combined, but it was a great and glorious adventure, too."

Into the Blue is about the best book dealing solely with the Royal Flying Corps which has yet been written. It reflects the spirit of a Corps which was half engineer and half soldier and yet managed to combine the best of both. It is not only an accurate and inspired history of a great Squadron but it is the history of the development of the art of flying under the stress of war.—C. M. MCA.

TURKISH DELIGHT.

A Turkish Military and Naval Commission is now in the United States inspecting aircraft factories and investigating the American Aircraft Industry generally. While in Los Angeles they visited the works of the Douglas Aircraft Co. and an informal ceremony of welcome was framed up.

Miss Bebe Daniels, who holds the title of Honorary Colonel in the 322nd Pursuit Group U.S. Air Corps Reserve was fully and immaculately garbed in the uniform of her honorary rank, plus wings and flying helmet, and acted as hostess. The Turkish officials were presented with silver and gold aviators' identification bracelets, and were advised by an "expert" on the particular type of aircraft best suited to Turkish service.

Photographs were taken showing a major and a lieutenant of the Turkish Army and Navy Air Services respectively with arms linked in those of the dressed-up movie star, and one presumes that a good time was had by all. Which, nevertheless, strikes one as a particularly undignified way of entertaining serving officers of any foreign Government.

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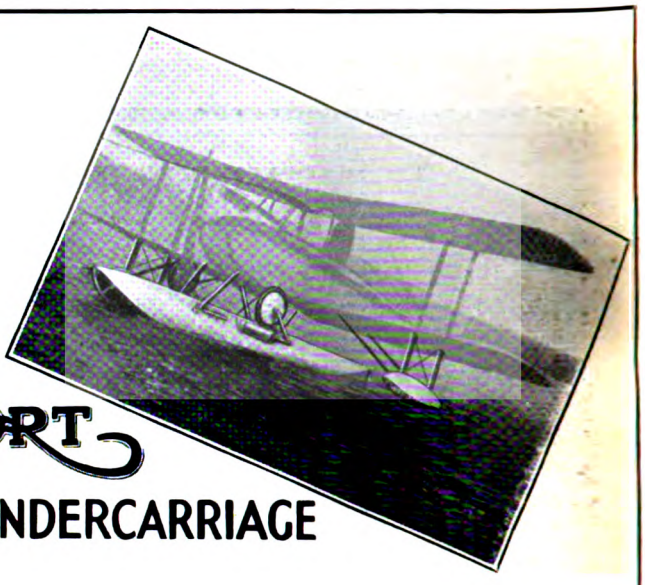

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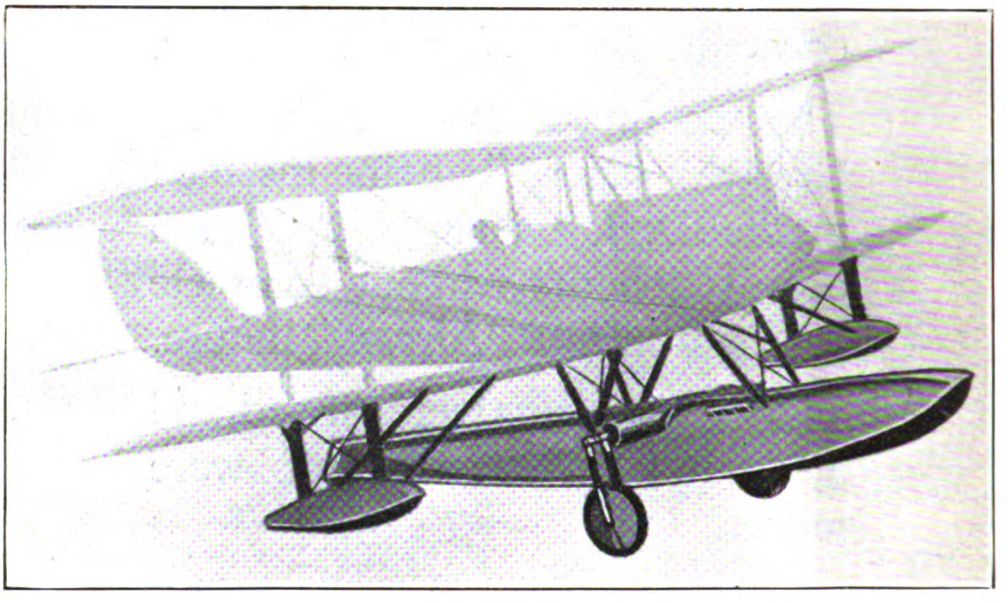

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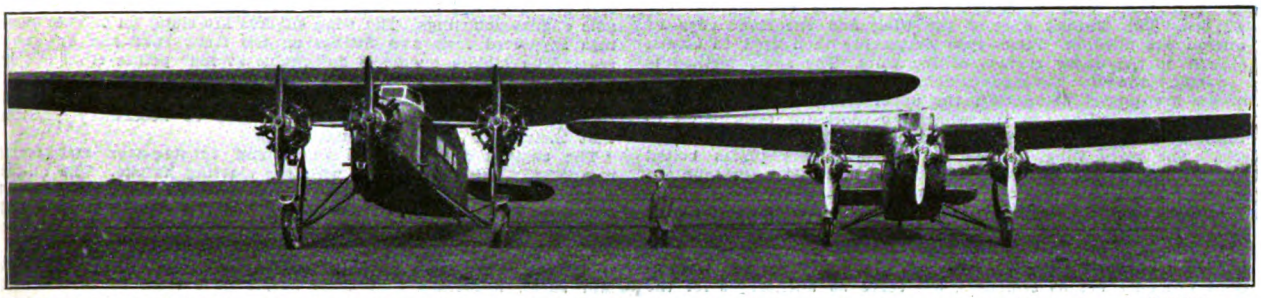
AT THE AVRO WORKS.



BIG AND SMALL.—The Avro Ten (Armstrong Siddeley Lynx engines) and the Avro Five (Armstrong Siddeley Genet engines) side by side. —(*"Aeroplane" photograph.*)

A recent visit to Manchester gave one an opportunity of inspecting the works of A. V. Roe & Co. Ltd. and seeing how things are done in that part of the world.

The shops have quite a lot of work in hand, which includes the reconditioning of 504Ks and bringing large numbers of 504 Lynxes up to date by fitting them with new wings and Frise type ailerons.

As a novelty, however, the matters of greatest interest were the batches of metallised Avians and Avro Fives and Avro Tens now in production. These machines were exhibited at the Aero Show, but this is the first opportunity one has had of seeing them being constructed.

Since the Show, two or three Avro Fives have been ordered. One is now on its way to Kenya by air to form part of the equipment of Wilson Air Lines Ltd. Two others have been ordered by an unnamed firm for air survey work in the Sudan.

Five Avro Tens have been built and shipped to Australia, four for Australian National Airways Ltd. and the other for another concern in Queensland, Australia. Another four or five are now going through the shops.

As everybody knows, the Avro Company has acquired the licence to build the Fokker F.VII-3m for all parts of the British Empire with the exception of Canada. The Fokker method of construction, as is well known, incorporates the use of welded steel tube. At the outset, therefore, A. V. Roe & Co. Ltd. started in to find a steel that would suit their requirements for the job. After a lot of experimental work they decided on a steel to be known as R.O.1 for sheet, R.O.2 for bar, and R.O.3 for tube.

This specification conforms very closely to D.T.D.41, but has a low carbon and manganese content, as the Avro Company has found this necessary so as to avoid any trouble with hardening close to the weld. Before welding, this tube has a tensile strength of 30 tons and a yield-point of 28 tons. After welding the figures are 24 tons and 17 tons. As may be easily realised, fittings can be quickly formed from the combination of tube, sheet, and machined bar.

This material is used by the firm for the structures of Fives, Tens, and Avians, the descriptions of which follow under their respective headings.

AVRO TEN.

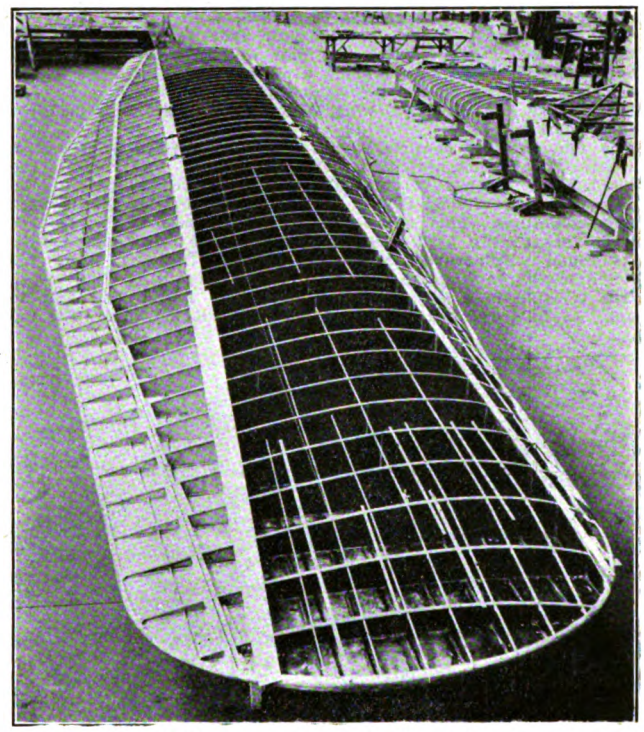
The Ten is a ten-seat, three-engined commercial, high-wing, cantilever, monoplane similar to the Fokker VII-3m.

The wing is attached to the fuselage by four bolts. In the Avro Ten the trailing edge has been made detachable along the entire length of the wing to make transport easier.

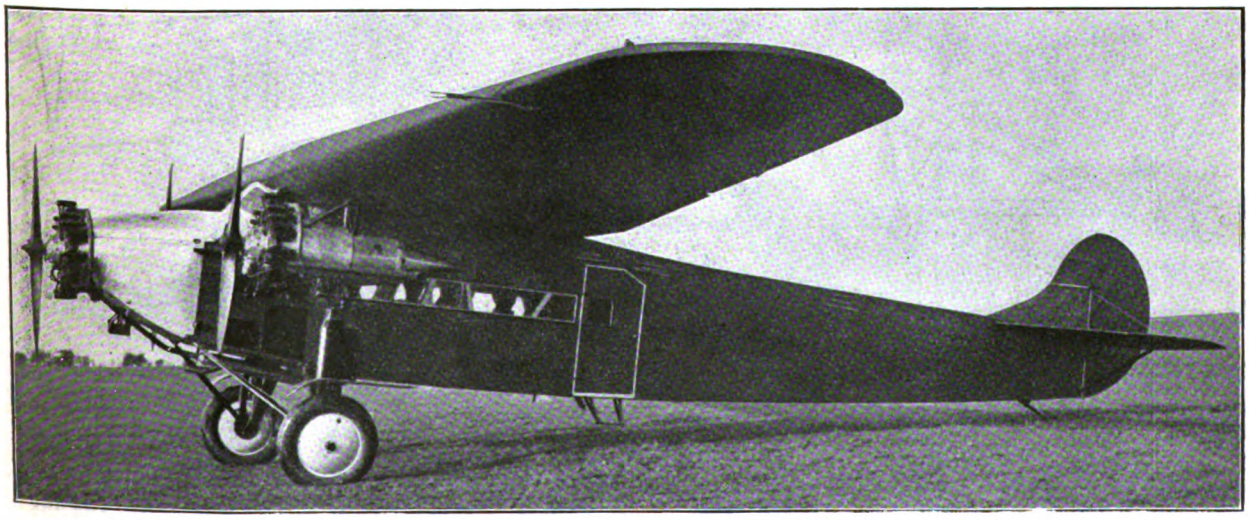
This wing is built up with two spars and a number of ribs. The ribs are further strengthened by a number of intercostal stringers running parallel to the spars and attached to each rib.

Over this a plywood covering is laid and fixed. This is finally covered with fabric and doped. The spars are of very deep section and have laminated spruce flanges, with webs of ply-wood. No lightening holes are used. The ribs consist of a ply-wood web with spruce booms sandwiching the web between them.

As these wings taper in chord and thickness every rib varies not only in depth and length but also in section, so the camber on



The wing of the Avro Ten, showing the ailerons and detachable trailing edge before being cut away from the wing.



THE AVRO TEN.—A side view of the British-built Fokker F.VII-3m which is built by A. V. Roe and Co. Ltd. and is equipped with three Armstrong Siddeley Lynx engines. —(*"Aeroplane" photograph.*)

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the underside becomes more and more pronounced towards the wing tips.

The method of making and attaching the ailerons is delightfully simple. When the wing is complete, the ailerons are marked out and cut off. The trailing edge of the wing and the front edge of the aileron are filled in. Piano type hinges are then used to attach the aileron to the upper surface of the wing. The same method is used to make the trailing-edge detachable, but, in the latter case, the hinges are placed along both the upper and lower surfaces.

The only metal fittings in the wings are those for attachment to the fuselage, for slinging purposes, and the brackets for the aileron controls. The main wing fittings are simple channel-plates bolted through the spars with holes at their lower extremities to take the attachment bolts which pick up holes in the fuselage.

The fuselage consists entirely of welded steel tube. The structure is rigidly braced to a point aft of the cabin whence wire bracing is used to the tail. The well-known Fokker method of construction has quarter loops of small diameter tube welded in at each joint. Such additions not only act as stiffeners, but serve as anchorages for the bracing wires.

Wood fairing strips are bound along the outside of the fuselage and the whole is covered with fabric.

The passenger cabin is a ply-wood box fitted inside the fuselage as is the rear luggage compartment and the light luggage space beneath the pilots' seats.

The tail unit is of the normal monoplane type, with adjustable tail-plane and wire-braced fin. The whole of this structure is made of welded steel tube. For British airworthiness certification the tail-plane had to be strengthened to meet the conditions of a nose-dive at terminal velocity. This necessitates the use of axle tube of T.2 specification for the backwardly sloping front spar and the stiffening of its joint with the rear spar. The ribs are made from welded steel tube and are attached to sleeves on the spars as the material from which this is made cannot be welded.

The tail-plane is hinged at the rear spar to the fin-post and braced on the underside with one pair of struts to the fuselage. The fin-post is stayed with bracing wires which run from the outermost elevator-hinges to the top rudder-hinge.

The rudder and elevators, which are balanced, are also made of welded steel tube.

The undercarriage consists of two wheels on divided axles and a tail-skid. The wheels are fitted with wheel-brakes. Each half of the undercarriage consists of an axle and radius-rod hinged to the fuselage with a vertical Fokker type shock-absorber leg to the wing engine-mountings. This shock-absorber leg consists of a member sliding between two fixed members and all three are equipped with pegs round which rubber rings are passed. Differing loads are catered for by varying the number of rubber rings.

The tail-skid is a large diameter steel tube hinged and free to track. At its lower end is a hardened steel rubbing shoe. The top end has two sets of rubber shock-absorbers splayed out to each side of the fuselage.

The power-plant consists of three Armstrong Siddeley Lynx seven-cylinder air-cooled radial engines, all three of which are on detachable engine-mountings. The wing engines are slung on tubular mountings supported from two fittings on the front spar and one at the rear. The middle engine is detachable at four points from the body of the fuselage.

These engine mountings are all built on jigs and the lugs through which the engine-mounting bolts pass are so accurately positioned that their faces require no machining.

The engines are all fitted with hand turning-gear and starting magnetos which are in gear with the starting handle. The oil-tanks are mounted behind the engines. The fuel-tanks are placed in the centre-section of the wing. Two tanks are normally supplied, but provision is made for fitting another two to suit individual customers' requirements.

The fuel-tanks are novel in that they are made of riveted duralumin sheet, a method that many people have tried at various times. The success of the Avro method lies in the way the tanks are jointed.

The fuel lines run to a junction-box on a bulkhead at the rear of the pilot's cockpit.

The pilot's cockpit is situated under the leading edge of the wing whose under-surface is actually cut away to give increased head-room. In front is a three-sided wind-screen which slopes back into the wing at a very marked angle. The sides are open so that pilots can hang their heads over the side if they wish.

The ailerons are interconnected with a balance-wire running along the front spar. To explain the meanderings of the aileron-operating wires, the passage of the wire from one aileron to the other will be described.

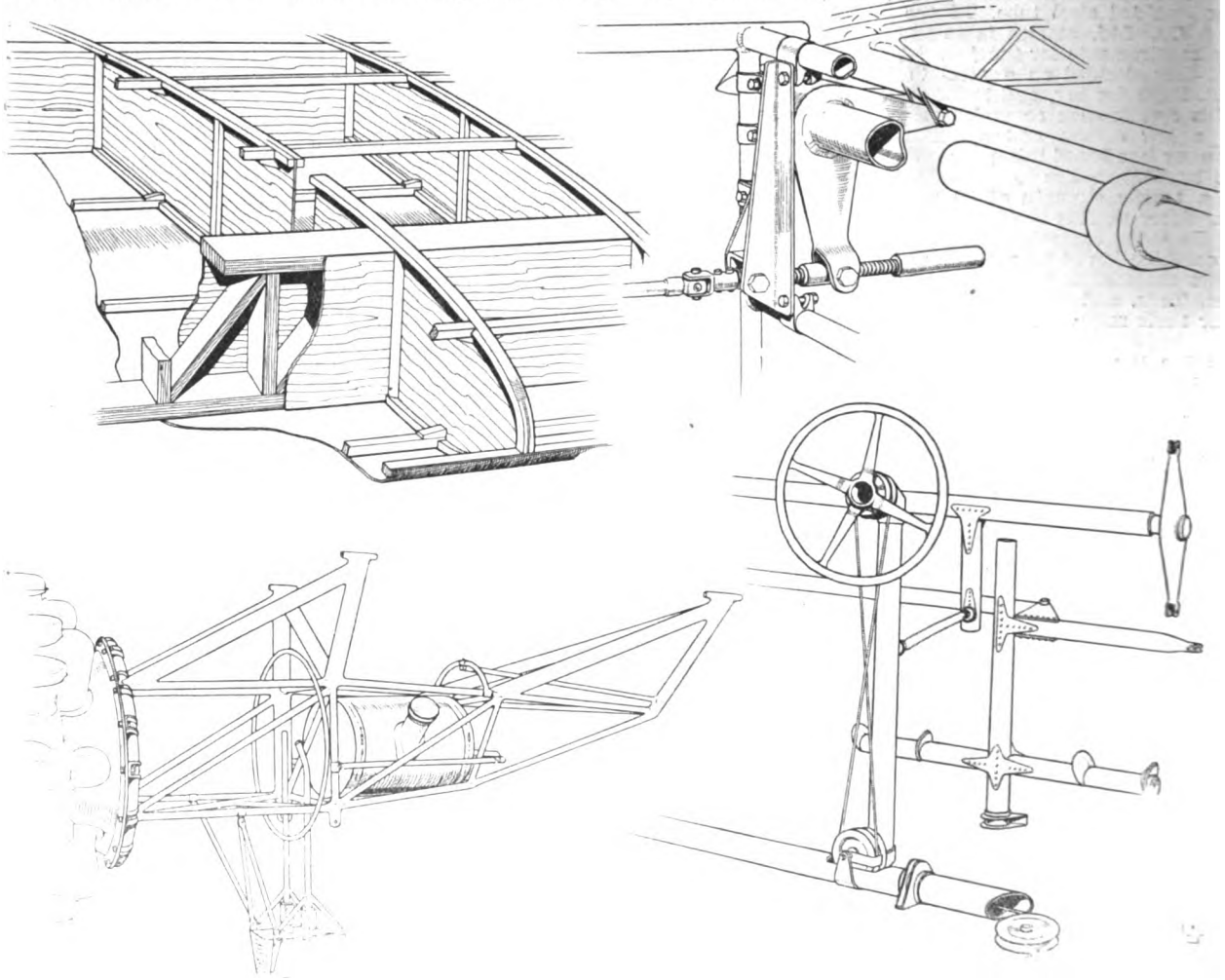
This wire leaves the aileron lever and passes to the interior of the wing. After rounding a pulley the wire runs in a conduit of aluminium tube along the front spar of the cockpit. Here the wire is guided by more pulleys to the side of the cockpit at floor level and in line with the control columns.

The wire now passes to a pulley at the base of the column and then turns upwards to the drum. The wire passes round and is secured to this drum which in turn is fixed to the wheel. The wire turns down to the floor and crosses its upcoming self.

The down-going wire passes another pulley and turns along the interior of the rocking shaft and along to the next column where the process is repeated except that after reaching the floor again the wire passes up the side of the cockpit to the front spar and along it to the other aileron.

The rocking shaft on which the control columns are mounted serves no other function than to connect the two control columns and to act as a conduit for the aileron wires.

For operating the elevators the columns are connected by means of push-pull rods to a rocking shaft behind the dashboard. A mech-



AVRO TEN DETAILS.—From right to left above are shown typical Fokker wooden wing construction and the tail-plane adjusting gear. Below on the left is shown the skeleton of a wing engine-mounting and on the right one half of the dual controls in the pilot's cockpit.

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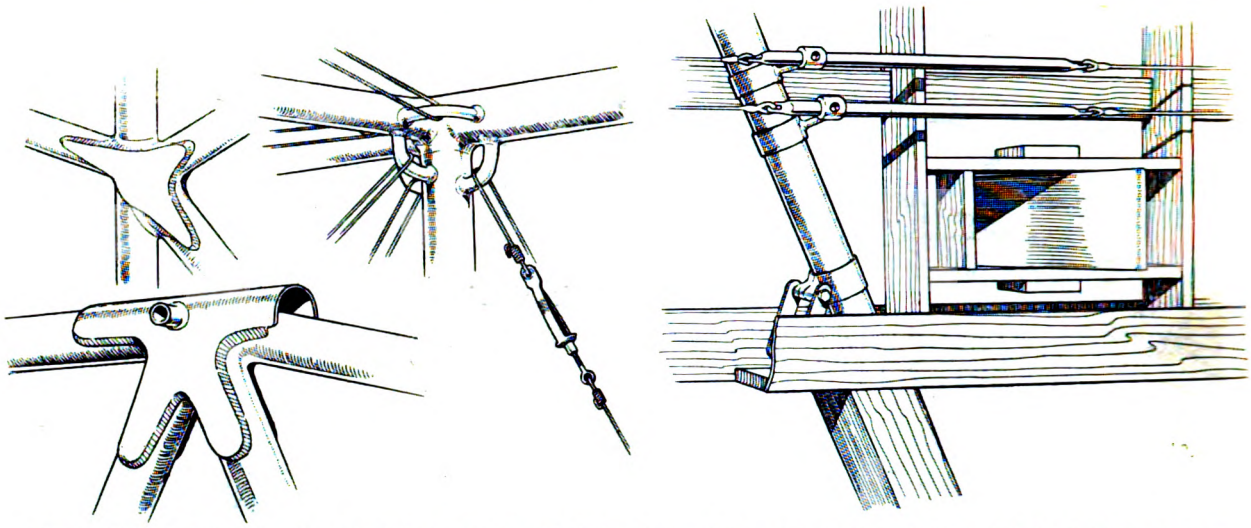


AVRO TEN DETAILS.—On the left typical welded fuselage joints and on the right a sketch showing a part of the cabin framing, a ventilator and attachment of control fairleads.

fication from Fokker practice has been made here in the detail design of the push-pull rods which now have ball and socket joints with micrometer adjustment. The rocking shaft protrudes through the sides of the fuselage and has levers at each end which connect with wires to the elevators.

The rudder-bars are mounted on vertical spindles which are interconnected and have levers projecting through the sides of the fuselage which are coupled with wires to the rudder.

The wheel brakes are operated by means of a lever centrally placed between the pilots. This lever puts on both brakes. These are interconnected through the rudder bars with the result that movement of the rudder bars releases one wheel and increases the pressure on the other.

The tail-trimming gear is operated by means of a small handle over the pilot's head. A shaft runs back from the top of the bulkhead behind the pilot's cockpit, along the top of the fuselage to the front spar of the tail-plane. This shaft ends in a screw thread, which revolves in a nut in a lever attached to a rocking shaft set across the fuselage. This rocking shaft connects with the tail-plane spar through two levers and links.

The engine controls are set centrally in the cockpit, and those to the wing-engines pass to their respective engine through streamli conduits.

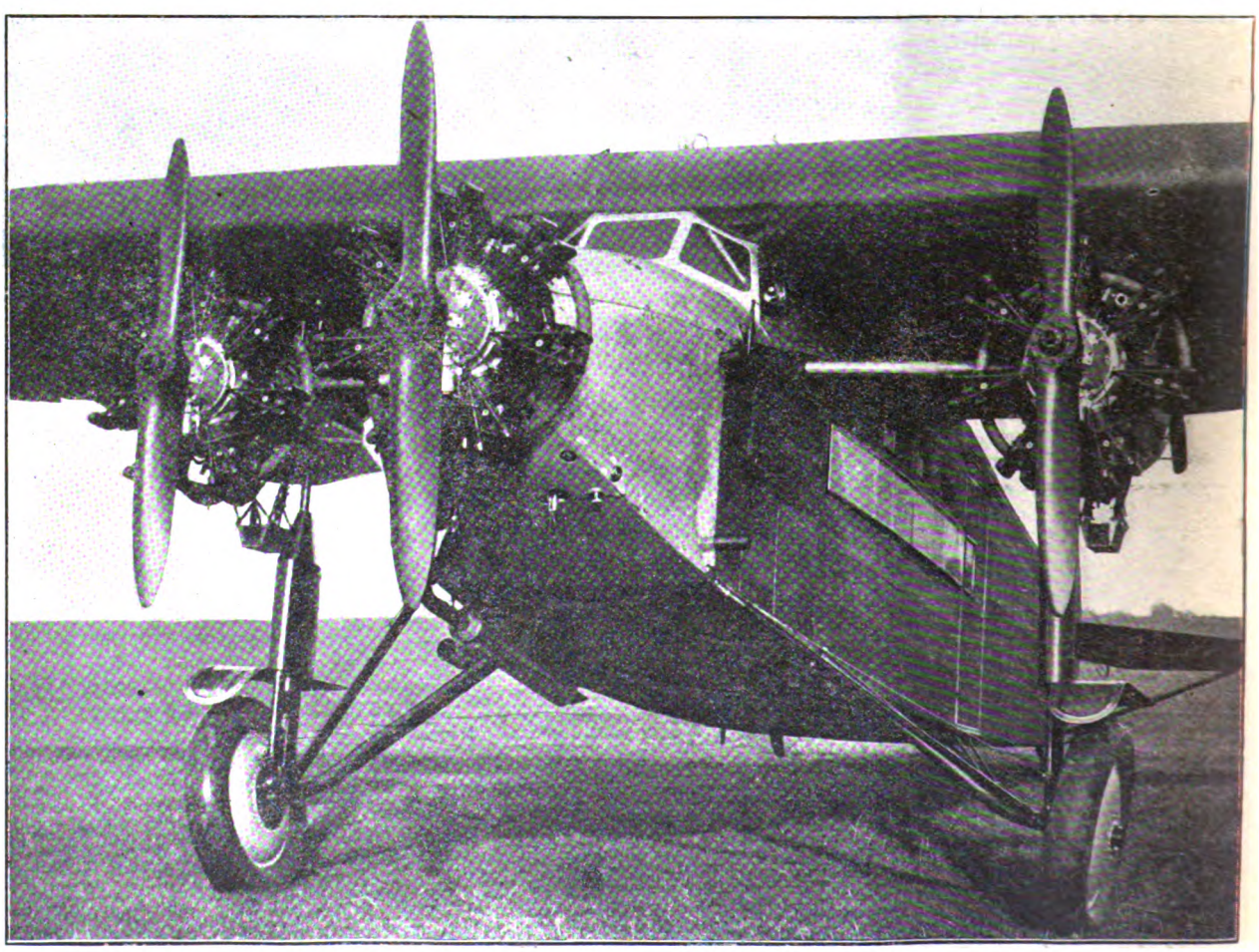
Behind the pilots is the main bulkhead to which the front spar attached. A ply-wood wall is behind this, with a door communicati to the passenger accommodation where there are seats for eight.

Windows run the length of the cabin and are openable. Over ea seat and in the side of the cabin are adjustable ventilators. Bagga racks run along the sides of the cabin. There is a door at the re of the cabin and behind this is the lavatory and the entrance door

The luggage compartment is further aft and has its own do on the opposite side of the fuselage to the entrance door.

THE AVRO FIVE.

The Avro Five has been designed by A. V. Roe & Co. as a scale down version of the Avro Ten. The Five has accommodation for pilot and four passengers. The power plant is three 105 h.p. Gen Major five-cylinder air-cooled radial engines. The pilot instead being under the leading edge of the wing is placed slightly in fro and has a completely enclosed cockpit with a glazed roof. The ta plane is rectangular in plan as compared with the swept-back ta plane of the Ten, and the tail-skid is of the leaf-spring type.



THE POWER-PLANT.—The front end of the Avro Ten, showing the three Armstrong Siddeley Lynx engines, the undercarriage, pilot's cockpit and cabin.—(*"Aeroplane" photograph.*)

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FASTEST TIMES

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2. MR. HEATH (Western Australian D.H.50)
3. CAPTAIN MILLER (D.H.9)

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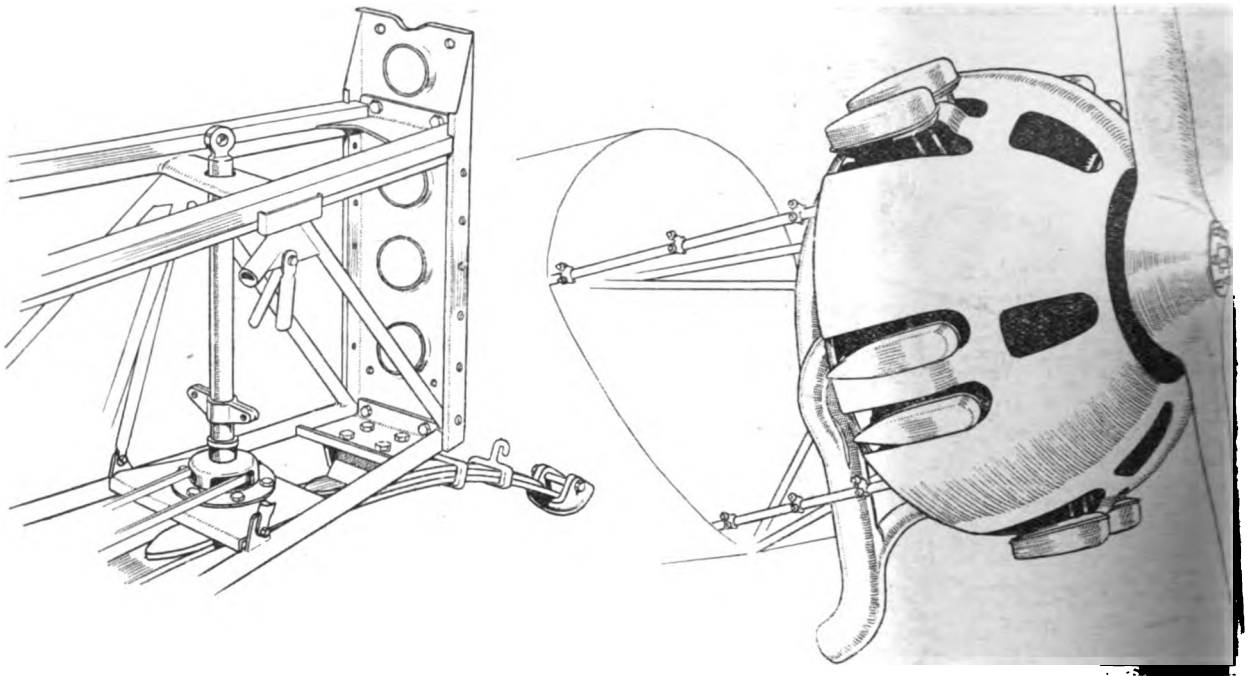

NEW AVRO AVIAN DETAILS.—On the left the adjustable tail-plane operating gear showing the [illegible] shaft which carries the rear spar of the tail-plane, and on the right the new cowling for the Gene[illegible] engine.

The Metal Avian.

The first Avian was the famous G-EBOV which created an excellent impression on its first appearance at Lympne during the Light Aeroplane Meeting of 1926. This same machine with modified wings and a Cirrus engine was flown by Mr. Bert Hinkler on his record-breaking flight to Australia.

Since that date Avians have appeared in ever-increasing quantities all over the World. The latest batch of metal Avians now going through the shops illustrates the latest Avian practice, and though not the final word in design for the type are extremely interesting as examples of all-metal light aircraft.

The most up-to-date Avians are those now being supplied to the South African and Estonian Air Forces. These machines are specially equipped for upside-down flying and have small special auxiliary tanks under the fuselage and Sutton Harness fitted as standard.

The wings are arranged as a single-bay biplane structure and fold about the rear spar. A jury strut is supplied for the purpose. The upper centre section is mounted above the fuselage on six struts, four vertical and two bracing the front spar forward to the fuselage. The upper centre section consists of the petrol tank.

The wings are wooden fabric-covered structures. The spars are of spruce spindled for lightness. The ribs are built up from spruce strips. The drag-struts are steel tube with plates welded to each end. These plates serve the dual purpose of wiring lugs and attachment plates to the spars. The wing root fittings are simple hinges on the rear spar and on the front spar the fittings are plates through which the locking pin passes.

The ailerons are balanced and are on the lower plane only.

The fuselage is of welded steel tube. The inter-bay bracing in the side panels is by diagonal tube struts and the transverse and horizontal bays are cross-braced with wire. The plywood decking is clipped in place and runs from the front cockpit to the tail. Behind the rear cockpit is a luggage locker of plywood let into the fuselage.

The tail unit is of the normal monoplane type. The tailplane is made of wood and covered with fabric and is generally similar in construction to the wings. The fin and rudder are welded frames covered with fabric.

The tail-plane is attached to the fuselage at three points. The front spar is hinged to the fuselage with two adjustable lugs and the rear spar is supported on a vertical shaft operated by the tail-raising gear and two struts running from the rear spar to the bottom of the vertical shaft. The tail-raising gear is used for normal adjustment and the front lugs are varied according to the type of engine fitted.

The undercarriage is of the divided type and consists of two Vees hinged on the centre line of the fuselage. The rear tube forms the axle and the front acts as a radius rod. The points of attachment on the fuselage are further strengthened with a distance tube running fore and aft between them.

The shock-absorber legs of the rubber-in-compression type slope upwards through the lower wing forward of the front spar and are attached to fittings at the base of the forward centre-section strut. The tail-skid is of the leaf spring type with hardened steel shoe.

The power plant for these particular Avians is the 105 h.p. Armstrong Siddeley Genet Major, but any of the alternative engines such as the Cirrus III. or Hermes may be fitted instead.

The fuel tank is carried on the centre-section, which consists of a square of steel tubes supported by the centre-section struts. The tank has a slot cut in it to fit over the front cross-tube and the back of the tank is supported by brackets on the rear cross-tube. The tank is made of welded aluminium. The auxiliary fuel-tank for upside-down flying is attached to the underside of the fuselage.

A modified form of N.A.C.A.-cum-Townend Ring cowling has been evolved for these machines and this has been found in practice to cool the engine adequately. The valve-gear is allowed [illegible] through the cowl, thus facilitating overhaul of the rocker-[illegible] Open[illegible] ings cut in the front permit the entry of cooling air, w[illegible] escape through annular slots at the back of the cowl. To contin[illegible] lines of the circular nose. In future machines the sides and b[illegible] the fuselage will be faired out to a more rounded section.

The seats are arranged in open cockpits in tandem. [illegible] seat bearers and the control-gear all form one unit which is [illegible] in a jig and assembled in completed form.

The rubber-bars have adjustable pedals, but the arrangement of the other controls is standard. By undoing four bolts in the front cockpit the control-unit may be removed and this will provide space enough for the fittings of an aerial camera.

An unusual provision for a machine of this class is a tail-trimming gear, to which reference has already been made. A small wheel on the left-hand side of the cockpit operates a sprocket and nut at the rear of the fuselage by lengths of chain and cable. The vertical spindle to which the tail-plane is attached is screwed and passes through the nut, the revolution of which thus moves the tailplane up or down.

A Matter of History.

Incidentally, the story of the evolution of the metal-fuselage Avian is well worth recording. The Avro Company announced to its agents abroad that it intended producing a metal version of the then all-wood Avian.

One agent immediately took the matter up with a Dominion Government, with the result that he obtained an order for a considerable number of machines with metal fuselages, for delivery in two months after the placing of the order. The company therefore had to design a metal fuselage, produce jigs, and build the machines in an extremely short space of time.

The fact that this was done within the time-limit not only does credit to the company, but also demonstrates the ease with which such welded steel fuselages can be built when once the designs and jigs are made.

These metal fuselages are put through in batches of fifty or so, and at the time of one's visit there was a stack of some thirty fuselages in the middle of the assembly shop ready for use.

A special version of the Avian which is being built to the order of Mr. C. T. Ulm is nearing completion. This machine has the new Genet Major cowling, and the fuselage is of a much fatter form than hitherto. This fatness is the result of fairing the fuselage to carry the lines of the nose aft, and the general effect is very pleasing. The centre-section tank has been removed and extra tanks stored in the front cockpit. This machine has the cross-axle Vee undercarriage in place of the standard divided type.

In the works there was quite a large number of 504 N training machines being built. This is the well-known Lynx-engined version of the veteran 504-K training machine. One large batch was being assembled for delivery to the Belgian Government in addition to a number bearing the R.A.F. markings.

Although the works were said to be not working at anything like full pressure, the shops were, to the unskilled eye, very busy.

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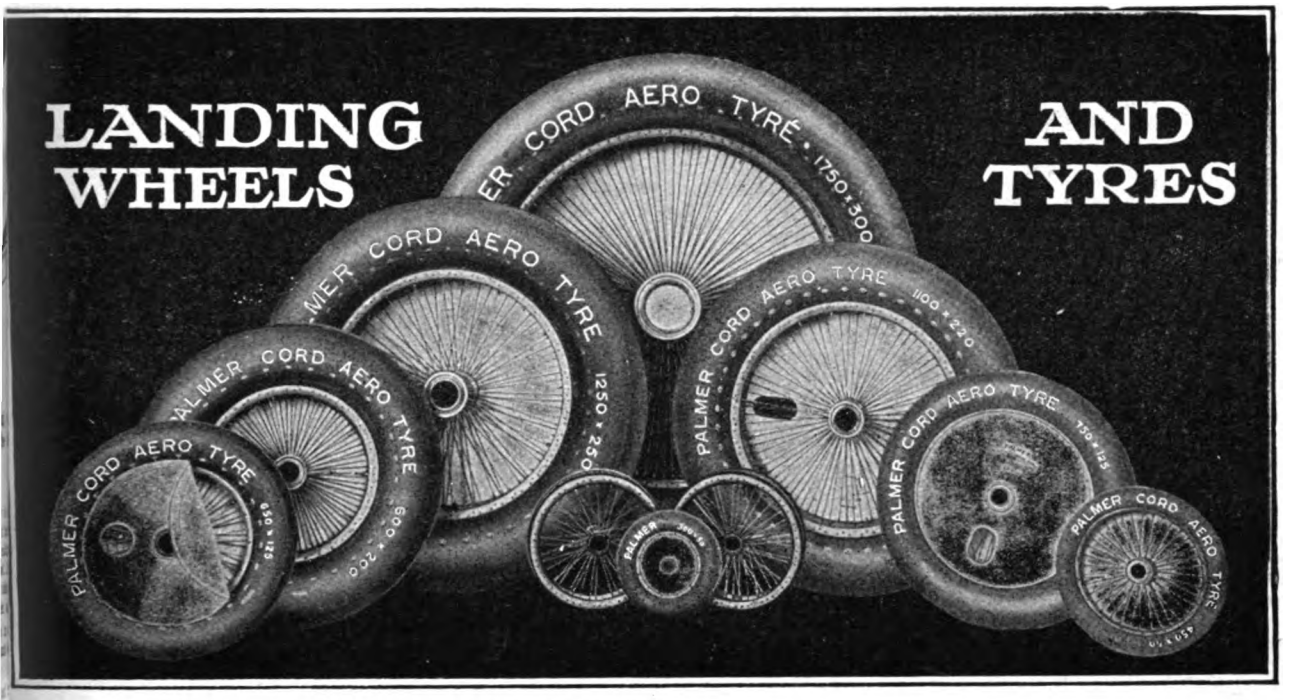
PALMER



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300×60	16	111.12	25.4	Central
450×60	30	89.	31.75	Central
"	172	130.	38.09	Central
575×60	21	160.	28.	Central
"	180	150.	38.09	104/46
"	186	120.	34.92	Central
"	190	150.	38.09	Central
600×75	21	160.	28.	Central
"	180	150.	38.09	104/46
"	186	120.	34.92	Central
"	190	150.	38.09	Central
700×75	78	178.	44.45	132/46
"	79	178.	44.45	Central
"	100	178.	38 09	132/46
"	101	178.	31.75	132/46
"	196	178.	55.	Central
600×100	188	120.	34.92	Central
"	304	150.	38.09	104/46
"	333	120.	34.92	Central
700×100	77	178.	44.45	132/46
"	92	185.	55.	135/50
"	95	185.	55.	Central
"	99	178	38.89	132/46

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700×100	112	150.	38.09	Central
"	176	178.	44.45	Central
"	179	178.	55.	132/46
650×125	119	178.	55.	132/46
"	147	178.	55.	Central
"	188	120.	34.92	Central
"	336	178.	44.45	132/46
750×125	77	178.	44.45	132/46
"	92	185.	55.	135/50
"	95	185.	55	Central
"	99	178.	38.89	132/46
"	112	150.	38.09	Central
"	176	178.	44.45	Central
"	179	178.	55.	132/46
800×150	161*	185.	55.	135/50
"	162*	185.	55.	Central
"	163*	185.	66.67	135/50
"	169†	185.	55.	135/50
"	177	185.	55.	135/50
"	183	185.	55.	Central
"	211*	185.	60.32	135/50
1000×150	167	185.	55.	125/60
"	174	250.	80.	Central
"	182	185.	55.	Central
"	187	220.	66.67	Central
"	201	185.	60.32	125 60

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000×150	210	185.	60.32	Central
1000×180	148	220.	80.	Central
"	149	185.	55.	Central
"	155	220.	66.67	Central
"	166	185.	55.	125/60
900×200	107	185.	55.	Central
"	108	185.	55.	125/60
"	128	220.	66.67	Central
"	137	250.	80.	Central
"	157	185.	80.	Central
"	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
"	136	250.	80.	Central
975×225	192	185.	60.32	Central
"	194	185.	55.	125/60
1100×250	364	220.	60.32	Central
1250×250	314	250.	80.	Central
"	154	304.8	101.6	Central
1500×300	305	304.8	152.4	Central
"	306	304.8	101.6	Central
1525×325	197	304.8	101.6	Central
1750×300	130	400.	152.4	Central
"	191	350.	156.3	Central
1750×350	193	400.	125.	Central
2000×450	363	500.	152.4	Central

Wheels Nos. 161, 162, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings.
Grease gun equipment is now a standard fitting on all wheels. (A/NL)

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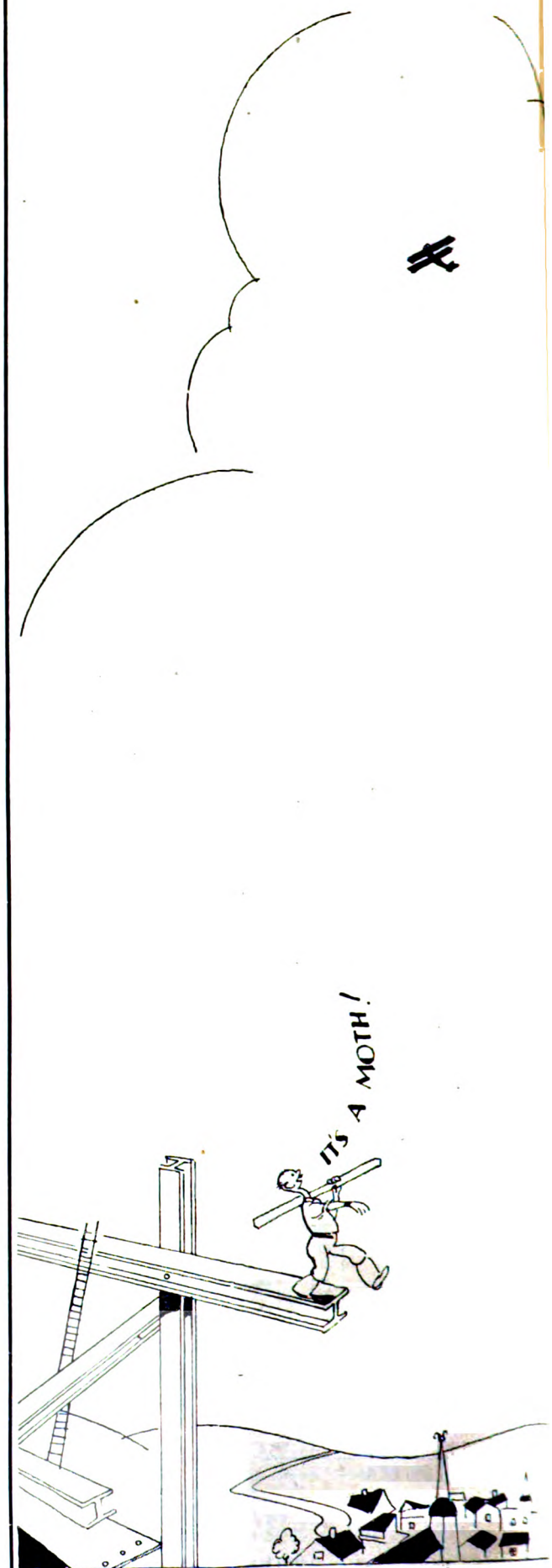

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THE LIGHT AEROPLANE AND THE FLYING CLUBS.

CONSUMPTION FIGURES.

Some interesting figures have been disclosed by the work the Cinque Ports Club during the past month. They ould be noted by other clubs.

The petrol-consumption figures for October show the most traordinary result in the case of G-EBPM. This aircraft used almost entirely for solo flying, and during the month e flew 39 hours 15 mins., and in addition the engine was n on the ground for 7 hours 20 mins, making a total of hours 45 mins. in the month, equivalent to a distance own of about 3,000 miles.

Throughout this period, the consumption averaged 3.647 llons per hour, roughly equivalent to 22 miles to the llon. The Ground Engineer deserves hearty congratulaons for obtaining these figures, which he says are the west he has ever heard of for the Cirrus Mark II engine. hey are all the more remarkable in view of the fact that e aircraft was in use as a hack machine for soloists roughout the period.

The other aircraft G-EBRI (which is used principally for ual instruction) averaged 4.306 gallons per hour throughut the month and achieved the very low oil consumption f .499 quarts per hour on Castrol XXL.

On Wednesday, the 6th, PM was given a very quick topverhaul and is now the fastest aircraft which this Club as yet owned.

Similar figures from other clubs would be valuable if ade public property.

THE DESOUTTER SPORTS COUPE.

The Desoutter Sports Coupé monoplane has very successully passed all its tests at Martlesham.

The figures show that the machine with a Cirrus-Hermes ngine climbs to 4,000 ft. in six minutes one second with a ull load of 1,800 lbs. and that it has a maximum speed of 11 m.p.h. at 1,500 ft.

The cruising speed is 96-98 m.p.h. at 1,900 r.p.m. and he company's figures show that the Sports Coupé with fuel anks, pilot and one passenger will climb the first 1,000 ft. n just over a minute.

The above figures are extremely creditable, coming as hey do from the most impartial source possible.

On Nov. 9 the Sports Coupé, flown by Mr. J. J. Flynn and carrying Mr. and Mrs. Desoutter and their small daughter, aged 8, flew from Croydon to Hanworth. It showed that it still had plenty of reserve power for climbing so that without luggage it should be possible for the machine to carry easily three persons and child.

At Hanworth it was flown by several pilots who all expressed themselves as very pleased with its performance, flying qualities and above all its non-stalling capabilities.

The production of the Sports Coupé is now in full swing at Croydon and the company will be delivering its first three machines to National Flying Services Ltd. this week. Thereafter the production will be at the rate of one every 10 days, which will probably be increased to one a week by the end of the year.

GIPSY MOTH SEAPLANES IN SARAWAK.

Two Gipsy Moth seaplanes were last year supplied to the Government of Sarawak for patrol and other duties. At the same time a pilot went out from England. He is now home on his first leave and from him comes the naturally expected statement that the seaplanes have given every satisfaction. One of them was unfortunately written off not long ago by being flown into some telegraph wires of which the pilot was unaware, and although there were two people in the machine nobody was hurt.

The Sarawak Government thought that Moth seaplanes would only be able to alight on large stretches of water and that, therefore, their usefulness would be limited. Soon after his arrival in Sarawak, however, the pilot found that the country abounds in disused and flooded mines. He alighted successfully on the first which he found and then proceeded to discover similar mines dotted over the country, nearly all of which are perfectly suitable for alighting and taking-off with a Gipsy Moth.

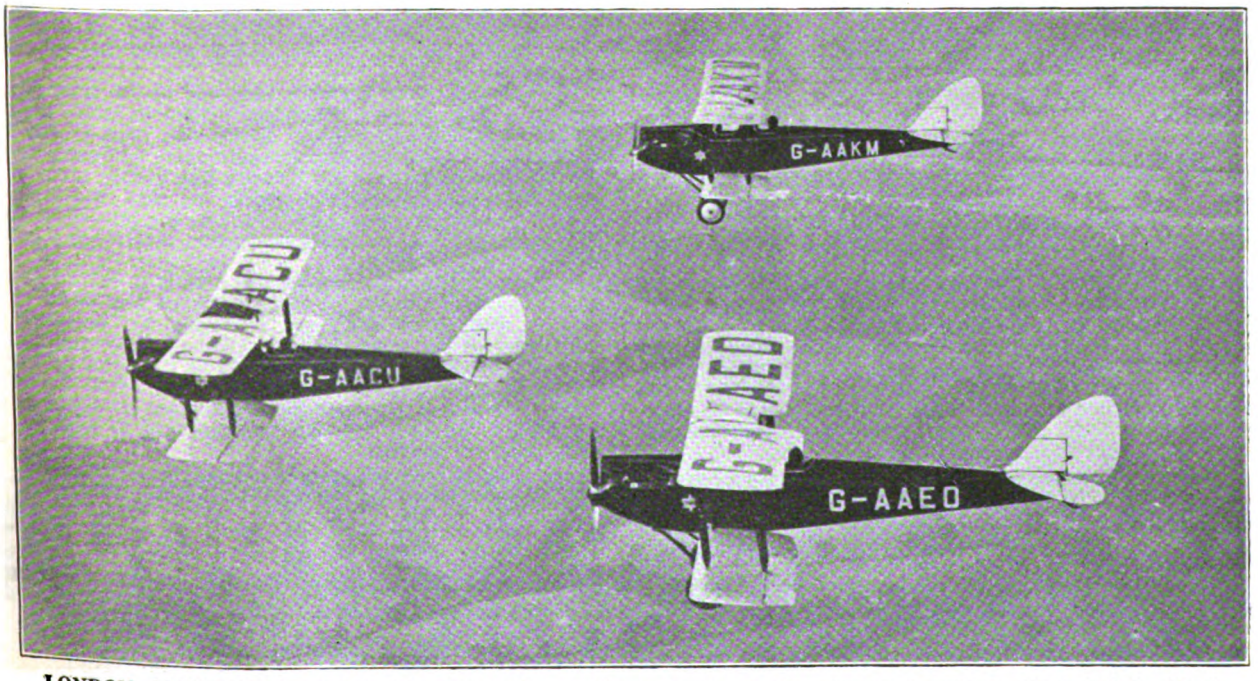
The Government were duly impressed with the unexpected handiness of the outfit. Reliability has been extremely good and repairs have been confined to a few odd details which, as the pilot remarked, was just as well, seeing that repair facilities were of the most primitive.

MOTHS FOR SOUTH AFRICA AND SPAIN.

On Nov. 9 three Gipsy Moths left Stag Lane for different parts of the world. Of these Mr. Roy Tuckett, a member of the Port Elizabeth Aero Club, South Africa, set out on his attempt to beat the record from London to Capetown. This is at present held by Mr. Murdoch in 13½ days, but Mr. Tuckett hopes to do the journey in 10 days.

His machine is standard except for stub exhaust-pipes and extra tanks. He carries 59 gallons of petrol, made up by the 19-gal. standard centre-section tank, a 20-gal. tank in the front cockpit and a 20-gal. tank in the rear luggage locker.

The other two Gipsy Moths were flown to Madrid by two officers of the Royal Spanish Air Force, Capt. Ricardo Garrido Verin and Capt. Infante Penax. These two Gipsy Moths are for training in the Spanish Air Force.



LONDON ASSURANCE.—A B.A.I.G. Formation. Gipsy Moths of the London Aeroplane Club, led by Capt. A. G. Lamplugh, with two other members of the British Aviation Insurance Group.—(*"Aeroplane" photograph.*)

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FOR GLIDING ENTHUSIASTS.

There is an axiom in newspaper offices that for one person who writes a letter on any subject there are a hundred who intended to write the same letter and are either too busy or too lazy to do so. Consequently the fact that a dozen or so people should have written within a few days of the publication of the last issue of The Aeroplane expressing their interest in gliding seems to indicate that there is quite a large amount of interest in the subject.

Incidentally, Mr. Dieter Keller of Bournemouth points out that in Germany there are two different names for motorless flight. He says that if the motorless aeroplane or glider is only constructed for short flights, for gliding down a hill or a slope, the operation is then called gliding. But if the machine flies "on the wind," and if it flies higher than its starting point, that is called sailing, because the aeroplane flies on the wind and on the air currents like a sailing ship on the water. Mr. Keller is interested because in England he has only heard the expression gliding.

The point here rather is that if a motorless aeroplane is good enough to do anything like a respectable glide down a hill, then it is quite good enough to sit on an up-current if the contour of the ground and the strength of the wind happen to be right for the purpose.

There is no essential difference between gliding and sail-flying. Sail-flying is merely gliding down a current which goes up faster than the sinking speed of the glider.

On this point several people have wanted to know how Herr Kronfeld managed to reach a height of 2,000 metres, or roughly 6,500 feet, in a glider. According to one of the few people in this country who know something about gliding, he took off from one of the regular gliding places as a large cumulus cloud was coming over, and picked up the up-current which always exists under such clouds, and by it was sucked up to the cloud itself.

What happens apparently is that the air under a cumulus cloud is cold because it is in the shadow, and as the sun streams down past the edges of the cloud it heats the edges of that mass of cold air which promptly expands and rushes upwards. Thus there is a continual upward current made by the expansion of the cold air under the cloud.

If you have a good enough glider, and if you are a good enough pilot you can hook onto that up-current and ascend with it till you reach the cloud itself. People who only remember our humble efforts at Itford in 1922 will realise from this how far gliding has progressed in Germany.

Readers of this paper who can write and read German and are interested in gliding can get an immense amount of information on the subject by communicating with:—

Die Rhon-Rossitten-Gesellschaft E.V., Schubertstrasse 10, Frankfurt, a.M.

The publication in Germany which deals with gliding is the old flying paper, *Flugsport*, Bahnofsplatz 8, Frankfurt a.M. The Editor, Herr Oskar Usinus, is one of the leading authorities in Germany on this subject.

The following readers of The Aeroplane would like to get in touch with others who are interested in gliding:—

Mr. W. Grover, 170, The Grove, Wandsworth, S.W.
Mr. Richard G. J. Nash, Grand Hotel, Eastbourne.
Mr. W. E. Wroughton, 12, Lansdowne Gardens, East Croydon.
Mr. L. E. Williams, c/o Mrs. Peacock, 30, Sandow Terrace, Hayes, Middlesex.
Mr. Stephen Fry, Hamble, Hants.
Mr. I. B. Newbigging, Officers' Mess, R.A.F. Station, Eastchurch, Kent.
Mr. C. V. Kerpen, "Clouds," Finchfield Gardens, Wolverhampton.
Mr. D. E. Culver, c/o George Culver Ltd., White Lion Street, Pentonville, N.1.
Mr. J. P. Cecil-Wright, Royal Air Force College, Cranwell, Lincs.
Mr. L. S. Dawson, Nun-Appleton, Yorkshire.
Mr. C. P. Parker, Pinson and Boons Ltd., Dudley Road, Wolverhampton.
Mr. Dieter Keller, 17, St. Anthony's Road, Bournemouth.
Mr. H. S. Cameron, 45. Princes Street, Bayswater, W.2.
Mr. A. H. Martin, Lowfield House Lodge, Crawley, Sussex.

A great deal of information on the subject of gliding can be got by visiting the Science Museum, South Kensington. Mr. G. Tilghman Richards, who is on the staff of that establishment, has made a close study of recent developments in gliding and is constantly delivering lectures on the subject to visitors to the museum.

An important lecture on gliding is to be delivered by one of the leading German authorities to the Royal Aeronautical Society early next year, and this should centralise the interest in the subject.

Presumably the formation of an actual gliding club or gliding organisation in this country should be undertaken by the Royal Aero Club. But as that institution is so wrapped up in flying with motor-power, probably enthusiastic gliders would be wiser to form an association of their own, or to co-operate with the Royal Aeronautical Society.

THE ROUND EUROPE CONTEST.

The Commission Sportive de l'Aéro Club de France has homologated the results of the *Challenge de Tourisme Internationale* which was held over a European Circuit between Aug. 2 and Aug. 16, 1929.

The Challenge Trophy given by the Aéro Club de France has been awarded to M. Morzik, who piloted a B.F.W.-M.23 monoplane. The same pilot wins a prize of 100,000 francs from the Aéro Club, a Sèvres vase as the prize offered by the President of the French Republic, a Fiat A.S.1 monoplane, presented by the Italian Air Ministry, a medal presented by the German Aero Club, a D.K.W. motor-cycle, a trophy valued at 10,000 crowns presented by the City of Prague, a Gnôme-Rhône motor-cycle, a silver trophy presented by the City of Hamburg, and a prize presented by the Austrian Government.

Mr. Hubert Broad, flying a D.H. Gipsy-Moth, wins the second prize of 50,000 francs, a Fiat A.50 aero engine, and a gold medal presented by the Italian Air Ministry, a prize of 500 marks presented by the City of Breslau, a silver trophy presented by the City of Hamburg, a medal presented by the Belgian Aero Club, and a prize presented by the Austrian Ministry of Commerce.

Third prize of 25,000 francs is won by Lord Carbery, who flew a Raab-Katzenstein RK25 monoplane (Cirrus-Hermes engine). He also wins a Gnôme-Rhône motor-cycle, a pair of Sèvres vases presented by the City of Paris, a Bohemian crystal Trophy presented by the Czechoslovak Aero Club, a prize presented by the Polish Ministry of Communications, a bronze medal presented by the Belgian Aero Club, and a prize presented by the City of Vienna.

Miss Spooner, flying a D.H. Gipsy-Moth, wins the 10th prize of 7,350 francs and in addition receives a silk scarf presented by the Maison Rodier, and a silver trophy presented by the City of Hamburg.

Mr. Weedon, Mr. Broad's mechanic, receives a pair of binoculars presented by the well-known firm of Karl Zeiss.

The remainder of the prize list is too long to give in full but the above gives those of the most importance.

All of which merely shows the silliness of rules and regulations as drawn up by Committees and administered by them. The De Havilland firm got a splendid advertisement months ago out of the fine performances of Miss Spooner and Mr. Broad. And now nobody is interested in the technical results as disclosed above.

AN ACQUISITION TO THE TRADE.

For several months those on the inside of aviation have known that Henley's Ltd., of Devonshire House, Piccadilly, intended to go into the aircraft business on a big scale, but the information has been kept dark at the request of the firm, who did not want anything said about it in print till they were ready to make a full statement on their policy. As usual, some bright daily journalist has got hold of a story, and as usual The Aeroplane suffers for respecting confidences.

The facts are that Henley's Ltd., one of the most famous dealers in automobiles in London, intend to tackle the selling of aeroplanes to private owners on lines exactly like those on which they have run their successful car business. But, as the nation does not provide free testing grounds for aircraft as it provides free roads for cars, the firm has bought an aerodrome at Addington, on the hills above Croydon, which will act as a demonstration ground, as a garage and as a service depot.

Apparently the intention of the firm is to sell aeroplanes on hire-purchase terms, or to do deals on any terms which appear reasonable, such as delivering an aeroplane in exchange for an expensive car (though there can be few cars whose second-hand price would be that of a light aeroplane), or taking a car in part-payment, or on the other hand taking over a second-hand aeroplane in exchange for a new car. In fact, Henley's are prepared to consider any reasonable proposition.

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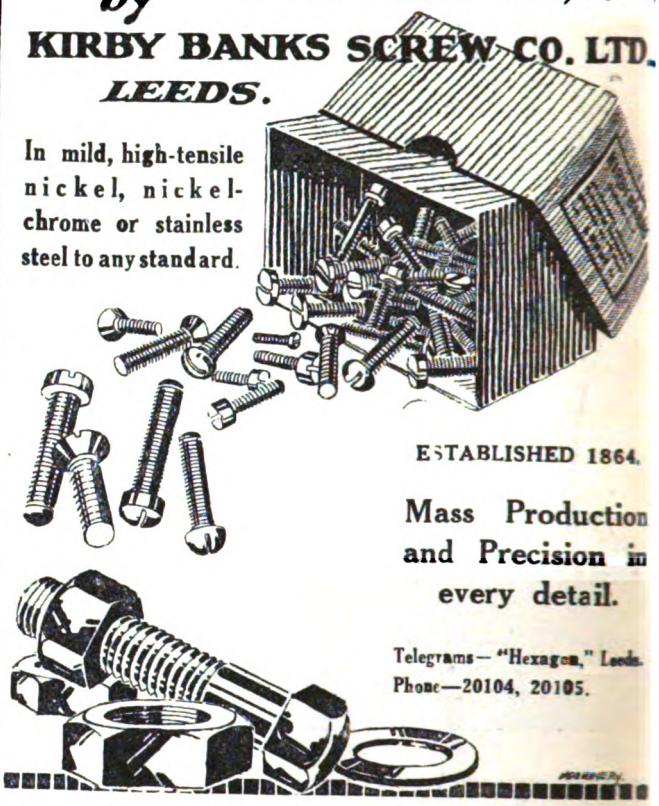

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COMMERCIAL AERONAUTICS.

IMPERIAL AIRWAYS INDIA SERVICE.

In the House of Commons on Nov. 6, in reply to a Question by Lt.-Cdr. Kenworthy, the Under-Secretary of State for Air said that the marine aircraft of Imperial Airways had suffered such severe damage during the recent period of abnormal gales in the Mediterranean that the Company had found it necessary to restrict the western part of the service, which was in any case primarily a mail service, passenger accommodation being strictly limited to mails and to accept no passenger for the present between Europe and Egypt. The Company had rearranged their fleet and were able to maintain the mail service by adopting temporarily a route via Cologne, Vienna, Budapest and Athens, instead of Genoa, Rome, etc. The usual passenger service was available between Egypt and India and the Company expected that the limited passenger accommodation over the through route would again be available next month.

THE CATERHAM DISASTER.

On Nov. 6 the D.903, a Junkers G.31 (three Junkers engines), crashed eight miles from Croydon in a wood on a hillside between Godstone and Caterham.

The machine belonged to the *Luft Hansa*, and was flying to Amsterdam, with four passengers and a crew of four.

Apparently the clouds were so low that the pilot decided to return to Croydon, and hit the tree-tops on his way back. The machine caught fire after crashing.

Only two persons managed to escape from the wreckage and resulting fire. One of these was Lt.-Cdr. Glen Kidston, R.N., and the other was Prince Eugen von Schaumberg-Lippe. The latter died of shock and burns on Nov. 7.

Prince Eugen, who was flying as assistant pilot, was not in the cockpit, but was inside with Lt.-Cdr. Kidston.

The inquest was opened at Caterham on Nov. 8 upon the bodies of the six victims, who were: Crew—Prince Eugen von Schaumberg-Lippe, Bruno Rodschinka, pilot (38), Wilhelm Ulrich, mechanic (36), Heinrich Niklas, wireless operator (31). Passengers—Mr. D. L. Jones, of Stockwell; Mr. Herbert John Gaspar, of Mincing-lane; Mr. J. T. G. Milne, a Calcutta merchant.

After evidence of identification had been taken, the inquest was adjourned until Nov. 22 so that Lt. Comm. Kidston might attend.

ANOTHER OPPORTUNITY.

Colonel E. Mossberg, who has for so many years been the Swedish Military Attaché in this country, and is known as a firm friend of British aviation, has recently gone to Sweden on a well-earned holiday. Before going he has left word that there is to be a great Exhibition of Arts and Crafts in Stockholm next September, and that there will be an International Aircraft Section in that Exhibition.

Everybody who went to the Gothenburg Exhibition two or three years ago had such a good time that one is sure that there will be a rush to exhibit British aircraft at Stockholm this year. Such an inducement is far stronger than is the mere prospect of doing good business through the winning of International Competitions, such as the Tour of Europe or the Zenith Cup.

THE LATEST JUNKERS.

On Nov. 6, at Dessau, the latest Junkers monoplane, the J.38, made its first flight.

This machine has a span of 107½ ft. with a length of 75½ ft. The wings at their juncture with the fuselage are nearly 8 ft. thick. This enormous thickness has allowed the engines and part of the passenger accommodation to be carried within the wing.

The J.38 weighs 13 tons empty and from 20-24 tons fully loaded. The range of the present machine is estimated at 2,000 miles with 3 tons of useful load. In test flights the machine made a speed of 124 m.p.h.

The four engines are so arranged that shafts project through the leading edge of the wing and drive tractor airscrews. There are two twelve-cylinder Vee and two six-cylinder in-line Junkers engines, the former of 800 and the latter of 400 h.p. Owing to their position in the wings the engines can be attended to while in the air.

A new form of flexible oil coupling has been devised by the Junkers company to provide the long drive necessary when the engines are placed so far from the airscrews.

The present petrol engines will be replaced later by Junkers compression-ignition engines, which will result in a further gain in economy and range.

This machine is a further step in the progress of Dr. Hugo Junkers towards his ideal of an all-wing aeroplane, a project which Dr. Junkers has been fostering since 1910.

A RECORD ATTEMPT.

On Oct. 18 Signor Maddalena and Signor Cecconi took off from the special concrete runway at Montecelio in the Savoia 64 monoplane (Fiat A.22T engine and variable pitch airscrew) in an attempt to beat the World's Record for distance and duration in a closed circuit.

The total load of the machine on taking off was 7,200 kgs. (15,850 lbs.) and it lifted after covering 1,500 m. (4,920 ft.) of the 1,700 m. (5,580 ft.) total length of runway. After flying for nine hours over the Montecelio—Torre—Flavia—Phare D'Anzio circuit the machine was forced to land with a broken water-pump.

INDESTRUCTO GLASS

With the possible future increase in the production of enclosed commercial aircraft, the demand for a transparent material for windows, etc., is a growing necessity.

The first essential in such material is its immunity from splintering and a secondary requirement, although not an essential one, is its resistance to discoloration or reduced transparency.

The British Indestructo Glass, Ltd., of Chase Estate, Park Royal Road, London, N.W.10, is putting on the market a product known as "Indestructo" glass which, although comparatively unknown in this country, is a material of long and honourable standing in the United States.

This glass is a laminated product made up of layers of polished plate glass and a flexible transparent binding material. The advantages claimed for this glass are that it is absolutely proof against separation, discoloration, and reduced transparency for indefinite periods of use. It can be drilled, ground and polished in exactly the same way as ordinary glass. It can also be etched, chipped or sand-blasted to produce ornamental surface patterns. Unlike many other makes of non-splintering glass, no sealing of the edges is required, and it can be cut by any workman with ordinary intelligence.

"Indestructo" glass fulfils the exacting requirement of the U.S. Army and Navy, and over 80 per cent. of all American service aircraft are fitted with "Indestructo" glass. One particular brand of this glass made to service requirements is bullet-proof.

Specimens of British "Indestructo" sheet and plate glass have been submitted for test by the National Physical Laboratory at Teddington, and copies of the reports on these successful tests can be had on application.

To these qualities must be added its power of insulation, its remarkable resistance to extremes of heat or cold, and freedom from condensation.

The danger of broken glass attending a bad landing are avoided as "Indestructo" will stand any strain of this kind. When, in the case of seaplanes, flotsam and jetsam are likely to cause damage, "Indestructo" glass is invaluable.

CROYDON NOTES.

Very deep sympathy is felt here by everyone for the ill luck which recently overtook the *Luft Hansa* machine. Lt.-Cdr. Glen Kidston, the sole survivor of the accident, seems to have rolled the dice with the Fates very successfully on this, as on many other occasions. When he arrived at Croydon Aerodrome that morning, he was booked to travel on the K.L.M. 10.30 machine, which for some reason or other, he thought started at 9.30. He therefore arranged a transfer to the earlier *Luft Hansa* machine, having, like everybody who knows both the K.L.M. and *Luft Hansa* lines, exactly the same confidence in each of them.

Commercial Aviation is going through an unfortunate period just at present, and so far as Croydon is concerned, this has not been helped by the somewhat eccentric behaviour of certain R.A.F. people. On Nov. 7, a couple of R.A.F. pilots, selecting Croydon as the place most worthy of their attentions, collided in the air and stepped out of their seats and parachuted quietly down. One landed in a certain waste space and the other in a tree in a cemetery.

A certain amount of annoyance was caused to Wallington people by the fact that one machine bored a hole in the roof of a house and poured all its petrol into the best bedroom, while the other set a house on fire and proceeded to broadcast live ammunition about the neighbourhood. Small boys, not yet tired of Guy Fawkes celebrations, enjoyed the bonfire and fireworks no end, but several gents who had heard the whine of bullets before, went home on all fours, and were accused, doubtless with injustice, of having had an extra one. An outstanding feature of the Press celebrations on this occasion, were photographs of Wallington firemen in brass hats examining the debris.

As a matter of fact, examining debris was about as far as the Wallington fire brigade got. Long before they arrived and indeed in an incredibly short number of minutes after the accident, Mr. Knight the Aerodrome fireman, was on the spot with his fire engine. He it was who put the fire out more or less single-handed, and the Wallington Fire Brigade arrived when he was packing his traps.

It was an extremely fine show on Mr. Knight's part, and the Aerodrome fire outfit is certainly to be congratulated.

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Mr. Knight's superiors apparently do not deem him worthy of a shiny brass helmet and he has to function in a little round cap with no peak.

On the theory that brass hats are folk who turn up after the battle is over and argue with any survivors there may be, this is perhaps just as well, and if a brass hat were to slow down Mr. Knight's speed and efficiency, we hope he won't find one in his stocking this Yuletide.

The other joke to be recorded against the R.A.F. is that three of their aeroplanes mistook France for England and landed there accordingly on a recent occasion.

Being urged to go away and report to St. Inglevert, they attempted to do so, but one of them failed and all three had to stay where they were. Urgent orders then reached them to refrain from further demonstrations likely to excite the natives and it is now rumoured that the R.101 is to be sent to fetch them complete with several navigators, the Astronomer Royal and an expert on Bird Migration.—SPRY.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 7; Monday, 21; Tuesday, 22; Wednesday, 15; Thursday, 24; Friday, 5; Saturday, 24.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich. London—Ostend—Brussels—Cologne and return: Machines 35, passengers 290, freight 16¾ lbs. India Route: Inward, passengers 0, mail 0 lbs.; outward, passengers 0, mail 700 lbs.

AIR UNION:

Paris—London: Machines 30, passengers 142, freight 18½ tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 12, passengers 59, freight 5½ tons.

SABENA:

Brussels—London: Machines 10, passengers 33, freight 2¼ tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London: Machines 26, passengers 45, freight 6¾ tons.

MISCELLANEOUS:

British machines 5, passengers 5.

Foreign machines 0, passengers 0.

Total number of trips by British machines, 40, carrying 295 passengers. Foreign machines, 78, carrying 279 passengers.

COMPARATIVE FIGURES.

Week ending Nov. 9:
Machines, 118; Passengers, 574; Crews, 285; Total personnel, 859.
Corresponding week, 1928:
Machines, 107; Passengers, 467; Crews, 206; Total personnel, 673.
Corresponding week, 1927:
Machines, 94; Passengers, 344; Crews, 167; Total personnel, 511.
Corresponding week, 1926:
Machines, 74; Passengers, 156; Crews, 86; Total personnel, 242.
Corresponding week, 1925:
Machines, 62; Passengers, 157; Crews, 75; Total personnel, 232.
Corresponding week, 1924:
Machines, 40; Passengers, 153; Crews, 52; Total personnel, 205.
Corresponding week, 1923:
Machines, 80; Passengers, 157; Crews, 129; Total personnel, 286.
Corresponding week, 1922:
Machines, 22; Passengers, 55; Crews, 48; Total personnel, 103.
Corresponding week, 1921:
Machines, 63; Passengers, 121; Crews, 92; Total personnel, 213.
Corresponding week, 1920:
Machines, 51; Passengers, 86; Crews, 64; Total personnel, 150.

A CIRRUS APPOINTMENT.

Flg. Off. S. A. Thorn, late R.A.F., has joined the staff of Cirrus Aero Engines Ltd. as Test Pilot to fill the vacancy made when Mr. T. Neville Stack, A.F.C., left the company to join National Flying Services Ltd.

Mr. Thorn joined the R.A.F. on Sept. 21, 1925, and was posted to No. 5 F.T.S., Sealand, for flying training. On Aug. 17, 1926, he was posted to No. 17 (Fighter) Squadron and in 1927 joined the Royal Aircraft Establishment as experimental pilot. He remained there until he left to join Cirrus Aero Engines Ltd.

Mr. Thorn has been an enthusiastic member of the R.A.F. Aero Club and he has represented this Club at most of the Light Aeroplane Club Meetings during the past year.

FRENCH PENETRATION IN CANADA.

Fast Air Service Transport Ltd. of Montreal has imported six Potez 32 commercial cabin monoplanes (230 h.p. Salmson engine) and three more are *en route* to Canada from France. The company has also bought four Bernard monoplanes of the type used by MM. Assolant and Lefèvre in their flight from America to Spain.

The President of F.A.S.T. Ltd. is Mr. R. D. Lehan, a well-known Montreal financier, and the General Manager is Mr. L. J. Aupick.

Here we have the complete answer to the feeble argument that we cannot sell British aircraft in Canada because the United States are next door. If the French can sell aeroplanes in a British Dominion and we cannot, then the only explanation is that our manufacturers are asleep.—(read THE AEROPLANE any time for the past ten years).

THE PASSING OF CRICKLEWOOD AERODROME.

Handley Page Ltd. have opened their new aerodrome at Radlett, near Elstree, where for the future all flying will be done, though their works and offices will remain at Cricklewood.

Flying at Cricklewood has often been hindered by fog, especially during the winter. The firm hope that they have now overcome this difficulty, as the Radlett district should be pretty free from foggy weather.

Cricklewood closed as from Nov. 8.

TAIL-PIECE.

Just prior to the passage of the first flying-boat of the New York—Buenos Aires Line over Martinique, French West Indies, Mont Pelée erupted and enshrouded itself in cinders, steam, brimstone and, so far as distant observers may presume, treacle. Can this have been a gesture of shame or of rage?

PERSONAL NOTICES.

MARRIAGE.

SOUTHEY—DAVIES.—On Nov. 9, at Knightsbridge, H. F. G. Southey, Flg. Off., R.A.F., only son of the late the Rev. W. G. Southey and of the late Mrs. Southey, and Miss Joan Mary Gordon Davies, eldest daughter of Mr. and Mrs. H. G. Davies, of 27, Park Mansions, Knightsbridge.

BIRTH.

BEARDSWORTH.—On Oct. 27, at St. Catherine's Nursing Home, Letchworth, to Betty, wife of Flt. Lt. H. I. T. Beardsworth—a daughter.

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or the convenience of Advertisers, replies can be received the office of THE AEROPLANE, Cannon House, Pilgrim Street, London, E.C.4.
pecial PREPAID Rate—18 words 4/6, 3d. per word ter; 13 insertions, 18 words, 4/-; 26 insertions, 18 ords, 3/6; 52 insertions, 18 words, 3/-, 2d. per word after. Situations Wanted ONLY—18 words 1/-.

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dvice given and rates quoted for all classes of Insurance.—pply to Bray, Gibb and Co., Ltd., Aviation Insurance pecialists, 166, Piccadilly, W.1, or 14, Sherborne Lane, C.4. Founded 1866.

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irwork Limited undertake all aircraft and engine repairs nd overhauls. Fully qualified staff. Completely equipped ervice hangar. Heston Air Park. Hayes 410.

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Air Survey Co. Ltd., 39, Grosvenor Place, S.W.1 (Sloane 048), Dum Dum, Calcutta, and Monkey Point, Rangoon. **The Aircraft Operating Co. Ltd.,** 8, New Square, Lincoln's nn, London (Holborn 8131), and Bulawayo, Southern thodesia; Cairo, Egypt; Rio de Janeiro, South America: Contractors to the Ordnance Survey. Laboratories and Subidiary Company for aerial photography in the British Isles. Aerofilms Ltd., Colindale Avenue, Hendon (Colindale 6183 nd 6184).

AVIATION PUBLICITY.

To All Aeronautical Firms.—The specialised advertising and marketing service required in the aviation field is provided by Aeromarine Advertising Ltd., 56-57, Fleet Street, London, E.C.4. (Tele.: Central 2423.) This service is free to clients. Leading aeronautical firms use this specialised organisation, which has been built up by aviation experts. Write or 'phone.

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Authorised Moth Agents.—Immediate delivery on payment of first deposit of £195, which includes insurance, balance payable to suit customer's convenience. Your old machine taken in part exchange. Write to the keenest Aircraft Agents—Phillips and Powis Aircraft (Reading) Ltd., Reading Aerodrome. 'Phone Sonning 114.

For Sale, 504K Avro, serviceable and complete in every detail, less engine. £60. F.O.R. Apply Box No. 5736, THE AEROPLANE, Cannon House, Pilgrim Street, E.C.4.

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Avro 504K Spares. New Main Planes; Cowlings; Undercarriages; Skids; Tanks, etc. Send for separate list. Coley Ltd., Queen Elizabeth Road, Kingston-on-Thames. 'Phone 0365.

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"Eagle" Aircraft Cameras and Equipment. Specialists in air photographic apparatus. Particulars from the manufacturers and patentees, Williamson Manufacturing Co., Litchfield Gardens, Willesden Green, London, N.W.10. Telephone 0073-4 Willesden. Telegrams, "Kinetogram Willroad London." Contractors to the Admiralty, Air Ministry, War Office

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Directorate of Technical Development.

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CINQUE PORTS flying club (Subsidised). WINTER RATES commence Oct. 1. 6 months' sub. 31s. 6d. Entrance fee 21s. Monthly sub. 21s. No entrance fee. Seven of our members took "A" licences in 4 weeks ending Sept. 26. Under 2 hours by car from London. Enlarged Club Room and Bar. Send 6d. to Hon. Sec., Hythe, Kent, for illustrated brochure. "LEARN AT LYMPNE."

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Ground Engineer, A, B, C and D, seeks permanent position. Sound production and maintenance experience. Good references. Box No. 5737, THE AEROPLANE, Cannon House Pilgrim Street, E.C.4.

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THE AEROPLANE

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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C.G.Grey

TOWARDS THE FUTURE.

The Junkers G.38 with accommodation for passengers in the eight foot depth of the wing.

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ON PATRIOTISM.

This is purely a personal matter, so I am going to deal with it as an individual and not as the more or less impersonal editorial One. I have been accused of being unpatriotic because I have given so much space in this paper to foreign aircraft, especially American aircraft. And so a justification of this policy seems necessary.

This policy is concerned with something greater than the immediate profits of the British Aircraft Industry, for, as Mr. Churchill said years ago, our Air Power depends on our Air Force being based on a strong and firmly established Aircraft Industry. And no industry can be firmly established unless its own policy is far-sighted.

As Editor of THE AEROPLANE I have steadily pointed the way towards commercial prosperity, so that our Aircraft Industry may become financially solid without having to depend entirely on being spoon-fed by our Air Ministry. And I have argued that the way to put the Aircraft Industry on a sound financial basis is to make and sell commercial aircraft at a profit.

Obviously, to make commercial aircraft at a profit we must make aircraft of sorts which can be sold in whatever market exists. And, except for two types of light aeroplanes, we have not sold commercial aircraft in big enough quantities to be worth considering.

In support of these arguments I have constantly told our aircraft constructors what the American Aircraft Industry is making, and why American aeroplanes are being sold in such vast quantities, not only in the United States, but in Canada. And I have published specifications and illustrations of those American aircraft so that our designers, senior and junior, may see what they are up against.

Consequently I have been accused of boosting American aircraft to the disadvantage of British aircraft. I have been told that THE AEROPLANE lives on the advertisements of British aircraft firms (which is perfectly true), and that therefore in admitting that anything good can come out of America I am not only being unpatriotic, but that I am biting the hand that feeds me.

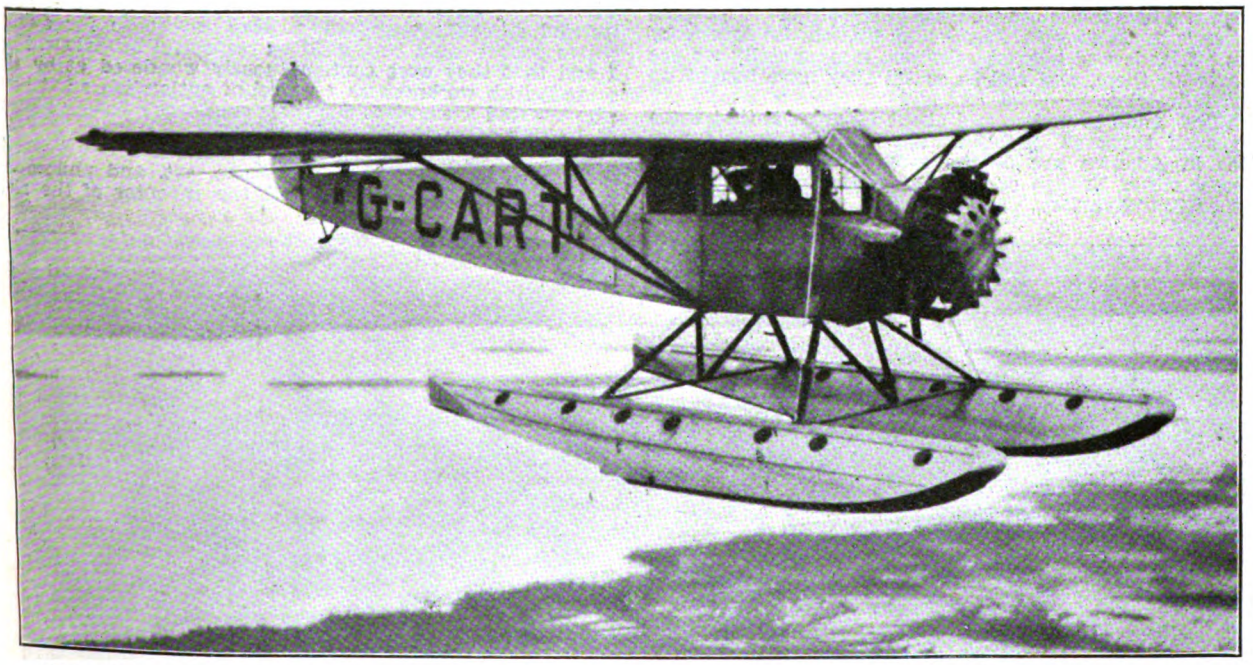
Presumably to be patriotic in the eyes of such critics THE AEROPLANE ought to consist entirely of eulogies of British aeroplanes and engines, whether good, bad or indifferent, and of hostile criticism of all American, German, French and Italian aeroplanes and engines. According to this idea we ought never to illustrate any new and improved American or European aircraft or engines, because that would be giving them free advertisement.

And what would be the result of such a policy? It would simply be that for a little while our old-fashioned designers would grow mentally fat and apathetic,—till they began to starve for lack of business,—and our younger and more active designers would have to go without that knowledge of developments in other countries which is at once their spur to improve their own work, and their source of inspiration with new ideas.

Therefore I hold that telling our people what American machines can do, and showing our Trade people what American machines look like, and telling them frankly that they have got to beat those performances and designs if they are going to make their livings, let alone make their fortunes, is far more patriotic than merely building up for them sand-castles in Spain in which they can bury their silly heads like ostriches.

**"THE GATES ARE MINE TO OPEN,
AS THE GATES ARE MINE TO CLOSE."**

(KIPLING - *Our Lady of the Snows.*)



CANADA'S CHOICE.—Air Transport firms in the British Dominions buy what they like, not what we here think they ought to like. Hence this Fairchild Monoplane of the FC-2W type (400 h.p. Pratt and Whitney Wasp engine). It carries 160 gallons of gasoline, 10 gallons of oil, and a pilot (say 180 lbs.). And after that it has a pay-load of 1,230 lbs. on floats or 1,500 lbs. on wheels.—These figures are not from the makers' catalogue but from the Canadian users. If there is a British aeroplane to beat it, then Canada will buy from us. But Canada's patriotism does not run to buying what Canada does not want. This machine belongs to Inter-Provincial Airways Ltd. of Grand 'Mere, Quebec.

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The Essential Englishman.

The Englishman is by nature lazy,—or rather he has an immense mental inertia which makes his mind slow to move. But there is always hope for a lazy man, because if you can once start him working he is too lazy to stop. And that is the salvation of the essential Englishman.

Tell an Englishman that his work is good and he will stop working to admire it. Or at any rate he will make no effort to improve it. But tell him that he is a fool and that his work is rotten, and he will turn out the best work in the World, just to prove that you are a liar.

Give an Englishman a perfect workshop and perfect machine-tools and he will sit with his hands in his pockets watching the tools do the work. But put him in a pokey little factory with nothing but hand-tools and he will turn out work far finer than any machine-tool ever made.—Only unfortunately it does not pay.

In theory I have always been a protectionist, in favour of a tariff-wall which would keep out all foreign goods. In practice I am a full-out free-trader because I know that if you once build a tariff-wall the English manufacturer will go to sleep in its shadow, as soon as he finds himself out of the heat of foreign competition—with the result that the consumer will have to pay through the nose for old-fashioned and inferior goods.

Consequently the only hope for the prosperity of this nation is free competition,—and the fiercer the better. When the British Manufacturer and the British Workman together have to use their wits, and work or starve, they produce the finest goods in the World.

To save them from starving more than is necessary the kindest thing to do for them is to tell them as often and as rudely as possible just what-like is the competition they have to meet. And at the moment the British Aircraft Industry is up against American Competition.

That is why I keep on acclaiming American progress. And, because he hates being waked out of his self-complacency, the British manufacturer and designer says that I am unpatriotic. At any rate I am in good company, for some six years ago Mr. C. R. Fairey imported American fuselage designs and engines, which have since been copied by every successful designer of aircraft of those types. And last year Mr. J. D. Siddeley imported the designs of the best commercial aircraft from the Netherlands. They also will, in due course, be copied,—just about when they are becoming out-of-date.

The Essential American.

To understand what American competition means and meet it you must understand something about what American competition has done in the past. And you must also know something about the American temperament.

In preparation for War the Staff studies the psychology and the history of every possible enemy and ally in the most minute detail, so as to know how to meet the attacks of the one and how to use the qualities of the other. The same study pays in Commercial War.—and, though the Americans are our friends and nearest relatives, commercially we are at war with them, and will be so till they have bought up all our industries.

The first thing to understand about America is that there is no such thing as an American. All the people who matter in America are of the same breed as ourselves. They are either English or Scots or Netherlanders or Germans or Scandinavians. Also there are some of the better sort of Irish, apart from a lot of the worse sort of Irish. The Nordics run the United States,—and the other Europeans, under the comprehensive American names of Wops, Dagoes, and Bohunks, do the work for them.

But you must also remember that, as I have often said before, everybody in America is descended from people who have had the energy and the initiative, and enough of the gambling instinct, to pull themselves up by the roots out of Europe and back their own ability on the other side of the Atlantic. Thus, on the principle that birds of a feather flock together, although there is no such thing as an American, and never can be, there are in the United States several millions of people belonging to one nation all of whom have the same qualities of energy and initiative, plus the willingness to take a chance. And those qualities are all to a greater or less extent lacking in those of us who have stayed at home.

Corroborative Evidence.

Now then,—if you do not believe my estimate of the American character, read what one of the greatest writers in the English language learned about the American engineers fifty years ago. He says:—

You must not suppose, because I am a man of letters, that I never tried to earn an honest living. I began trying to commit that sin against my nature when I was fifteen, and persevered, from youthful timidity and diffidence, until I was twenty-three.

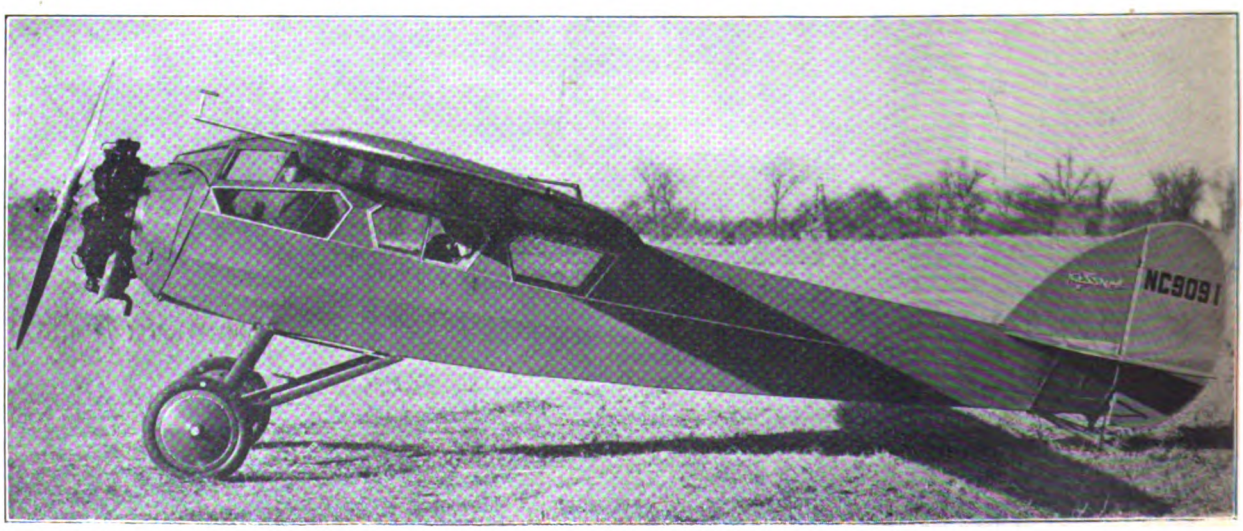
My last attempt was in 1879, when a company was formed in London to exploit an ingenious invention by Mr. Thomas Alva Edison—a much too ingenious invention as it proved, being nothing less than a telephone of such stentorian efficiency that it bellowed your most private communications all over the house instead of whispering them with some sort of discretion. This was not what the British stockbroker wanted; so the company was soon merged in the National Telephone Company, after making a place for itself in the history of literature, quite unintentionally, by providing me with a job.

Whilst the Edison Telephone Company lasted, it crowded the basement of a huge pile of offices in Queen Victoria Street with American artificers. These deluded and romantic men gave me a glimpse of the skilled proletariat of the United States. They sang obsolete sentimental songs with genuine emotion; and their language was frightful even to an Irishman. They worked with a ferocious energy which was out of all proportion to the actual result achieved.

Indomitably resolved to assert their republican manhood by taking no orders from a tall-hatted Englishman whose stiff politeness covered his conviction that they were, relatively to himself, inferior and common persons, they insisted on being slave-driven with genuine American oaths by a genuine free and equal American foreman.

They utterly despised the artfully slow British workman who did as little for his wages as he possibly could; never hurried himself; and had a deep reverence for anyone whose pocket could be tapped by respectful behaviour. Need I add that they were contemptuously wondered at by this same British workman as a parcel of outlandish adult boys, who sweated themselves for their employer's benefit instead of looking after their own interests?

They adored Mr. Edison as the greatest man of all time in every possible department of science, art, and philosophy, and execrated Mr. Graham Bell, the inventor of the rival



A LIGHT CABIN MONOPLANE.—The Cessna AW. four-seat cantilever monoplane (110 h.p. Warner Scarab engine). **And we need about 40 h.p. per passenger for a lower performance,—but with greater strength.**

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An Epic Story!

"THE RESCUES FROM KABUL

IT is impossible to read without a thrill the story told in the official report of the rescues from Kabul carried out by the Royal Air Force in December, January and February last.

In those winter weeks—destined surely to be famous for ever in the history of the Air Force—the great aeroplanes went to and fro, to and fro, in all weathers over mountainous country of the most forbidding kind, where landing was practically impossible and any sort of failure in skill or in material must have meant disaster. There was no disaster. In more than seventy journeys nearly 600 men, women and children were rescued, and not one suffered injury.

Henceforth it will not be difficult to connect the ideas of precision, punctuality, efficiency under the most exacting conditions, with transport through the element which hitherto men have regarded as more chancy than land or even sea. It is a great thing to have won the Schneider Trophy.

It is a greater thing, greater for the country and greater for the future of travel by air, to have effected the rescues from Kabul.

Not then for the first time, but then for the first time in that new and marvellous manner, and with a swiftness denied to both the older Services, neither of which could have sent help from Iraq to India in two days, those forces came to the rescue of men, women and children in peril; and no less than a great victory in battle, this triumph deserves to be emblazoned on the colours."

The Times, 8 *Oct.*, 1929.

VICKERS aircraft combined with NAPIER engines made these rescues possible.

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telephone, as his Satanic adversary; but each of them had (or pretended to have) on the brink of completion, an improvement on the telephone, usually a new transmitter.

They were free-souled creatures, excellent company: sensitive, cheerful, and profane; liars, braggarts, and hustlers; with an air of making slow old England hum which never left them even when, as often happened, they were wrestling with difficulties of their own making, or struggling in no-thoroughfares from which they had to be retrieved like strayed sheep by Englishmen without imagination enough to go wrong.

The Witness.

That was written by Mr. Bernard Shaw in his Preface to the American edition of *The Irrational Knot* in 1905. The book itself was written in 1880.

That description of the essential American—and of the essential Englishman—will never be bettered, and for several thousands of years there will probably never be any need to revise it. Any student of psychology who reads that description will understand how, and why, the Americans get ahead of us, and why we win out in the end.

But do not forget that America made millions out of selling telephones, and other things made by the Edison-Bell combine, which we might have made ourselves if our electrical people had not been so slow.

The great historical fact is that the fool Englishman without imagination enough to go wrong muddles through somehow and comes out on top at the finish. But, as was shown by our method, or rather lack of method, in winning the War 1914-18, coming out on top always costs us fifty times as much as it might cost us if only we would use a little sense, and if only we would learn from the experience of others instead of refusing to learn except from our own bitter experience.

One of our commonest faults is that of despising our enemies, or our competitors. Personally I have had some 35 years of experience of American competition and possibly a brief review of that competition may be useful to the younger members of the Aircraft Industry even if the older ones, few of whom have had 35 years' experience of business, think that they already know too much to profit by it.

The Teaching of Experience.

When I was a youngster and was supposed to be learning engineering in London, long before there were any motor-cars, I used to be able to push a bicycle rather fast, as did the late Charles Rolls who afterwards founded the Rolls-Royce firm and S. F. Edge and some others who afterwards became well known. And wonderful stories used to come from America about the speeds done in American bicycle-races.

We used to think that somewhere about 32 seconds for an un-paced quarter-mile on the track was amazingly good going. The Americans claimed to have done 28 seconds. We, being English, laughed at their performance-figures, and said that they timed their races on an oil-can to imitate a stop-watch. We were just like our aircraft manufacturers, who laughed at American performance-figures till the Curtiss seaplanes came to Cowes and took the Schneider Trophy away with them.

A. A. Zimmerman came over in, I think it was, 1893, and proceeded to give all our scratch-men about 80 yards in the mile and a licking. We merely said that he was a human phenomenon and let it go at that. The next year Walter Sanger came over, and, although our people had learned something about thoroughness in training from Zimmerman, he proceeded to beat them worse than ever.

He rode an absurd-looking bicycle with wooden rims which was pounds lighter than anything we ever built. And our cycle manufacturers said that it could not hold together just as our aircraft manufacturers say that American aircraft cannot hold together. But it did.

Then we began to believe the American performance figures and we began to take our training seriously. And years afterwards our men proceeded to beat American figures.

What the Cycle Trade Learned.

In 1895 I went to Coventry as a draughtsman in a big cycle firm, and I was about the worst draughtsman that ever happened. But having seen American bicycles, and having seen the bicycles which small firms in London, who had learned their lesson, were turning out on somewhat similar lines, I was tactless enough to sketch out roughly what Coventry bicycles ought to look like, and to say that probably Coventry would be making those bicycles two years later.

After about eighteen months I was sacked because the firm said that they could not do with two managing directors. But the bicycles which the firm made for the next season but one were very like those American bicycles. And twenty years later the man who had sacked me came and asked me whether I could help him to find a job.

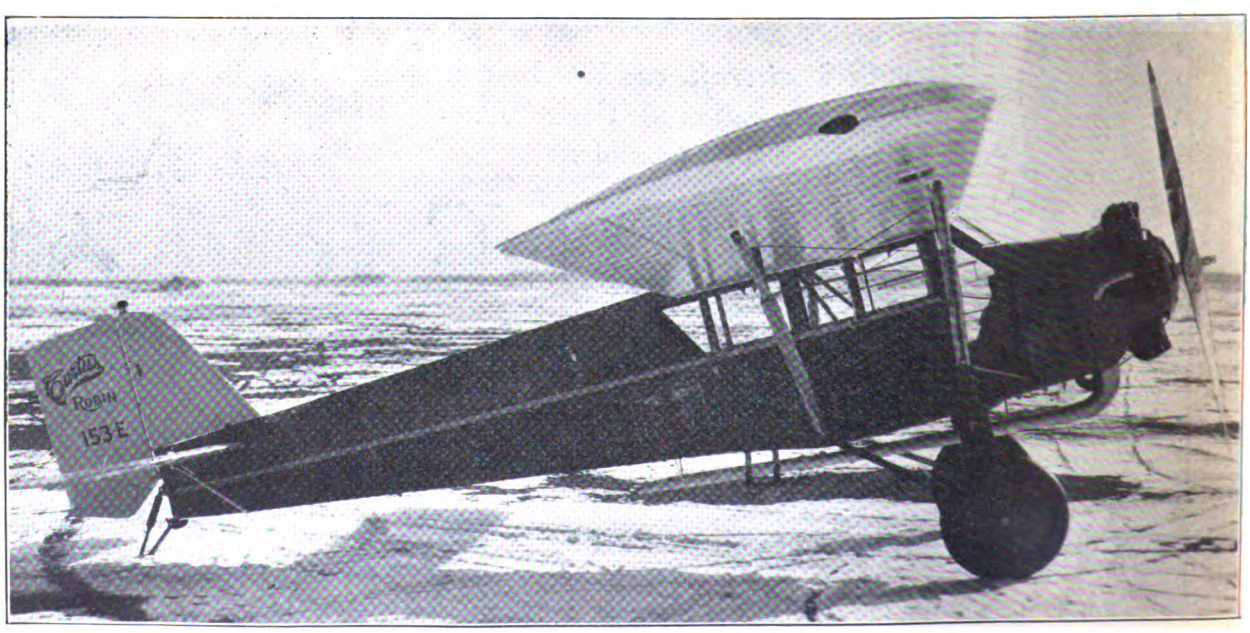
In those days the cheapest bicycle made in Coventry sold for about 12 guineas, and we thought that it was an absurdly low price. American bicycles were being sold all over the World for about 50 dollars, and later for 40 dollars.

Then, much to the disgust of Coventry, a Birmingham man named Ivy Rogers took an old warehouse in Coventry, and, instead of trying to make everything himself, he had all his parts made under contract by comparatively small firms in the Birmingham district at cut prices, by the simple process of telling the makers that he would pay so much and no more and that if they did not like to make the stuff at that price, somebody else would. The result was that he put on the market Coventry-built bicycles at £7 apiece.

Then the Coventry manufacturers were forced to sit up and take notice. Within a few years they had re-designed their machines for cheap production, they had bought modern American machinery, they had cut their prices down, and they were getting back the World's markets from the American manufacturers and were making handsome profits.

The Motor Trade's Experience.

Almost precisely that same sequence of events has happened in the Motor Trade, but the course of History has been varied by conditions. Coventry and Birmingham began making motor-cars on German and French models. In fact, the Daimler Company of Coventry was an offshoot of the Canstatt-Daimler firm in Germany which made the Mercédés car. And Louis Coatalen came from France to design the Humber. American cars were, of course, regarded with scorn. And the published performance-figures of American cars were frankly described as lies.



THE CURTISS ROBIN.—A light cabin monoplane with the 170 h.p. Curtiss Challenger engine which is now being introduced into Canada by the Curtiss-Reid Aircraft Co. of Montreal.

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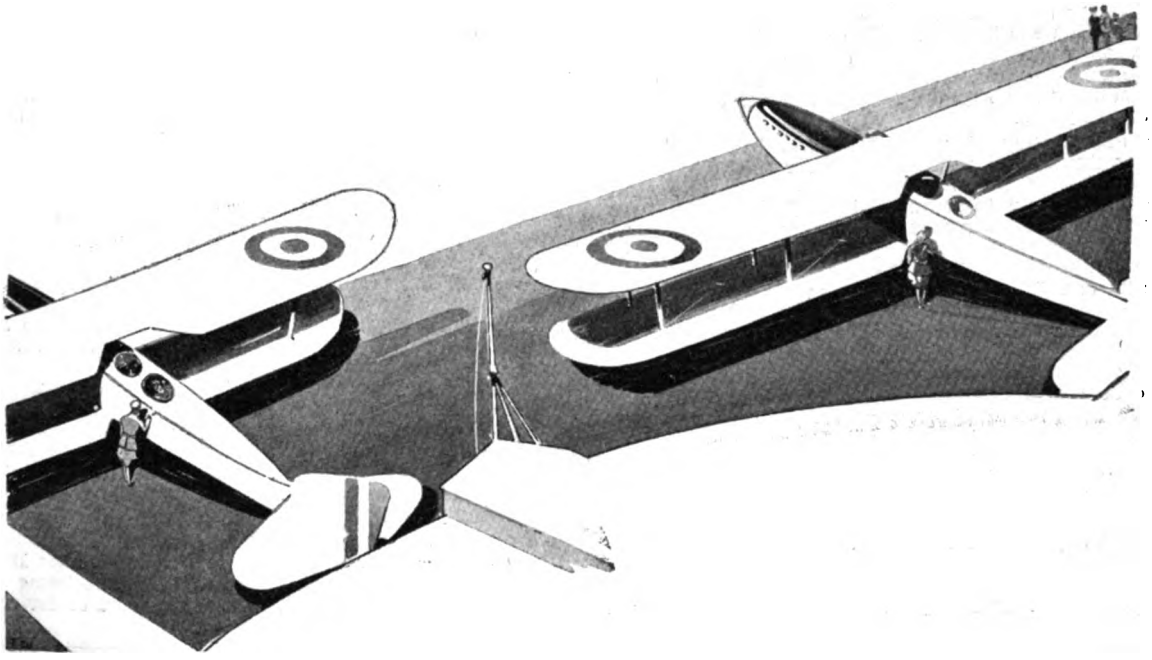

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We made cars which suited our roads and the European roads, which were pretty good roads. The Americans made cars which were designed to go without any roads. And the natural result was that the Americans got the whole of the market in the British Dominions as well as in all foreign countries outside of Europe.

Our cars were much more beautifully made and on our roads they wore rather longer than the American cars did. But on what passed for roads overseas our cars either broke or simply did not go because their tracks were too narrow and they were too low on the ground, and their engines burnt themselves up.

Also, the Americans turned out cars which were fully equipped with everything that you could want on a car. We charged extra for such essential things as lamps and hoods and speedometers. The Americans provided detachable wheels and spare wheels, while we were still content with fixed wheels, and made do, when tyres burst or punctured, with Stepney wheels which clamped awkwardly onto the sides of rims.

And the worst of it was that these despised American cars which their manufacturers only intended to be used for a year or so and then thrown away, kept on running in the British Dominions for several years.

Then the British Government started taxing cars on cylinder-capacity. And the British manufacturer, trying to be clever, invented the small-bore high-speed engine to cheat the tax-collector. The result has been that for ten years we have been driving horrible little high-speed engines which wear themselves out in a few thousand miles and cost more in repairs than a big engine would pay in taxation and extra petrol-consumption.

Our makers advertise that their small engines do 4,000 miles to the gallon of oil. So they do—on the first gallon. But they do 1,000 miles on the second gallon, and about 500 on the third gallon, and something under 100 on the fourth, because of wear on the pistons.

Meantime the Americans have gone on steadily with their fat woolly engines which wear indefinitely and put up a performance. The result has been that at the last Olympia Aero Show the great step forward for the year in the 1930 models, if you please, was the introduction of bigger engines, which will wear better, and the equipping of the cars themselves, as a great attraction to the British public, with all the gadgets and little comforts and luxuries which have been standard fittings on every American car for the past five or ten years.

Whether any of the motor papers have had the gumption or the pluck during the past ten years to tell the British motor manufacturer the particular kind of fool he has been I do not pretend to know. British Aviation has been struggling too hard during that period for me to have time to look at motor papers. But quite by chance a week or two before the Olympia Show I happened to come across an article by one John Prioleau, who seems to write more sense than most people on the subject of motor cars, in which he stated in some detail what he hoped to see at Olympia. And all the things that he hoped to see made up a very good specification for any standard American automobile of five or six years ago—in fact, just the kind of American car that many of our patriotic manufacturers of British aircraft have been driving for quite a while.

Now we read in the papers of a great selling campaign for British cars in the British Dominions. Which means that as there are well-made English cars on American lines to sell overseas there is some hope of selling them. And the campaign ought to be a success. At any rate, I hope cordially that it will be.

But there is no reason why we should be starting such a campaign in 1929. The English automobile manufacturer ought to have made cars on those lines in 1919, and he ought to have got the trade in the British Dominions ten years ago.

The Big Idea.

Precisely with the idea of saving the British Aircraft Industry from ten years of depression, and with the idea of getting the overseas trade in aircraft before the Americans get it, The Aeroplane has been rubbing in descriptions of the kind of aircraft which are doing trade in the United States at present, because they are the kind of aeroplanes which are most suited for use in our Overseas Dominions and in all other countries overseas.

Also these American aircraft have the additional advantage that they are precisely the types of aeroplanes which are suitable for use *in* the British Isles,—and for air transport out of the British Isles all over the World. For the great difference between the Aircraft Trade and the Automobile Trade is that whereas European cars were originally produced to run on European roads, and American cars were designed to run without any roads, the air happens to be very nearly the same all over the World, and consequently the aeroplane which is suitable for one country is equally suitable for any other country,—with perhaps minor alterations in the accommodation.

More Evidence.

If anybody has any doubts about the performances and the general high qualities of American aircraft, I advise them to have a talk with Mr. W. L. Hope of Air Taxis Ltd. Lawrence Hope was one of our earliest air-transport pilots. He flew Handley Pages when Handley Page Transport Ltd. started up as early as might be after the Armistice. He has won the King's Cup Race twice in a Moth, so he is no mean judge of the qualities of an aeroplane, whether big or small. And for the past year or two he has been operating a Fokker monoplane for his air taxi work because no British aeroplane exists which will do the same job.

He has just come back from the States, and while he was there he flew twenty-seven different types of American aeroplanes. Most of them were cabin ships of the type which is universal everywhere except in this country, that is to say of the type of the Fokker and the Ryan and the Bellanca and the Fairchild and the Stinson and dozens of others. He has also flown some of their bigger multi-engined ships and some of their small open craft.

His opinion of American aircraft seems to be something like the British workman's opinion of beer,—none of it is bad but some of it is better than others. He says that their performance-figures are all that they claim for them, and that they are beautiful to handle.

They all have wheel-brakes and they all have swivelling tail-wheels, and their internal equipment is magnificent. You can go and buy those machines practically off hooks in the American factories. But you cannot buy a machine of that type in England if you want to. And unfortunately it happens to be the type that is wanted in the British Dominions and all over the World, and it will soon be wanted in this country.

Personally if I were starting to build aircraft myself tomorrow I should not build that type, I should build something quite different, which I believe would be very much better in that it would have all the qualities of that type plus much higher efficiency. But in the meantime that is the type which can be sold. And it is a type which can be built cheaply and quickly.

Where We Have Scored.

Up to the present moment the British Aircraft Industry has been in a position to compete on equal terms in the Overseas markets with American firms. And so far as mili-

AMERICAN TRAINING MACHINES.—A batch of three Fairchild KR.34 biplanes (165 h.p. Wright Whirlwind (J-6) engines). These machines were originally produced by the Kreider-Reisner Aircraft Co., which company has been absorbed by the Fairchild Airplane Manufacturing Corporation.

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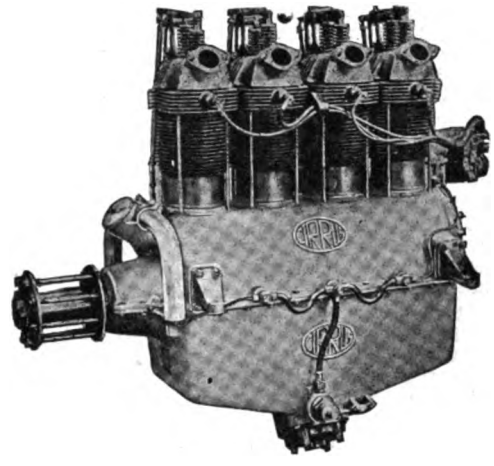
SWEDEN

TO

SOUTH AFRICA.



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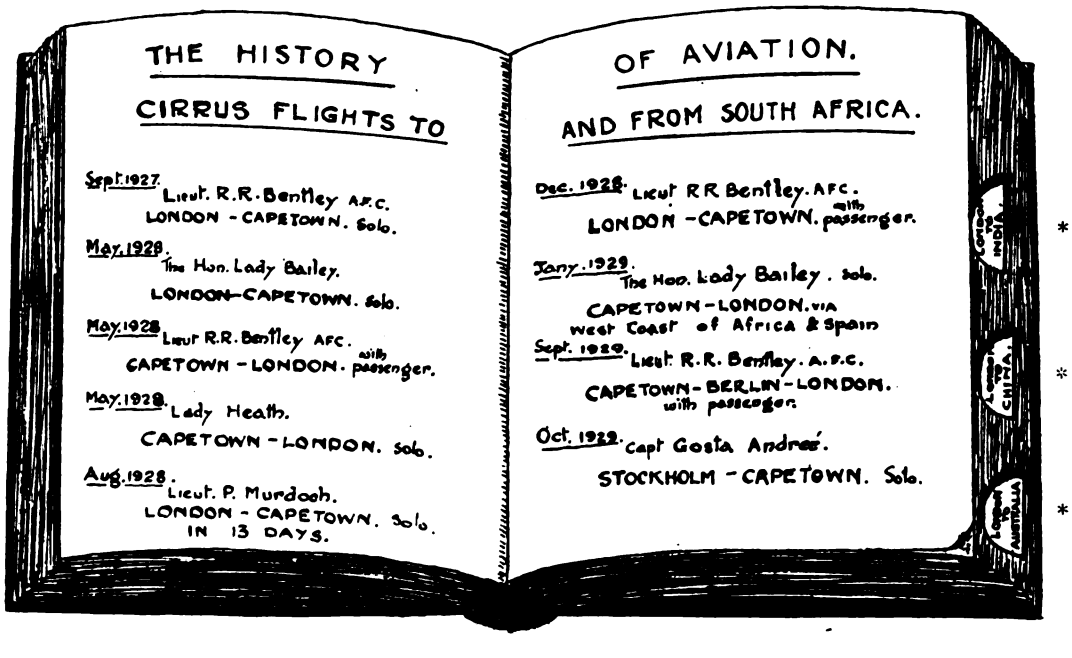

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tary aircraft are concerned we have beaten the American manufacturers.

Quite definitely, any of our military aircraft are better built and better equipped than are any but a few American military aircraft. We have had more experience of the use of aircraft in war than have the Americans, and that counts for something with the fighting services of foreign nations.

Also, on the whole, foreign nations, especially in Latin America, rather prefer English business methods. Which is possibly because they have had so much experience of the get-rich-quick type of American business man and mistrust all American methods accordingly, whereas they have not come across the objectionable type of English business man, who is just as much a twister though in a different way, and happily has not so far appeared to any marked extent in the Aircraft Industry.

At any rate, quite considerable sums have been spent on British military aircraft by foreign nations, and those aircraft which have been bought are beyond argument the finest products of the World in their class. But I do wish that the British Aircraft manufacturer would remember that within a very few years the sale of military aircraft is going to be a very small fraction of the total sales of aircraft all over the world.

Of course if any individual firm has no ambition other than to maintain its present type and to go on selling a dozen machines here and a dozen machines there to the fighting Services of foreign powers, well and good. That is the private business of that particular firm. I am not writing for people of that sort. I am writing for the Aircraft Industry as a whole, into which little new firms are coming who if they are properly run and if they are able to deliver the goods, will soon have between them very much bigger export business than the combined exports of all the war machines.

Past Conditions.

Hitherto, as I have said, the conditions under which the American Aircraft Trade and the British Aircraft Trade have had to compete with one another have been pretty well the same. They have had to design their machines for the same air. And they have had to produce them under very similar conditions.

Although the output of American aircraft is so enormous compared with ours, there are so many different American firms that there has not as yet been anything like mass production. The free and independent American workman is much more slave-driven, as Mr. Bernard Shaw has said, than is the English workman, so probably his individual output is higher. But on the other hand, he is paid much higher wages, so probably the labour on American machines costs as much as ours does. Where the American manufacturer has scored mostly has been because he has not been put to so much expense for the sake of the Government Certificate of air-worthiness, and he has designed the details of his aeroplanes for cheaper methods of construction.

Still, on the whole there has not been much in it between the price of an airplane and the price of an aeroplane. But, where the American has scored, is that he has been able to supply the type of aircraft that people want.

The result has been that Canada is flooded with American machines, and with American-Dutch machines in the shape of the American-built Fokkers. And American machines are already getting into Australia and South Africa. Only the other day an American-built Fokker was supplied to Union Airways of South Africa, a firm which is subsidised by the South African Government and began operations with a number of Moths.

Of course there is the argument that Canada is next door to the United States and that naturally Canadians buy American aircraft because they can be flown from the factory to the user and can easily be sent back for overhaul. But that does not account for the fact that two or three weeks ago half a dozen cabin monoplanes built by the Farman Company in Paris were delivered to a firm in Canada, and that if that firm had wanted to buy cabin monoplanes of that type in England,—like the Duchess of Bedford and Mr. C. D. Barnard,—they could not have got them, because the type does not exist in this country, although it is the type that everybody wants all over the world.

Changed Conditions and Wall Street.

So much for what has been happening under past conditions. But let us consider what is likely to happen under the different conditions which now threaten us.

America has just had one of the most awful financial slumps in her history. The result has been that hundreds of thousands, if not millions, of individual small investors have either gone broke or at any rate are very much worse off than they would have been if American finance had remained normal. The United States are the home of the hire-purchase business, and the vast majority of the people in the States are in debt up to their necks on hire-purchase payments for all their household goods.

This big slump in Wall Street must affect the whole fabric of society in the States. It means that all the little investors will fail to keep up payments on their motor-cars and wireless-sets and vacuum-cleaners and other comforts of the home which they have bought on the Kathleen Mavourneen principle of "it may be for years and it may be for ever."

This means that the firms which do hire-purchase business will fail, and the manufacturers who supply them will make bad debts and will not get fresh orders. Which means that the men in the factories will be out of work, and that the banks which have financed the manufacturers and the hire-purchase people will burst, and so "a bad time will be had by all," to paraphrase a popular American expression. For which I am very sorry, because I have an immense number of very good friends in the States. I only hope most heartily that none of them will be badly hit.

The Pendulum of Prosperity.

The pendulum of prosperity swings across the Atlantic on a period of somewhere between seven and ten years. Our last boom was the false boom which followed the War in 1919. America has been booming ever since.

Our slump came quite suddenly in 1920 and reached its worst in 1921. Then we ran along a flat of hard times until about 1926, and since then we have been slowly crawling upwards. So, as has been said in this paper several times in the last two years, we are coming up towards a general boom in prosperity.

But that does not mean necessarily the sort of boom which we want in the Aircraft Industry,—in fact it may be just what we do *not* want. There may be a sudden rush next year and for the next two or three years for aeroplanes for private owners and for taxi work at home. But that is not going to put the Aircraft Industry on a sound basis if it makes us neglect the Overseas markets. It may provide people with quick profits but it is not going to build up solid businesses.

In those early days of the cycle trade, of which I have told, when there was a boom in this country I remember seeing my managing-director going round taking the labels off hundreds of machines which had actually been packed for export, and having them replaced with labels for agents in the British Isles. Which simply meant that we were saturating our home market quickly and were starving our

THE LATEST FAIRCHILD.—The Fairchild 42 monoplane (300 h.p. Wright Whirlwind J-6 engine), a six-seat cabin monoplane with folding wings.

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Overseas market. The result was that the Americans just walked into it with their low-priced machines. That is one of the things we must avoid when the aircraft boom comes in the next couple of years.

A Warning.

The more serious feature of the present situation is the effect on our Overseas markets of the slump in the United States. Although the American consumer may go broke and so ruin the home market for aeroplanes, the important American aircraft and engine firms are very strong financially.

The people who put money into them may not see it back for some time, and the mutts who bought American aircraft shares at twenty or thirty or fifty times their real value will never see their money back. But the general conditions are quite different from what they were when the slump came in the American bicycle trade and motor-car trades.

The American aircraft firms still have their capital and they still have the equipment of their factories, and they have money enough to buy more equipment for their factories. So they will go on making aircraft and engines rather than shut down because of the slump at home. I say this on the authority of the most recent information from the States.

What that all means is that as the output of these factories cannot be absorbed in the United States it will be dumped on the British Dominoins right now, whereas if things had remained normal in the States the home market would not have been saturated for another three or four years, and we should have had time in those four or five years to produce in this country, if we had the intelligence, aircraft of the types wanted in our Overseas Dominions.

We should then have got a strong footing in those dominions before American over-production started the dumping campaign which would necessarily have followed.

A Comfortable Delusion.

There is no use in our aircraft manufacturers deluding themselves with the idea that we can afford to let American aircraft be dumped in our Overseas Dominions because when the buyers get the American stuff they will be disgusted with it and will be glad to buy our better aircraft when we start delivering. That is the old argument with which we used to humbug ourselves in the days of the cycle trade and the motor trade. If we try to humbug ourselves in the same way to-day we shall merely ruin ourselves when we might be making a fortune.

American aircraft of to-day are not to be despised. The old and crude American methods of manufacture have been scrapped. The American Air-Worthiness Certificate issued by the Department of Commerce is recognised in Canada and in Australia, and an American machine with a Canadian air-worthiness certificate will be recognised in any of the other British Dominions, or in any other country in the world.

American performance figures are just as trustworthy as anybody else's performance figures. And the British aircraft manufacturer who scoffs at those figures is just as foolish as we were in my young days when we scoffed at American bicycle records and at the performances claimed for American motor-cars.

American methods of production of raw material and parts, are ahead of ours. American foundries, and American metallurgical works in general, such as those firms which produce stampings and forgings and so-forth, are miles ahead in their methods and in their machinery of our old-fashioned conservative firms in Birmingham and Sheffield. And so material and parts are as good as ours and cheaper.

Mass Psychology.

Presumably I shall be called unpatriotic for making these statements also. Perhaps I might put all this into a kind of circular letter to the individual heads of the twenty firms or so who constitute officially the whole British Aircraft Industry. If I did I might get polite letters thanking me for telling them what they already know,—or ought to know, if they don't. And there the matter might end. But that information might never reach the men who matter most,—namely, the younger men who must in the end save the British Aircraft Industry if it is ever going to be saved.

The patriotic course, as I conceive it, is to tell everybody in the British Aircraft Industry, and everybody who is interested in aviation not only in this country but all over the British Dominions and all over the world just exactly what the position really is.

Mass psychology is a curious thing. A small group of individuals may have certain knowledge for years and years and keep it to themselves. They may even do their best to let other people share their knowledge. But nothing happens till enough people get to know about it to create a psychological mass momentum. And then things happen suddenly. This is simply an effort to hurry up the happening of something which will make the British Aircraft Industry a great paying commercial affair.

If the close corporation of aircraft firms which at present exists does not take the present situation seriously and go out for the commercial markets Overseas, then either of two things may happen. Either the enterprising and hard-pressed Americans will get that market, or else some of the dozen or so young and energetic firms who are at present outside the sacred circle, and in a very small way of business, will produce what the market wants.

Then they will get hold of some of the immense amount of money which is floating around the city of London at the present moment waiting to be put into real live aircraft concerns. And those young firms will suddenly jump ahead just as young and energetic firms have jumped ahead in the motor-trade and in every other trade.

Ten years ago nobody outside of the good city of Oxford had ever heard of the Morris car and now look at them. Think of all the stupid old motor firms whose managing directors might have been where Sir William Morris is if only they had had the energy and intelligence and had not been so self-satisfied.

To-day anybody overseas who ever thinks of British motor-cars at all thinks of the Rolls-Royce as the World's finest luxury car, and perhaps of the Bentley as the best sports car for those who can afford it. And apart from them the Morris is looked upon as the Only British Automobile. Most of the rest are definitely so ugly that they come under the generic heading of what a friend of mine calls the "Epstein Straight Four." But the overseas buyer knows dozens of makes of American cars which stand up to the work needed in his country. And all these cars might have

LONG DISTANCE TRANSPORT.—A Sikorsky Amphibian (two 425 h.p. Pratt and Whitney Wasp engines) which is used on the Nyrba or New York, Rio and Buenos Aires Air Line.

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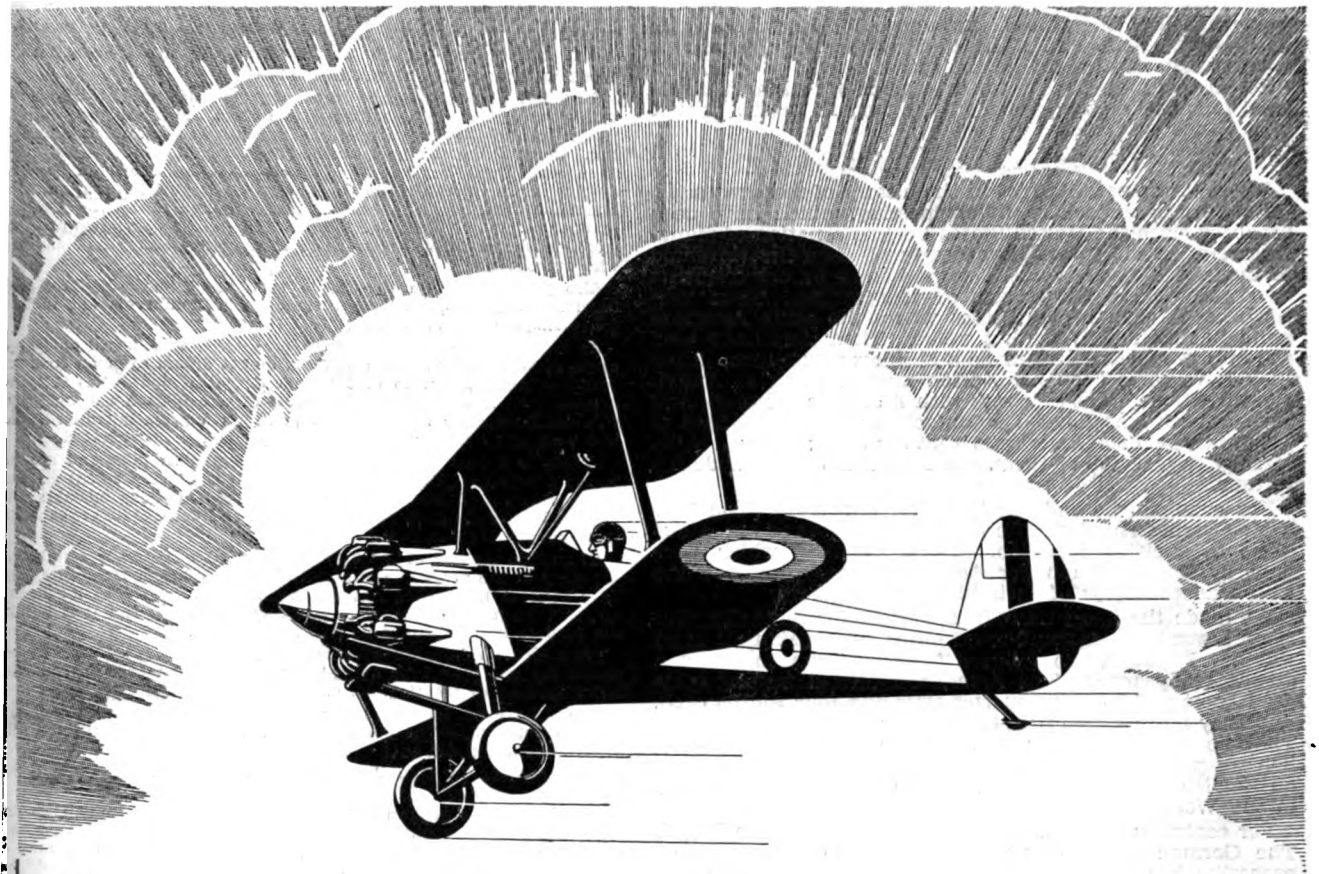

"Bristol"

BULLDOG

SINGLE SEATER FIGHTER.

From "Aircraft" (Sept. 30th, 1929).

"For accuracy of formation flying this event was, in my opinion, the cream of the whole Display. It was also the first time we had seen the Bulldog in formation. It is a very taking machine to watch, well balanced with the Jupiter well streamlined, but without any marked peculiarity in depth or length of fuselage. Its performance marks it as the very best fighter of the day, and I feel sure that the Royal Australian Air Force will enjoy itself immensely when it gets its first consignment of Bulldogs."

THE BRISTOL AEROPLANE CO. LTD., FILTON, BRISTOL.

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been British if the British car-monger had not been such an obstinate fool, and if he had made what the market wanted instead of what he thought it ought to want.

So all this is written to try to prevent our Aircraft Trade from following in the way of our Automobile Trade. Is that or is it not patriotic?

History Repeats Itself.

There is one peculiar fact in the history of most manufactured articles, especially in engineering, which have been produced since the United States became a nation of manufacturers. Such things have nearly all been first invented in England. They have been turned down by our scientists or experts or manufacturers or shopkeepers. Then they have been taken to the States where the acute American mind has seen their market value. Then they have been put into production and made a business proposition. Then they have come back here, often masquerading as American inventions, or at any rate with American prestige. And then some bright English manufacturer has taken hold of them, has paid the Americans a lot for them, and has made a really perfect job of them, and incidentally has made his fortune.

For example, we had the first electric railway. The New York Overhead and the New York Underground are a disgrace to a civilised nation. And our Tubes, which were built by Englishmen under American supervision, are the most perfect things of their kind in the World.

We made the finest boots in the world for centuries. But when I was a youngster I could never get a pair that fitted whether I paid three guineas to have them made or a guinea ready made. The Americans started making quite good boots and shoes in quarter sizes and four widths each, and they made cheap shoe-trees which kept them in shape. They flooded the English market with them and took millions of pounds out of this country. And now you can get an English shoe which is better and cheaper than anything in the World.

For centuries we have made the best steel in the World. The German scientists showed us how to temper razors properly. We invented the safety-razor and looked on it with scorn alongside the old-fashioned hand-knife. The Americans made the safety-razor a working proposition. And now you can use any old safety-razor with an English Darwin blade in it, and it is the finest shaving apparatus in the world.

The English housewife made the most delicious simple household sweets. The Americans took them and turned them into ornamental candy, and even opened shops in England to sell them. But there is nothing to touch Fortnum & Mason's modern products.

An Englishman invented the steamship, but it was the Americans who made steamships work. And the Americans built cheap steamships for years. But to-day there is not an American steamship on the water that compares with the products of Belfast and the Clyde.

Let us hope that the same thing may happen with our aeroplanes. Sir George Cayley made an aeroplane about eighty years before the Wrights were born. The Wrights were taught just about all they knew by a Frenchman. And the Americans made aeroplanes fly before we did. But we made, and still make, the best war-machines.

The first passenger-carrying aeroplane with proper cabin accommodation was built immediately after the War by Mr. Koolhoven, a British subject with English ancestors. Now the Americans are making commercial aeroplanes by the thousand before we have produced one which is actually on the market.

We shall probably have to wait a while before we beat the Americans at their own game, in accord with history. The question is whether we are going to let them make a fortune out of our Overseas Dominions, and out of this country as well, while we are thinking about it.—C. G. G.

THE LOSS OF THE "CITY OF ROME."

The Under-Secretary of State for Air, in the House of Commons on Nov. 13, replying to a question by Mr. Lees, made the following statement:—

A report upon this most regrettable loss has been received from the British Consul at Spezia, through the Consul-General at Genoa. It goes to confirm the view that the immediate cause of the loss was the breaking of the tow-line which the captain of the Italian steamer *Famiglia* had succeeded in passing to the flying-boat, the subsequent inability of the *Famiglia* to find the flying-boat again in the darkness and heavy weather, and the eventual foundering of the flying-boat in the gale. It throws no light on the initial cause of the disaster, the forced descent upon the water. It is known that one of the engines developed some fault, and finally stopped, but, in view of the complete loss of the flying-boat, the reason for this can hardly now be ascertainable. The answer to the last part of the question is that I have no reason to think that anything more could have been done than was done in the very difficult conditions that existed, but I understand that this aspect of the matter is being examined by the Italian authorities.

SERVICE PILOTS AND AIR TRANSPORT.

An ex-Service reader writes thus on the discussion last week of some recent accidents:—

I realise, of course, that you are apt to seize on half-truths, and with your fertile brain, enlarge and distort them until they are full-grown untruths.—For example the famous and astonishing explanation of why the Italians couldn't get round the corners in the Schneider Cup.—But don't you think that this attack on the Short Service bloke is rather too much—As usual you have a half-truth and have made us, and therefore the System of Service Training, as dust before the Editorial Storm: also it savours rather of hitting someone who can't hit back: those in the Service may not, and those who are out would not.

Also you might persuade people who didn't know anything about Service flying that you were correct: your manner is apt to be so convincing for the uninitiated!

As regards the Imperial Airways crashes, I have heard another account of Woodbridge's crash at Jask, and it differs so much from your surmises that I prefer to wait for the official account.—But if you are holding "Woodie" up as an example of a slap-dash ex-R.A.F. pilot who cannot become a commercial pilot, its a gross untruth: I knew him well, and "Safety First" was very much his watchword.

[There is a vast difference between a slap-dash pilot and one who makes a mistake. This instance was quoted, on very recent evidence, as an example of how even the best pilots can make mistakes. We have had lately the cases of Charles Jones and John Clarke to emphasise this unhappy fact.—C. G. G.]

As regards the loss of the *City of Rome*, I feel perfectly certain that the story of the grass line is incorrect or very incomplete. Birt would have realised that there was a heavier line attached to it: he was no fool: he had had plenty of seagoing experience and it is libelling the dead to insinuate that he was incompetent.

[This was an instance of sheer lack of knowledge. Mr. Birt had served for one year with flying-boats. He was an excellent pilot but not a seaman by training.—C. G. G.]

Also I have an idea that you are wrong in your account of how Kidston got away.—The Junkers people told me a tree cut the belly open and Kidston fell out!

[The account in The Aeroplane was Lt. Cdr. Kidston's own.—C. G. G.]

To say that the modern R.A.F. pilot is slap-dash—ham-handed—and a trifle careless is untrue also: there *are* exceptions I know—but even with all the editorial aids and assurances I'd like to see some of them "slamming" 9as—or Grebes or Siskins onto the ground—and have you ever tried to "pull" a heavily loaded Vernon off the ground?

[What was said was that Service pilots were *apt* to become so, by the nature of their work.—C. G. G.]

The trouble appears to be that you simply don't know enough about Service flying. In matters of Policy nearly every one reads, and very often, admires, you as correct—but I'm afraid that they don't ever take your flying paragraphs seriously: there have been too many mistakes in the past.

[Then the mistakes have been those of pilots with many years' more experience than the writer of the letter has had. One never writes of flying except as expressing the opinions of pilots.—C. G. G.]

As regards the suitability of ex-R.A.F. people for Civil flying, it seems to me that you have missed one of the most salient features.

On the present type of Short Service officer the effect of Service Training should produce much the same degree of efficiency as regards flying ability.—The reason that some pilots are better than others is that their ability is dependent on individual common sense: consequently if a civilian firm wish to engage an ex-R.A.F. pilot, they will find many with similar flying records, and they must make their choice, not so much on hours flown as on their own estimation of the candidate's personal ability and common sense.

Your article does not allow for this: you damn all under the ham-handed, slap-dash heading: the young scout pilot is classed with the old, overseas, "twin" expert, and when you point a moral in the foolishness displayed by someone in trying to take off with too short a run, you seem to forget that a bloke who does that would probably have done it whether he was Service Trained or not.

Your article gives the impression that if a Service pilot breaks an aeroplane it is a signal for a complimentary guest night—instead of the father and mother of all chewings-up by the Flight Commander—Squadron Commander and Station Commander, and a few kind words added by the staff of A.R.S.

I can assure you that the modern ex-S.S.C. officer is anything but the wild, thoughtless and slap-dash pilot of your imagination, and unless he is very much the exception, any one of them who has had suitable Service experience would make just as satisfactory civilian pilots as a man trained in civilian schools. [Those who have seen some of the flying by ex-Service, and serving, pilots at certain flying meetings this year will not agree.—C. G. G.]

I know that you'll rend this—your journalistic ability is too high for you not to be able to do so, with the greatest of ease—but, never mind, the time when I hoped for your conversion is long since past and I shall read The Aeroplane just the same, and get a hearty laugh from the Editorials just as before.

I hope you'll accept this in the spirit in which it's written: primarily as a defence of two who cannot reply, and many who may not—and secondly in the quite hopeless endeavour of persuading you to get someone else to write up your practical and theoretical flying for you.

[Good Lad! One always admires a man who has the courage of his convictions. As a matter of fact we are both right. Probably the ideal commercial pilot for an air-line is the well-seasoned N.C.O. pilot who has served on over-loaded twin-engined machines in hot countries. But he is difficult to find. And the pilot of the "officer" class is apt to be too impatient for regular flying over the same old route till he retires on pension. So the remedy seems to be an Air Traffic Pilots' School, to weed them out,—not to train civilians *ab initio*.—C. G. G.]

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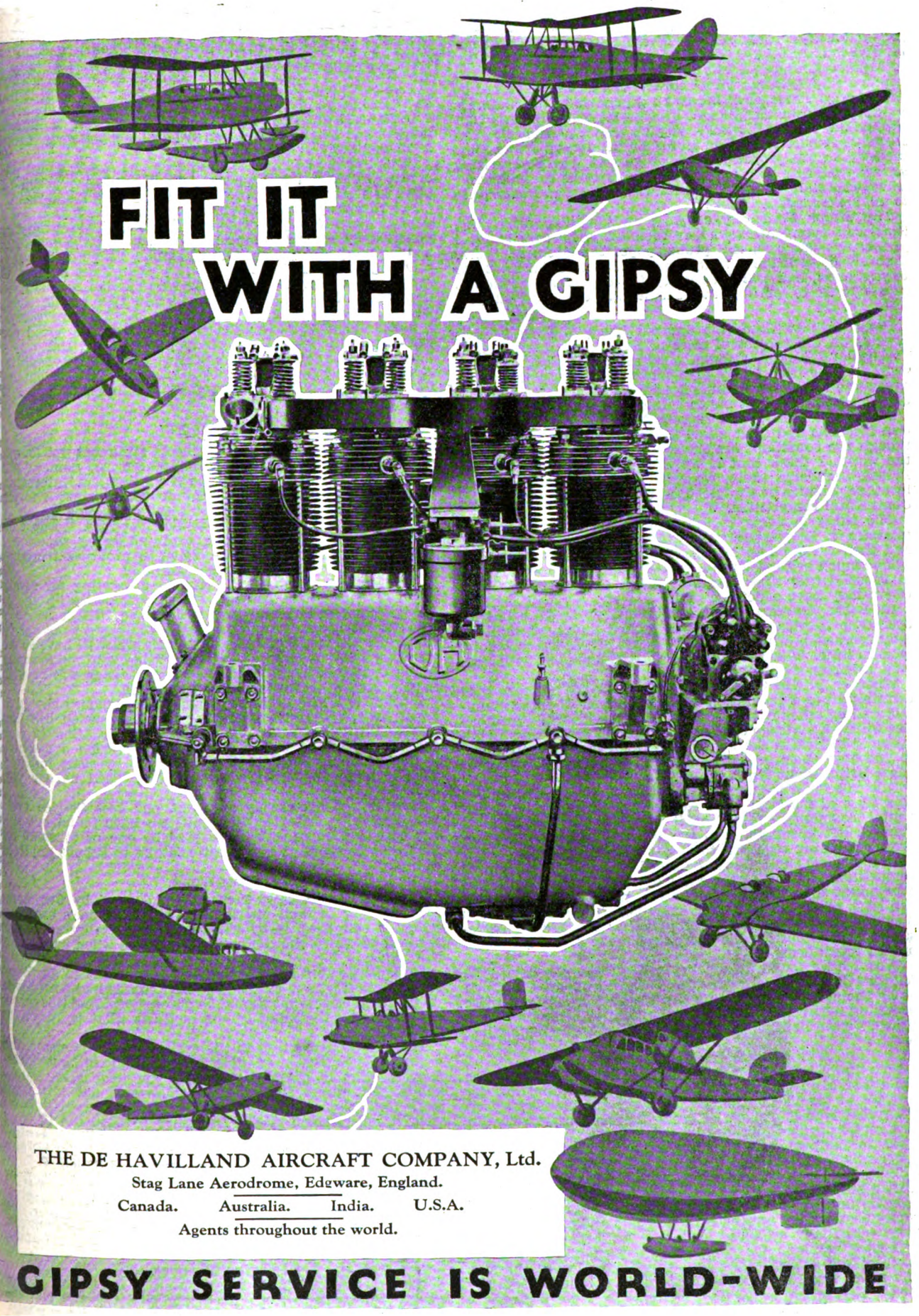

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OVERSEAS TRADE AND CO-OPERATION.

BY GERALD N. DEANE.

[The following article by Captain Gerald Deane is of particular interest in these days when we hear so much of a great effort to capture foreign markets for the British Motor Trade. It points a way by which those markets can also be captured by the Aircraft Trade. But there is a difference in the methods.

Captain Deane suggests co-operation,—which means that the bulk of the profits would remain with the Aircraft Constructors themselves. The Motor Trade method seems to be rather to let the profits go into the pockets of an enterprising selling syndicate or firm which is prepared to take risks which the motor-makers themselves have not the enterprise to take themselves.

The Motor Trade, by copying, and possibly improving, American specifications, so as to make their cars suitable for foreign markets, will probably get the business. The question is,—will the Aircraft Trade likewise build what the buyers want, and will they grasp the opportunity which is now offered of getting the business before America gets it?—C. G. G.]

From time to time this Journal has published leading articles on the subject of sales of British aircraft material abroad, and certain references which have been made recently to the desirability of a more lively co-operation between the individual manufacturers who constitute the Aircraft Industry, prompt me to frame a reply.

I have for some years represented various British aviation interests and their allied trades in Latin America, and though the conditions are similar to those in other parts of the world, I think that if we established our position and British Standards there, we could easily hold our position in other portions of the globe, in the face of American and Continental competition.

One thing is fairly certain, unless we are prepared to establish a British Standard within the next five years, and then carry on in an increasingly energetic manner, it will be much better for the Aircraft Industry to spend money in consolidating their position within the British Empire, where they have a definite pull.

In Latin America, there are about a dozen countries operating Service aircraft with either naval or military establishments, which are run (some of them) on quite modern lines. Their aerodromes are well equipped with hangars, machine-shops and machines.

Whether British Service aircraft are in use or not, they certainly have a reputation for being ahead of those manufactured by other nations. Most of the responsible Authorities with a knowledge of the subject prefer something manufactured to British Standards, and wherever they can afford to purchase them, a Latin-American Government will purchase British-built types.

I do not for a moment suggest that orders are taken for this class of material unchallenged by American or Continental competition. In fact it is fairly evident that no stone is left unturned, even to the point of several foreign firms combining together, to defeat British interests.

In a way we shall always be faced with a certain form of competition, for no Continental or American concern will ever admit that their respectively competitive goods are in the least sense inferior. For example, if it is French it is magnificent anyway, no matter whether the French representative is discussing his own firm's make or that of some other French firm!

This I have found, is a policy rather different from that followed by certain British firms' representatives, as well as by the agents representing them, who frequently criticise anything competitive, whether British or Foreign. This policy, I need hardly say, re-acts most unfavourably against us.

THE SUPERIORITY OF BRITISH TYPES.

Now there is absolutely no doubt that British Service types *are* ahead of anything manufactured by other countries; for though we avoid multiplicity of types, nevertheless each individual type is capable of great flexibility of service. In fact certain general-purpose types have actually been called upon to perform numerous tasks for which the designer never originally intended them.

Take for instance, the development of one of our best-known seaplanes:—

In its numerous forms this machine has been fitted with pretty nearly every type of British engine and several foreign ones. Originally produced as a two- or three-seater reconnaissance seaplane for operating from an aircraft carrier or from the shore, it can be either lowered over the side of a naval vessel for a take-off, or can be catapulted into the air.

It can be fitted with the standard undercarriage, either split or cross-axle type, or with skis, and no doubt it would be perfectly possible to fit it with amphibian gear if necessary.

The standard machine is equipped for reconnaissance, bombing, and ground-straffing duties. It carries radio and complete photographic apparatus. And it can also be operated as a single-stretcher ambulance machine.

It is just as good a landplane as a seaplane. And it must be remembered that a well-designed seaplane will always convert satisfactorily to a landplane, though a machine designed as a land-plane seldom gives complete satisfaction if subsequently fitted with floats.

The machine has been operated by the R.A.F. in all parts of the world, and a large number of them have been supplied to overseas governments, including South American.

For this very reason English aircraft are always more expensive than foreign,—which point is quite naturally emphasised by foreign competitors who are compelled to use a complexity of types to fulfil a similar range of duty.

Owing to the amount of military equipment carried, the range of the average British Service machine is usually less than that of a complementary foreign type. And, though we can more than hold our own in performance carrying a given weight, nevertheless, when it comes to speed competitions, ours are not so easily stripped for the fray as the American machine which carries a minimum of military etceteras,—in lieu thereof they allow for a greater capacity for fuel and oil, and consequently attain about twice the range. So much for types.

SALES POLICY.

Now as regards sales policy:—

One is quite familiar with the usual argument put forward against co-operation between manufacturers, namely, that sooner or later there would be a clashing of interests if similar types were offered simultaneously against a foreign inquiry. In England, where firms are competing on an Air Ministry Specification, this argument applies. But there is plenty of evidence of one machine being superior to another. And when the placing of a production order is concerned, they really differ considerably.

The thing to emphasise is that in competing for foreign business, the British Aircraft Industry is firstly up against foreign competition, and to establish the British Standard it is absolutely necessary to present a combined front against this competition. To do this effectively we shall have to trot out the finest machines both in design and performance that we possess, and then quote a price which will be within the means of our overseas customers.

I think it is the greatest calamity that money should be spent by any firm in submitting a design which has been one of the "also rans" in one of our Air Ministry competitions. Even if we do manage to sell such a machine it will be easily bettered and shown up by some foreign with a machine which is not half as good as our best.

It does not necessarily say that our best Service type will always be suitable. But until we have found out that the specification cannot be covered by one or other of our best Service types, it is a great mistake to submit anything else.

TEAM-WORK.

The most satisfactory method yet devised by Commerce for disposing of, and distributing, goods in one's own and in other countries, is by wholesale and retail trading,—to the cost of which the customer contributes when purchasing the goods.

Many customers have thought it convenient to go direct to the manufacturer as soon as their minds had been made up for them as to what should be purchased. And this power of influencing the mind of the buyer is what is known as salesmanship.

There is no doubt that in the early days of commerce, the customer was ready to give his decision without interference. But in these days where you have sales propaganda both direct and indirect, emanating not only from one's own people, but from various foreign competitors as well, it has become vitally necessary to keep the lines of communication open by a highly efficient sales organisation co-opting a multiplicity of interests, both technical and commercial,—and one must perhaps include diplomatic.

In selling aircraft material, these members of a British team would be the firm's representative, the local agent, and our Government Departments respectively. Without close co-operation between this team and the manufacturer, the selling of aircraft is likely to be of a very spasmodic nature.

PRESENT METHODS.

The present system is to engage an agent in one of the buying countries to keep in touch with Government Air Forces and uncover inquiries,—for which service commission is paid at varying rates. Occasionally the agent's and his customer's interest is stimulated by the co-operation of a travelling representative from home, who is either making a general tour of a number of countries, or has been sent

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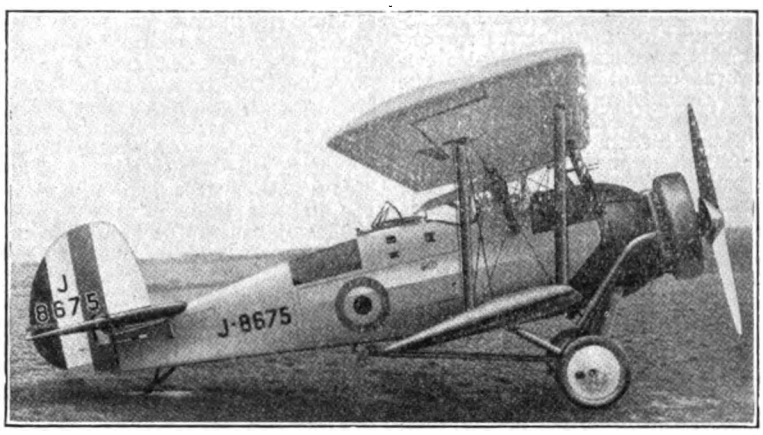
ARMSTRONG WHITWORTH
AIRCRAFT



THE ALL STEEL ATLAS
(ON WHEELS, FLOATS OR SKIS)

THE all-steel Atlas is the best aircraft for land or sea reconnaissance.

It is the standard Army Co-operation two-seater of the Royal Air Force.

Its steel construction accounts for its unrivalled durability and ease of maintenance. Fitted with the world-famous Armstrong Siddeley Jaguar engine (plain or geared type), its speed, climb and ceiling fulfil the severest Service requirements. It is produced on the grand scale by the best equipped aircraft works in Europe.

PERFORMANCE FIGURES

ATLAS WITH JAGUAR ENGINE AND TOWNEND RING

Fuel, 75 gallons (337 litres). Oil, 7 gallons (32 litres). Military Load, 880 lbs. (400 kgs.)

	Plain Engine	Geared Engine
Approx. total weight	4000 lbs.	4115 lbs.
	1820 kgs	1870 kgs.
Speed at ground level	143.5 m.p.h.	149 m.p.h.
	231 km.p.h.	240 km.p.h.
" " 5000 ft.	139.5 m.p.h	145 m.p.h.
" " 10000 ft	134 m.p.h	140 m.p.h.
" " 15000 ft.	125 m.p.h.	131 m.p.h.
" " 1000 metres	226 km.p.h.	236 km.p.h.
" " 3000 metres	216 km.p.h.	225 km.p.h.
" " 5000 metres	193 km.p.h.	204 km.p.h.

	Plain Engine.	Geared Engine.
Time to 5000 ft.	5.25 minutes	4.25 minutes
" " 10000 ft.	12 5 "	10.5 "
" " 15000 ft.	26 "	21.75 "
" " 1000 mtrs.	3.5 "	2.5 "
" " 3000 "	12.5 "	10.25 "
" " 5000 "	34 "	27.5 "
Absolute Ceiling	19000 ft.	19100 ft.
	5800 metres	5830 metres
Service Ceiling	17300 ft.	17700 ft.
	5280 metres	5400 metres

Maximum allowable R.P.M. 2200. Normal R.P.M. 2000

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LIMITED

Works and Aerodrome: Whitley, Coventry. London: 10 Old Bond Street, W.1

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out specially to assist in obtaining some important contract.

There have been several occasions upon which a representative has actually visited countries in South America, and pulled off important contracts independent of any agent, —but these occasions unfortunately have been rare. On the contrary, it usually takes anything from eighteen months to two years for an order to mature from a firm inquiry.

The rates of commission paid by individual British manufacturers to local agents have usually been more modest than those paid by foreign competitors. But owing to the fact that much spade-work has to be done, and a certain amount of risk has to be taken in submitting some particular type (which may or may not be successful in obtaining the order), applications have occasionally been made for an increase.

It will be readily understood that the agent has to cultivate the acquaintance of the influential authority responsible for the eventual placing of a contract. It is also evident that more than one firm cannot participate in the same order. The amount of commission which has to be added for the agent, ought therefore to be sufficient to prevent him from concerning himself with the promoting of easier business. But the addition of more than a normal amount of commission may quite easily prejudice the placing of a contract,—especially when a British price is already considered sufficiently high.

Our foreign competitors can always quote a cheaper price. They invariably allow their agents substantial commissions, and even then their prices are competitive in comparison with ours. There are, however, a number of solutions to this difficulty.

The Right Way.

If the British firms would pool their sales effort, and promote an intelligent sales policy, suitable agents could be chosen and given a range of material which would cover all the normal aviation requirements of these South American countries. Their chances of obtaining regular business would be enhanced. And the commissions paid could be reduced to a minimum figure.

If the selling team were allowed to work together mutually for a sufficiently reasonable period of, say, not less than five years, there is no doubt that our position would be firmly established ahead of our foreign competitors.

It would be necessary to employ a limited number of agents, and these would have to be carefully chosen. Between them they would cover not only aircraft, aircraft-engines and equipment, but also semi-raw usable stores, and all installation and apparatus comprised in the make-up of the Aviation Service—Naval, Military and Civil.

In South America, it would be necessary to have technical regional representatives, who would not only study the requirements of each individual case, but would also study the commercial features underlying the placing of the different contracts.

The lines of communication between the British manufacturer and the local organisation would have to be kept open by occasional visits of individual firms' representatives,—or, better still, by one or more officials representing the Industry as a whole.

The duty of these officials would be to study the developments of aviation in all its branches and to keep in touch with the firms which compose the Society of British Aircraft Constructors. They would also be in touch with British official Departments, such as the Board of Trade and the Royal Air Force, who would render them every facility for keeping thoroughly up to date.

Their additional duties in South America would be to strengthen their connection with the various officers composing the different Air Forces. They would do their best to bring the manufacturer and the purchasing commissions together, and to keep the negotiations alive and in a fluid state from the inquiry stage to the closing point.

Local agents would naturally be in competition with one another, but this would be a perfectly healthy arrangement, if they were made to understand that they were working for the British Industry. And if they were given a sufficient range of material to sell they would presumably benefit in turn. The same competition exists at the present moment in any case, and I do not think it is desirable to try to eliminate it.

I think the commission on articles should be the same for all agents, and that to become a British Aircraft Industry agent each of them would have to learn to work on a definite system.

Much more could be done by the Members of the British Aircraft Industry if they were acting as a body than as separate individuals. They would occupy a different place and they could command a certain amount of influence from telegraph companies, railway companies, Government authorities and so forth. And in England I am sure there is no question that we could obtain the co-operation of Government Departments, as well as assistance from Foreign Office Representatives in all the countries concerned.

As it happens, the scheme mentioned above has actually been in operation by some Trades for many years, and in the present state of South American trade there is nothing to touch it. Even with such co-operation we shall still have an uphill fight to establish our position. Establish our position we certainly will, though there is no other possible manner so far as I can foresee.

THE ROYAL AERO CLUB.

The following members of the Royal Aero Club have been co-opted to fill the vacancies on the Club Committee:—Mr. H. S. Broad, Major C. J. W. Darwin, Major A. R. Goodfellow, Mr. A. H. Downes-Shaw.

The Committee of the Royal Aero Club has had under consideration certain matters of interest, to wit,—the Schneider Contest in 1931, the King's Cup Race in 1930, the revival of the Aerial Derby in 1930, Municipal Airports, and the Guild of Air Pilots.

The function of the Royal Aero Club is to control the Sport of Flying. Therefore just how Municipal Airports come within the purview of the Royal Aero Club is a question which naturally arises. Presumably Municipal Airports may be used for sporting flying meetings in the future, and as landing places in cross-country races.

How the Guild of Air Pilots comes within the radius of action of the Aero Club is less easy to explain. There seems to be little community of interests between professional air pilots and navigators, such as the members of the Guild, and the purely sporting interests of the Royal Aero Club.

THE AGA KHAN PRIZE.

H.H. The Aga Khan has offered, through the Royal Aero Club, a Prize of £500 for the first flight from England to India or *vice versa* by a person of Indian Nationality.

It must be a solo flight, completed within six weeks from the date of starting. The prize will remain on offer for one year from January 1, 1930.

[The question arises, naturally, what is Indian Nationality? If birth be the qualification, then a pure-blooded Englishman born in India may try for the prize. If not, then Punjabis, Pathans, Parsis, and descendants of the Moghul monarchs and their followers, must be disqualified on the ground that they do not racially belong to the people of Hind. And if the contest be confined to those who are of the indigenous people East of the Indus the prize will never be won, for the good reason that no Dravidian is ever likely to get an aeroplane into the air and down again in one piece. A definite ruling on this subject is needed at once.—C. G. G.]

CHRISTMAS CARDS—A REMINDER.

Readers of The Aeroplane are reminded that if they are going to send Christmas Cards to friends in the British Dominions overseas they had better get them off at once. Naturally readers of this paper would rather send cards of an aeronautical character than anything else, and by far the best cards of that sort are produced by the Aircraft and General Fine Art Co., Constitutional Buildings, East Grinstead, Sussex.

Mr. W. E. Johns, the head of the firm, was a pilot in the R.A.F. for a number of years, during the War and after which accounts for the fact that his pictures are always alive, and are so different from the pictures one often sees of aeroplanes which look as if they were stuck on to the sky.

His Christmas Cards this year are particularly striking. He has made great use of our Schneider Trophy winner, the Supermarine Rolls-Royce S.6, and somehow manages to convey a proper impression of its speed in all sorts of different positions. Also he has a wonderful selection of light aeroplanes and of standard Service aircraft. His latest catalogue shows how well he can supply everybody's needs.

A METALLURGICAL OCCASION.

On Thursday, Nov. 21, 1929, Mr. L. W. Johnson will read his paper on "The Inspection of Metals and their Alloys" before a joint meeting of the Royal Aeronautical Society and the Institution of Automobile Engineers at the Royal Society of Arts, John Street, Adelphi.

All those wishing to attend are particularly asked to notice the change of time for the start of the lecture. This will be at 7.45 p.m. Light refreshments will be served in the Library from 7.15 p.m. onwards.

Mr. Johnson will review the various types of material tests available to the inspector, and what these tests can tell. He will also outline the different kinds of defects found in metals.

The lecture will be illustrated with slides, a number of which show very interesting macro-sections of components in various stages of manufacture.

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Payload up to 2000 lbs.

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THE ROYAL AIR FORCE.

The London Gazette.

Air Ministry, November 12.

ROYAL AIR FORCE.

ENERAL DUTIES BRANCH.—P. F. Canning is granted a S.S. comn. as lt. Off. on probation with effect from and with seniority of Oct. 21. following Plt. Offs. are promoted to the rank of Flg. Off.:—). G. Freeman, A. J. P. Groom, A. D. Jaffe, G. E. F. Proctor (Oct. D. A. L. Campbell, P. Le M. C. Deacon, J. W. Hawke, H. J. A. liams (Oct. 13); F. R. Balfour (with seniority of Oct. 13) (Oct. 18). he following are promoted with effect from Oct. 13:—FLT. LTS. TO Sq. LDRS.:—E. B. Grenfell, A.F.C., P. F. Fullard, D.S.O., M.C., .C., H. O. Long, D.S.O., V. R. Gibbs, D.S.C., C. E. W. Lockyer, Buxton, O.B.E., H. B. Russell, A.F.C.

LG. OFFS. TO BE FLT. LTS.:—E. A. Healy, F. E. Nuttall, V. Harris, W. B. McDonald, H. F. Jenkins, L. W. Dickens, D. A. Boyle, Ll. R. Atcherley, H. R. D. Waghorn, A.F.C., J. M. Cohu, G. B. M. ind, R. P. P. Pope, D.F.C., J. H. Powle, J. H. Sender, J. L. F. Fuller-d.

lt. Lt. G. G. H. Du Boulay is placed on the retired list at his own uest (Nov. 1). Flg. Off. H. T. Satterford is placed on the retired on account of ill-health and is granted permission to retain rank of Flt. Lt. (Oct. 1). (Substituted for the notification in the *ette* of Oct. 1.) The following are transferred to the Reserve, ss A:—Flt. Lt. S. D. Scott (Nov. 8); Flg. Off. S. A. Thorn (Nov. 4). J. S. Martin, R.M., Flg. Off., R.A.F., relinquishes his temp. comn. return to duty with the Royal Marines (Oct. 25).

ccountant Branch.—Flt. Lt. (now Sq. Ldr.) R. Byrne, M.C., is nted the acting rank of Sq. Ldr., with pay, whilst employed as nmand Accountant, Aden (May 27, 1928).

EDICAL BRANCH.—Flg. Off. H. D. Humphreys (Temp. Lt., General t. Army) is promoted to the rank of Flt. Lt. (Dental) on pro-tion to the rank of temp. Capt. in the Army (Jan. 27). (Sub-tuted for the notification in the *Gazette* of Oct. 29.)

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—A. T. Laws is granted a comn. in the ecial Reserve as a Plt. Off. on probation (Oct. 14). The following . Offs. of the Special Reserve are promoted to the rank of Flg. :—N. A. Lindley (Aug. 3); G. A. Worth (Sept. 12).

The following are transferred from Class A to Class C:—Flt. Lt. A. Hale-Monro (Nov. 12); Flg. Off. H. C. E. C. P. Dalrymple (Nov. 8); g. Off. A. H. Grace (June 23). Flt. Lt. F. C. Wilkinson is trans-rred from Class B to Class C (Nov. 11); Flg. Off. K. E. Shelley re-nquishes his comn. on completion of service (Sept. 11); Plt. Off. F. Canning relinquishes his comn. in the Special Reserve on ap-ntment to a S.S. comn. in the R.A.F. (Oct. 21).

MEDICAL BRANCH.—The following relinquish their comns. on com-etion of service:—Flt. Lt. J. G. F. Heal, M.D. (Aug. 1, 1928); g. Off. H. W. D. Mackenzie, M.B. (Sept. 9).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 600 CITY OF LONDON (BOMBER) SQUADRON.—The following Plt. Off. to be Flg. Off.:—R. Faulds (Oct. 5). No. 602 CITY OF GLASGOW (BOMBER) SQUADRON.—The following Plt. Offs. to be Flg. Offs.:—J. K. Horsburgh (Sept. 14), A. D. McNab (Oct. 12). No. 603 CITY OF EDINBURGH (BOMBER) SQUADRON.—The following to be Plt. Off.:—T. M. McNeil (July 22). (Substituted for the notification in the *Gazette* of Oct. 11).

Appointments.

Week ending November 18.

GENERAL DUTIES BRANCH.—Air Vice-Marshals F. R. Scarlett, C.B., D.S.O., to H.Q., R.A.F., Middle East, on appointment as Air Officer Commanding, 25/10. A. E. Borton, C.B., C.M.G., D.S.O., A.F.C., to H.Q., Inland Area, on appointment as Air Officer Commanding, 2/11.

Group Captain A. W. Bigsworth, C.M.G., D.S.O., A.F.C., to No. 10 Group H.Q., Lee-on-Solent, to command, 1/11.

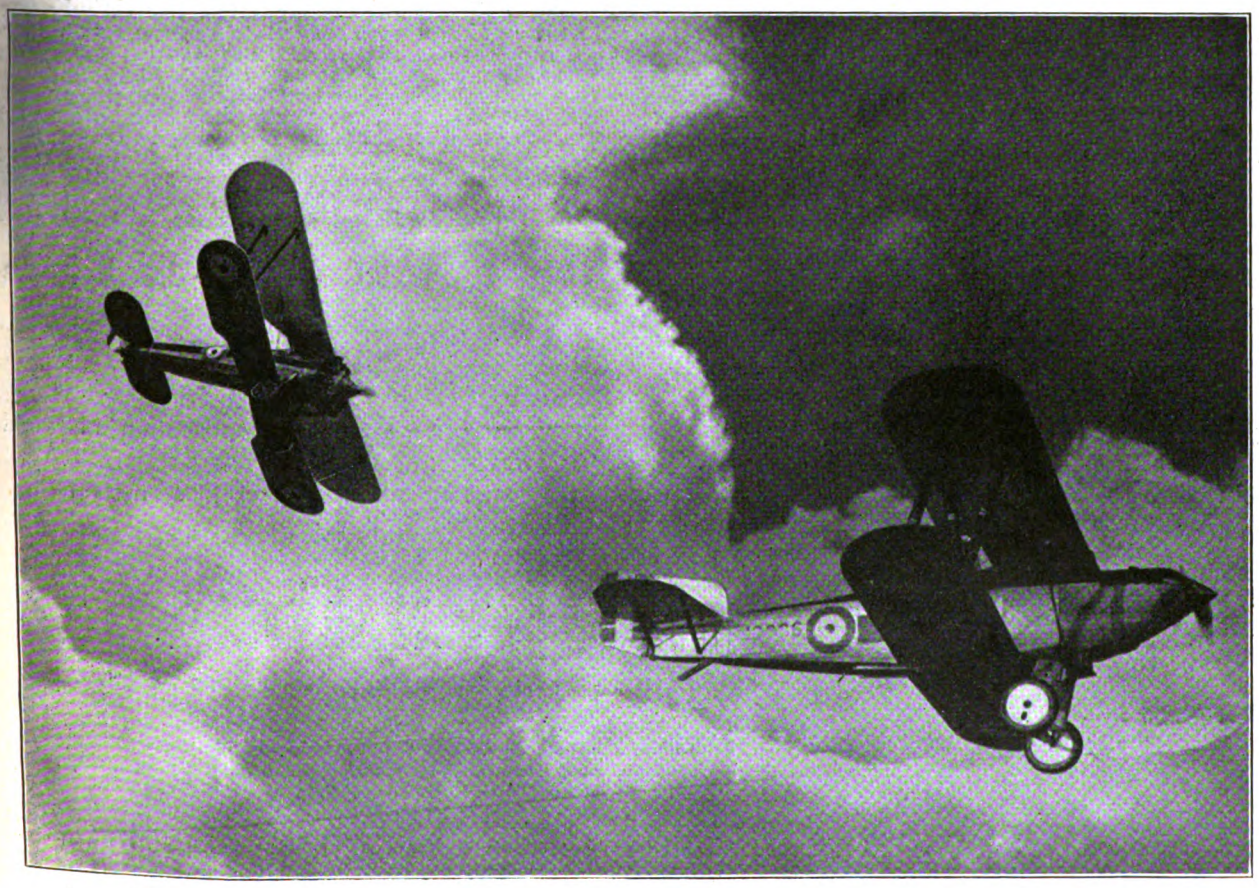
Wing Commanders W. B. Hargrave, O.B.E., to Station H.Q., Andover, to command, 21/10. L. D. D. McKean, O.B.E., to Air Ministry (D.O.I.), for Air Staff duties, 18/11.

Squadron Leaders H. S. Kerby, D.S.C., A.F.C., to Air Ministry (D.O.I.), 1/11. J. J. Breen, to No. 33 Sqdn., Eastchurch, 27/10. J. B. Cole-Hamilton, to No. 13 Sqdn., Netheravon, 1/11.

Flight Lieutenants R. J. H. Holland, to No. 503 Sqdn., Lincoln, 1/11. W. J. Richards, to No. 22 Group H.Q., S. Farnborough, 4/11. R. A. B. Stone, to Home Aircraft Depot, Henlow, 28/10. J. S. L. Adams, to No. 19 Sqdn., Duxford, 21/10. M. C. W. C. Flint, M.C., to No. 30 Sqdn., 'Iraq, 1/10.

Flying Officers W. E. Symonds, to R.A.F. Depot, Uxbridge, 3/9. A. G. C. Somerhough, to R.A.F. Base, Kai-Tak, 20/7. J. B. Mackenzie, to No. 33 Sqdn., Eastchurch, 11/10. F. S. Homersham, D.C.M., M.M., to R.A.F. Depot, Uxbridge, 29/9. J. A. P. Harrison, to No. 45 Sqdn., Middle East, 6/10. P. de C. Festing-Smith, to No. 216 Sqdn., Middle East, 6/10. H. D. Mitchelmore, to Home Communication Flight, Hendon, 19/9. A. J. Brister, to No. 111 Sqdn., Hornchurch, 25/10. G. H. Huxham, to No. 10 Sqdn., Upper Heyford, 24/10. W. S. Calder, to No. 30 Sqdn., 'Iraq, 1/10.

Pilot Officers F. C. Edney-Hayter, to No. 7 Sqdn., Worthy Down, 23/10. F. P. Hewitt, to Andover Communication Flight, 14/10. P. F. Canning, to No. 207 Squadron, Bircham Newton, on appointment to a S.S. Comn., 21/10. J. A. Nicholson and G. W. Stranraer-Mull, to No. 4 F.T.S., Middle East, on appointment to S.S. Comns., 23/9. The following Pilot Officers are all posted to No. 3 F.T.S., Grantham, with effect from 26/10:—C. F. G. Adye, C. P. F. Alderson, I. O. Baldwin, J. N. Baxter, N. V. Bertram, B. W. E. R. Bonsey, M. Q. Candler, W. O. J. Coke, V. A. Dawson, C. C. M. Dunman, T. E. Dunville, F. P. R. Dunworth, N. Foster-Packer, H. M. Gahan, F. B. H. Hayward, N. Hill, M. V. Johnstone, N. D. Lamb, G. W. Lawson,



THE DUEL.—A Bristol Bulldog attacking a Fairey Fox.—(*"Aeroplane" "composite" photographs.*)

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D. McGregor-Cheers, L. E. P. Mahon, D. E. Milson, W. S. Moody, P. E. L. A. Myers, R. W. H. Rayneau, E. G. Reed, P. A. Smith, J. F. Sutton, C. H. Williams, S. M. Worrall.

Medical Branch.—Flight Lieutenants J. G. Skeet, to R.A.F. Depot, Uxbridge, 4/11. J. T. T. Forbes, to H.Q., 'Iraq Command, 26/10. E. P. Carroll, to Wireless Station, Ismailia, 15/10. G. S. Strachan, M.B., to No. 1 (Indian Wing) Station, 26/9. W. S. Stalker, M.D., D.P.H., to R.A.F. Depot, Uxbridge, on appointment to a temp. comn., 21/10.

Stores Branch.—Flight Lieutenants H. Parker, to No. 4 Stores Depot, Ruislip, 12/10. A. T. Shaw, to No. 1 Stores Depot, Kidbrooke, 23/10.

Flying Officers A. M. Reidy, to Station H.Q., Upper Heyford, 1/11. A. E. Connolly, to No. 45 Sqdn., Middle East, 9/10.

Accountant Branch.—Flying Officer E. L. G. Le Dieu, to Night Flying Flight, Biggin Hill, 18/10.

Chaplains Branch.—The Rev. C. A. Smith, to H.Q., R.A.F., Cranwell, on appointment to a S.S. Comn., 18/10.

The West African Flight.

A Flight of Fairey III.F aeroplanes of No. 45 (Bomber) Squadron, R.A.F., under the command of Sq. Ldr. F. J. Vincent, D.F.C., left Helwan, Egypt, on Oct. 19 for a flight to Nigeria and the Gold Coast.

The Flight arrived at Khartum on Oct. 20.

The next news of the Flight stated that the machines left Lagos on Nov. 13 for Cairo. They had flown from Accra to Lagos.

No. 45 (Bomber) Squadron is mainly equipped with D.H.9as, but three machines of its new equipment were used for this flight.

[The route to Nigeria and the Gold Coast is best described in the words of a Cairo-to-Kano pilot, who in answer to a Cairo-to-Cape-Town pilot's question about how one gets to Nigeria, said:—"You know the way to Khartum? Well! When you get there you turn sharp right, and keep straight on."]

No. 8 (Bomber) Squadron.

Demonstration flights by machines of No. 8 (Bomber) Squadron were made over an area north of Assauda, between Dala and Aden, where trouble was experienced with the Koteibi tribe during September. The tribesmen had been interfering with the traffic and looting caravans on the road and had taken no notice of the warnings given them. Air action was taken at the request of the Sheikh, and following it no further trouble occurred.

No. 30 (Bomber) Squadron.

No. 30 (Bomber) Squadron, R.A.F., moved from Hinaidi to Mosul, 'Iraq, on Oct. 23, 1929.

No. 30 (Bomber) Squadron is commanded by Sq. Ldr. H. P. Lale, D.S.O., D.F.C., and is equipped with D.H.9as.

No. 203 (Flying Boat) Squadron.

A flying boat of No. 203 (Flying Boat) Squadron, Basrah, flew from Basrah to Mosul and back during July. The machine alighted at Hinaidi, where it stayed the night and on the following day alighted on the Tigris at Mosul. Various alighting and taking-off tests made on the river at Mosul proved that flying boats could be operated there during the greater part of the year.

One machine of this Squadron flew to Karachi in August with Air Marshal Sir Geoffrey Salmond, Air Officer Commanding R.A.F., India, as a passenger. The route taken was *via* Bahrein, Umm al Qaiwain, Ras al Khaimah, and along the coast of Oman to Muscat, and thence to Gwadar, where the machine was refuelled without difficulty in spite of a bad swell on the water. The trip took three days.

On the return journey sites were inspected for landing grounds at Sohar and at Yas Island. At both places suitable sites were found.

No. 205 (Flying Boat) Squadron.

Monthly cruises by flying-boats of No. 205 (Flying Boat) Squadron, Singapore, have been made during the last few months to gain practical experience of weather conditions from an aviation point of view during the whole of the monsoon period, over the proposed air mail route from Singapore to Calcutta.

One machine left Singapore for Calcutta on August 6 and returned on August 21. Another machine left on Sept. 3 and returned on Sept. 18. On both cruises the machines alighted at Penang, Mergui, Rangoon, Akyab, and Chittagong.

The conditions experienced during the cruise to Calcutta in August showed a marked difference from those met on a similar cruise in June. The worst conditions so far experienced occurred during the return trip from Calcutta in August, during which the monsoon rain was particularly heavy.

Flying through this rain is said to be somewhat similar to flying in fog, with the added disadvantages of a strong wind, bumpy air, and the discomfort of the rain beating in the pilot's face. In spite of these conditions, the aircraft adhered to the time-tables of the flights with only minor alterations.

Seaplane Trials in the Southern Sudan.

The following note appears in the November issue of the *Journal of the Royal United Service Institution*:—

Further trials of aircraft fitted with float undercarriages were carried out in the swamp areas of the Sudan during August. The aircraft proceeding from Khartum, visited Malakal, Shambe, Yirrol, Mala-Wan, Lake No, Nasser and Ahwong, successful landings being made at each of these places. A certain amount of difficulty was experienced in taking off which it is hoped to overcome by the use of improved propellers and floats. As a result of these trials it is considered that the use of float planes is possible in most places in the Southern Sudan during the rainy season, which will enable aircraft to operate in the swamp areas which have hitherto been inaccessible to any form of military force.

The Squadron stationed at Khartum is No. 47 (Bombay) Squadron which is equipped with Fairey IIIFs, machines designed for land or water undercarriages.

Some Sidelights on the Schneider Contest.

On Nov. 15 Squadron Leader A. H. Orlebar, A.F.C., gave a lecture at the R.A.F. Station Cinema, Cranwell, on the contest for the Schneider Trophy. The lecture was illustrated by lantern slides and a short cinema film. In addition to the Commandant, officers, civilian staff, cadets and airmen of the Cadets' Wing, Cranwell, the audience included the Commandant of the Royal Military Academy, Woolwich, and the Rugger and Soccer teams from Woolwich who were playing Cranwell teams the following day.

A good deal of the information contained in Sq. Ldr. Orlebar's extremely interesting lecture has already been published in this and other journals, but one or two points are of interest.

Describing the training of the pilots selected for the team, the Lecturer said when they were appointed to the High Speed Flight none of them, with the exception of Flt. Lt. Greig, had ever flown seaplanes. They had started training with a dual-control seaplane, and had then gone onto Flycatchers with floats. From that they had gone onto the high-speed practice machines

Except for taking off and alighting, flying high-speed machines was very much like any other sort of flying. The first stage in taking off was rather unpleasant, especially if the sea was not very calm, as the machine pitched about and very often water was thrown back over the fuselage and a good deal of it went down the back of the pilot's neck. The second stage when the machine was up on the step was quite pleasant.

With regard to the personal training of the pilots, nobody knew much about training high-speed pilots, and they had taken things in a fairly free and easy manner. They had knocked off alcohol, which was not very difficult as three of them were teetotallers anyhow and the others did not care either way, and they had cut down smoking to a minimum, again not very difficult as three of them were non-smokers. They had taken ordinary exercise and had kept away from the sheds when there was no flying on. They had refused offers of massage.

Describing the delay in the arrival of the competing machines he said that delay in these affairs could be easily understood. They were built to specifications which were continually being altered and amended. Naturally the designers would go on adding power and taking away weight until somebody at the Air Ministry, somebody very brave, called a halt. The Supermarine S.6 had proved very different from anything else they had flown because of its high-powered and low-geared engine. He described the various difficulties and trials with the new machines and how they had been overcome.

He had originally intended that each pilot in the Flight should try out every machine and then make his own choice, but in the end that had been impossible. Waghorn and Atcherley had definitely wanted S.6s, Stainforth had wanted a Gloster, and Greig had been neutral. So Stainforth and Greig had been allotted Glosters with the S.6 as a second string for Greig.

Interesting experiments on turns had been made while they were at Calshot. First of all they had flown over a *camera-obscura*, and after that they had done timed and measured turns over a spit of land. They had then drawn up a mean average between the time lost on a sharply banked turn and the time lost in covering more ground on a flatter turn.

Their experience had been that the problem of the pilot "blacking-out" on a sharp turn was not a serious one. A medical theory that black-out followed the loss of other faculties was not supported by their experience because they had found that in every case the pilot became normal again on resuming level flight and did not at any time lose consciousness. Stainforth was not subject to black-out at any time, to which might be due his reputation for having a cast-iron inside.

Describing the crisis which had arisen on the evening before the race when one of the Supermarine S.6 machines

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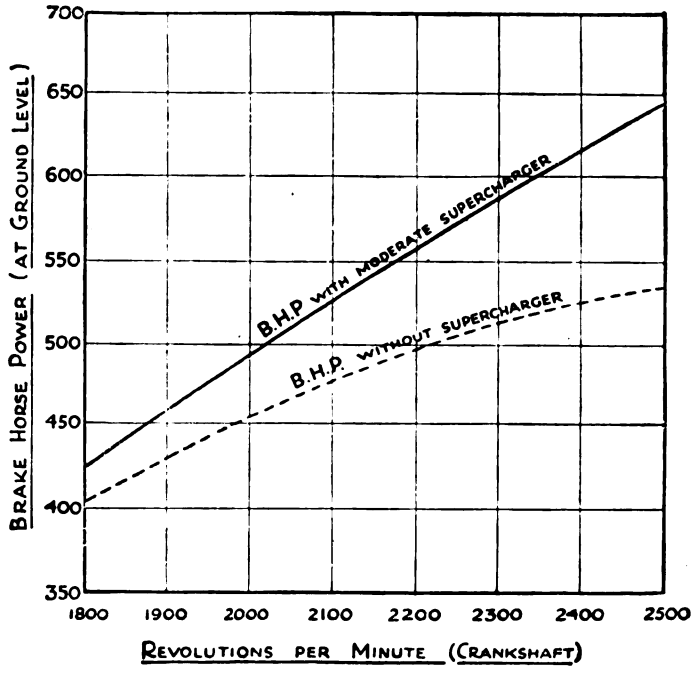

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had been found to have a fragment of metal on one of the plugs caused by the scoring of the inside of one of the cylinders, the Lecturer said that the mechanics from the Rolls-Royce Company had already been working for four days and four nights without rest except for an odd hour's sleep now and again, and were in no condition to tackle such a tremendous job that night. With the help of the Police a party of mechanics from the Works at Derby, who were staying in and around Southampton to see the race, were raked up and brought to Calshot.

They immediately got down to the tremendous job of changing a cylinder-block at night and with the engine in the machine, a job which had never been attempted before. Everything was ready one hour before it was time for the machine to be taken out for the Race.

The Cost of the Schneider Trophy Contest.

In the House of Commons, on Nov. 15, in reply to Mr. Mander, who asked what was the total cost involved in British participation in the Schneider Trophy Contest, the Under-Secretary of State for Air said that it was not possible to give a precise answer as preparations for the Schneider Trophy Contest were inextricably mixed up with the official programme of development of high-speed aircraft and engines. As some indication of the magnitude of the cost, it was estimated that the Air Ministry would have spent at least £100,000 less in the last two years if there had been no question of the Schneider Trophy. The specific additional expenditure on accommodation, hospitality, and the like had been in the neighbourhood of £4,000. [But, on the other hand, we now have knowledge of what engines and aeroplanes and floats and pilots will stand which could not have been got in five years at five times the price by any other method.—C. G. G.]

The Kenley Collision.

In the House of Commons, on Nov. 11, Mr. Meller asked the Under-Secretary of State for Air whether he could give any information with regard to the circumstances in which two R.A.F. aeroplanes collided at Wallington on Nov. 7, whether stunt flying was taking place, and if so, would he see that manœuvres of this kind were confined to open spaces; whether he was aware that the aeroplanes carried machine guns loaded with live cartridges and that many of the cartridges had exploded in all directions to the danger of human life, and whether the carrying of live cartridges in ordinary flying practice was contrary to instructions, and, if not, could he give an assurance that the practice would be discontinued in time of peace.

Mr. Montague said that the accident had happened in the course of normal service exercises which had been carried out by two aircraft of a squadron stationed at Kenley aerodrome. This aerodrome was an integral part of the system of air defence of this country, and it was essential to the efficiency of the units stationed there that they should be able to carry out their training from their own aerodrome. It would be impracticable to limit such training to remote and unpopulated areas. The cartridges carried by one of the aircraft were part of its full equipment, practice in the carrying of which was again a necessary part of training. There had been no previously recorded instance in similar circumstances of cartridges exploding after impact, but orders were being issued to limit as far as possible in future the number of occasions on which live ammunition would be carried during training exercises.

Mr. Meller complained that the aeroplanes came too much over the populous districts near Wallington and not enough over the large tracts of Surrey and Sussex which were not populated. Mr. Montague said that the defence of London was of some importance.

Vacancies in the Auxiliary Air Force.

The termination of the four years' engagements of some of the non-commissioned officers and men of No. 601 (County of London) Squadron, Auxiliary Air Force, has resulted in a few vacancies in this Squadron.

Applications to join the Squadron are invited from men, preferably with experience of the aircraft or motor trades.

The town Headquarters of the Squadron are at 54, Kensington Park Road, W.11 (near Notting Hill Gate Station). The aerodrome is at Hendon.

The present equipment of No. 601 (County of London) Squadron is Avros and D.H.9as. The Squadron is shortly to be re-equipped with Westland Wapitis. Accepted recruits will be employed as riggers, fitters, and on W/T duties. Opportunities do not often occur to join this famous Territorial squadron, and suitable men are recommended to get into touch with the Adjutant without delay.

No. 3 Squadron Re-union.

The Tenth Annual Re-union Dinner of No. 3 Squadron, Royal Flying Corps, and No. 3 (Fighter) Squadron, R.A.F., will be held at the Hotel Cecil on Dec. 6 at 19.30 hours for 20.00 hours.

Air Chief Marshal Sir John Salmond, K.C.B., C.M.G., C.V.O., D.S.O., A.D.C., will take the Chair and Air Vice-Marshal C. A. H. Longcroft, C.B., C.M.G., D.S.O., A.F.C. has been invited as Guest of Honour.

Tickets at 12/6 (wines extra, gratuities included) will be obtainable at the dinner.

Former members of the Squadron who wish to attend should inform Flt. Lt. J. L. Airey, D.F.C., No. 3 (Fighter) Squadron, R.A.F., Upavon, Wiltshire.

Photographs of Northolt.

The Officer Commanding, R.A.F. Station, Northolt, is anxious to obtain copies of photographs of any groups of Officers, or Officers and Airmen, who have been stationed at Northolt Aerodrome during or since the War 1914-18.

Will anyone in possession of such photographs kindly communicate direct with the Officer Commanding, R.A.F. Station, Northolt Junction, Ruislip, Middlesex?

The Royal Air Force Quarterly.

The attention of intending contributors to the R.A.F. Quarterly is called, in an Air Ministry Order, to the following notice:—

All matter for the January number of the R.A.F. Quarterly should reach the Editor by Dec. 1, 1928. Dates of important Service functions, re-union dinners, sporting events, etc., and any notices of general Service interest will be published under "Forthcoming Events" in each number. Announcements for the period January to April 1929 should therefore be sent to the Editor without delay.

Rugby Football.

Woolwich v. Cranwell. — The annual Rugby Football match between the Royal Military Academy, Woolwich and the Royal Air Force College, Cranwell, was played at Cranwell on Nov. 16. The result was a draw, Woolwich scoring two tries (6 points) and Cranwell one try and a penalty goal (6 points). The match was watched by Major-General H. D. de Prée, C.B., C.M.G., D.S.O., Commandant of the Royal Military Academy, Air Vice-Marshal F. C. Halahan, C.M.G., C.B.E., D.S.O., M.V.O., Commandant of the Royal Air Force College, and a large number of officers of the Station, of past and present cadets, and of airmen and aircraft apprentices of the Station.

The Woolwich team were heavier in the scrum and faster in the three-quarter line, and, except for the fitness and energy of the Cranwell forwards and the undefeatable defence of the Cranwell backs, they might have won by a wide margin of points. The last line in the Cranwell defence was their Captain, Flt. Cadet Coote, who was moved from his place at half to full-back because he had been on the sick list and was not really fit to play. In spite of this he put up a splendid show.

The game was fairly even for the first fifteen minutes but steady pressure by the Shop drove Cranwell back until they were relieved by a long kick to touch by Coote who fielded a cross kick from a mark. Woolwich were getting the ball from nearly every scrum but their halves were closely marked and well tackled and they rarely got their threequarters on the move. When they did however, they gained a lot of ground and Cranwell had hard work to keep them out. Coote was a tower of strength at full-back and seemed to be always on the spot. He was well backed-up by the rest of his team. For a few agonising minutes Woolwich were right on the line and only after the second five-yards scrum had been formed did Cranwell clear from the danger zone. A heavy storm of rain blotted out the proceedings from the spectators for a few minutes and when it cleared Cranwell were holding their own. They got the ball from a line-out and made ground but Woolwich recovered from a scrum. Coote gathered the ball from the feet of the Shop's forwards and broke back on his own to nearly the half-way line. The next Woolwich attack was successful and they scored a try with a fine run in on the left wing. The goal kick failed. Cranwell recovered and had the best of the game for ten minutes following a brilliant run by Hodgkinson but just before half-time Woolwich scored a second unconverted try again on the left wing.

Cranwell scored early in the second half after some good work by the whole team with Elsmie particularly prominent and a fine run down the wing, punt ahead and run in by Walker. The goal kick failed. About ten minutes from the end of the game Coote kicked a beautiful goal from a penalty. The scores being even both sides made a desperate effort to get on top. The Shop, getting the best of every scrum by sheer weight, put Cranwell on the defence but every attack was broken up by the Cranwell tackling. By the end of the game both sides were played to a standstill.

The Cranwell team were:—Flight Cadets P. B. Coote, G. R. A. Elsmie, O. R. S. Bader, W. N. McKechnie, R. L. Wallace, C. E. J. Baines, N. C. Walker, J. O. W. Oliver, F. C. Daubeny, T. N. Cadet Robinson, W. H. Hodgkinson, W. Sawyer, E. A. de Pencier, M. W. S. N. E. Morrison.

Association Football.

R.M.A., Woolwich, v. R.A.F. College, Cranwell. — This match, played at Cranwell on Nov. 16, resulted in a win for the "Shop" by 3 goals to 2. In previous games, "Shop" had defeated the Old Malvernians, and Cranwell had beaten Christ's, Cambridge; so that a keen game was expected.

Cranwell were without Cleland and Baker, their inside wing forwards, while Woolwich were at full strength.

Play during the first half was very even. Woolwich being very lucky to score through a mistake by the Cranwell left-half. During the second half of the game Cranwell, playing with the wind, pressed continuously, but their attacks lacked vigour. Hogan and Wright

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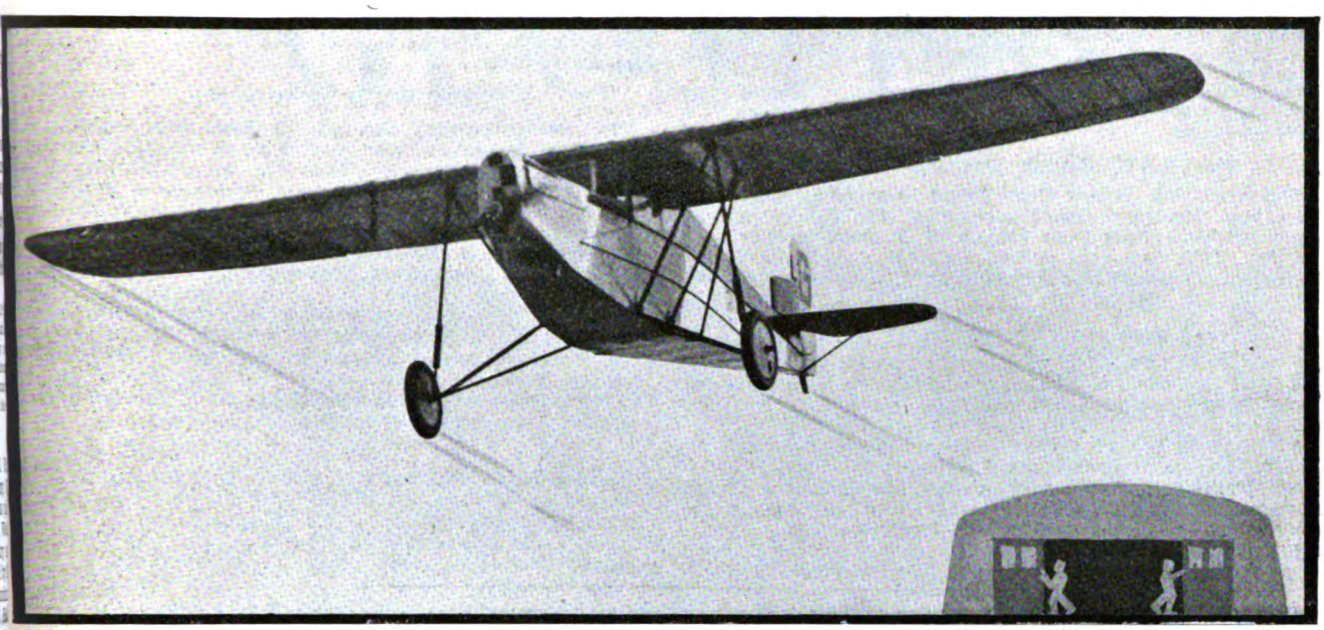
SEE IT FLYING!



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THE Cirrus-Hermes engine has been standardised for the Desoutter Sports Coupé. This, in itself, is sufficient guarantee as regards the reliability of the power plant.

SHORT SPECIFICATION:

Span	36 ft.
Length	27 ft.
Height	7 ft.
Weight	1,070 lbs.
Loaded weight ...	1,800 lbs.
Fuel capacity	21 gallons.
Wheel track	10 ft. 6 ins.
Maximum speed ...	112 m.p.h.
Climb to 4,000 feet with full load (1,800 lbs.) ...	6 mins. 1 sec.

PRICE: With Cirrus-Hermes £795.

DEMONSTRATION FLIGHTS

National Flying Services Ltd. will give demonstration flights with the new Desoutter 3-seater Cabin Monoplane (fitted with Cirrus-Hermes engine) at the London Air Park, Hanworth, on the afternoons of November 22nd, 23rd, and 24th, from 2 p.m. (weather permitting). Those interested are invited to write or telephone for an appointment.

IMMEDIATE DELIVERIES.

¶ **The Desoutter has been adopted by National Flying Services Ltd. as one of their standard types, and they are in a position to offer immediate deliveries.**

Sole Concessionnaires:

NATIONAL FLYING SERVICES LTD.,
Grand Buildings, Trafalgar Square, W.C. 2.
'Phone: Gerrard 9316 (4 lines). 'Grams: "Natflying, Westrand, London."

Manufactured by:

DESOUTTER AIRCRAFT CO. LTD.,
Croydon Aerodrome, Surrey.
'Phone: Fairfield 5736. 'Grams: "Desairco," Croydon.

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played well on the wings, but the reserve inside forwards were weak, and the movements were never finished.

When Woolwich attacked their forwards combined well and they scored twice, through their centre-forward and inside left.

Towards the end of the game Cranwell were awarded a doubtful penalty for hands, which Messenger scored. The play now brightened and just before "no side," Messenger scored again with a clever cross shot.

For the Shop, the goalkeeper played finely, handling the slippery ball in good style. The centre half played a good destructive and constructive game, while left wing combined well and always looked dangerous.

The Cranwell defence was good, and although the forwards tried hard, thy did not work together as a team, and their attacks were easily broken up.

The R.A.F. Squash Racquets Association.

The following officer has taken over the duties of Honorary Secretary and Treasurer of the R.A.F. Squash Racquets Association from Flt. Lt. E. F. Waring, D.F.C.:—Sq. Ldr. J. P. Coleman, A.F.C., A.D.G.B., Royal Air Force, Hillingdon House, Uxbridge, Middlesex.

THE CHRONICLES OF R.101.

On Nov. 12 the R.101 withstood successfully the hardest test that she has yet had. These conditions were probably the most severe that a moored airship has ever successfully withstood.

At 1.15 a.m. the wind veered through 135 deg. from S.W. to N. The average wind speed during this change, which took about a minute, was 35 m.p.h. The indicator at the nose-coupling registered a force of about 15½ tons while the vessel was swinging round the mast.

During the previous day the ship rode successfully through a gale whose average velocity was 55 m.p.h., with a maximum recorded gust of 83 m.p.h.

On Saturday, Nov. 16, the much-advertised Parliamentary flight of the R.101 had to be postponed because of poor visibility and bad weather.

In spite of the various internal disarrangements which R.101 suffered after its last night out, the ship has again been out for the night, and in spite of the cold mornings we now have no airship was to be seen when the crew of the mooring mast poked their heads out for the early morning milk. These nocturnal meanderings, which are prolonged into the next day, can only be regarded as youth's wild oats.

On the morning of Nov. 17 the R.101 left Cardington for the longest flight the ship has so far made. During its wanderings R.101 passed over Howden where R.100 is [A gesture at which we are not amused.—Ed.], over Newcastle, Berwick, Edinburgh, down the Clyde, and then south to Ailsa Craig and so to Belfast.

R.101 returned to the mast at Cardington on the afternoon of Nov. 19 after a flight of 30 hrs. 35 mins.

During the whole trip of over 1,000 miles the airship flew at a height between 1,000 and 1,500 feet. The average speed was about 60 m.p.h.

R.101 IN THE HOUSE.

In the House of Commons, on Nov. 13, in reply to a question by Mr. Malone, the Under-Secretary of State for Air said that the Air Ministry's published programme had from the very first provided for the operation of the Indian airship route with an intermediate halt in Egypt for refuelling. For that reason a mooring tower base had been erected at Ismailia.

Mr. Malone then asked the Under-Secretary of State for Air whether any royalties had been paid in respect of any of the patents held by Sq. Ldr. Scott and Lieut.-Col. Richmond relating to airships; whether any of these patents had been developed by public money; whether the Air Ministry had any control over these patents; and what was the position with regard to the future value of these patents.

Mr. Montague said that no royalties had been paid by the Air Ministry. Some of the inventions covered by the patents had been developed with public money and were embodied in Airship R.101. The Air Ministry had the right of user of these inventions for the service of the Crown in any part of the world free of royalty or other payment and had also certain control over the commercial rights in the inventions under agreements with the inventors. It was not possible to forecast the future value of the patents.

RESTRICTING FLYING.

The Secretary of State for Air is empowered by an Order in Council announced in the *London Gazette* to restrict aircraft movements when it is brought to his notice:—

"That a large number of persons are likely to gather in any district in Great Britain and Northern Ireland for the purpose of witnessing some event of public interest; or that it is intended to hold in any district in Great Britain and Northern Ireland an aircraft race or contest or exhibition of flying."

FRENCH HIGH SPEED.

On Nov. 17 M. Paillard, flying the first of the high-speed aircraft built to the order of the French Government is reported to have made a speed of 310 m.p.h. at Hourtin near Bordeaux.

It is believed that the machine used by M. Paillard was a Nieuport-Delage seaplane (1,000 h.p. Hispano-Suiza engine), which was one of two built by the Company for the 1929 Schneider Trophy Contest. Unfortunately it was not finished in time.

THE FIRST SEADROME.

The construction of the first of Mr. Edward R. Armstrong's Seadromes is to be started next month (December) at Chester, Pennsylvania. The structure should be completed in August next, and will be towed to a position 50 miles south-east of New York, where the floating aerodrome will be anchored for full-scale experiments.

A photograph illustrating a large model which has been tested recently appeared in The Aeroplane of Oct. 30.

Feeling already exists in France that international agreement must be reached as to the partition of the seas of the World for anchorages for seadromes. Otherwise there may be future unpleasantness. In fact, the question of the freedom of the sea appears to be getting mixed up with the seadrome of the free,—if, of course, America is to be considered the Land of the Free.

A MIS-DEAL.

The Italian company Societa Trans-Adriatica has acquired the licence to build the American Burnelli monoplanes by arrangement with the Uppercu-Burnelli Corporation. The agreement calls for the production of not less than 50 aircraft per year for the next five years.

The arrangement was made by Signor Morandi of the Societa Trans-Adriatica, who visited the United States with an Italian Air Commission under General Balbo. The object of Signor Morandi's visit was to examine the various types of American transport aircraft suitable for use on his air lines.

The Burnelli monoplane is of all-metal construction and has a fuselage of aerofoil section 12 ft. wide, with two engines in the nose driving tractor airscrews side-by-side. The cabin, which has accommodation for 20 passengers, is 22 ft. long, 6 ft. high, and 20 ft. wide.

The most recent American-built Burnelli monoplane had two 600 h.p. Curtiss Conqueror twelve-cylinder Vee water-cooled engines, but it is expected that the Italian version will be fitted with either Isotta-Fraschini or Fiat engines.

One American-built Burnelli monoplane will be sent to Italy as a model for the Italian-built machines.

This is claimed to be the first time that building rights for an American aeroplane have been acquired by a European company. [And, unless one's aerodynamic judgment is utterly wrong, it is not likely to encourage similar deals in future. A fuselage of aerofoil form is the least efficient possible form. Also, licences to build Wright aeroplanes were sold to France, Germany, Italy and England more than twenty years ago. And Mr. Fairey bought Curtiss rights six years ago.—C. G. G.]

MOSCOW—NEW YORK.

On Aug. 8, as reported in The Aeroplane of Aug. 14, an A.N.T.-4 monoplane left Moscow in an attempt to reach New York. This machine was crashed at Taiga, near Chita. The crew were unhurt.

A second attempt started on Aug. 23, and was successfully completed on Nov. 1, when *The Land of the Soviets*, as the machine was called, landed at Curtiss Field.

This remarkable flight was made by way of Siberia, the Aleutian Islands, Alaska, and the Pacific Coast of America, and then across the United States to New York.

There is some talk of this machine attempting the Atlantic flight and making a round-the-World trip.

A DISAPPOINTMENT.

The lecture by Senor Don Juan de la Cierva before the Royal Aeronautical Society on "Recent Work on the Autogiro" has been unavoidably postponed from Dec. 5 until the second half of the present session.

M. MAURICE WEISS.

On Nov. 13 M. Maurice Weiss, a well-known French civil pilot, was killed near Garches (Seine-et-Oise) while ferrying a Potez aeroplane from Méaulte, where are situated the Potez works and aerodrome, to Villacoublay. He flew into thick fog when nearing Villacoublay and in flying low to find the aerodrome he hit some trees. He was thrown out of his seat and was killed instantly.

M. Maurice Weiss, who was chief pilot to the Potez company, is not to be confused with Commandant Weiss, the famous French military pilot, who was the father of artillery co-operation and of aerial photography in French Aviation.

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[" *Flight* " *Photograph.*

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DISCUSSING THE SCHNEIDER RULES.

On Nov. 15 the Royal Aeronautical Society held an Informal Dinner (for men only) and Discussion. Members of the Society who also happened for their sins to be members of the Press were requested by the authorities not to report the discussion, on the grounds that many who were prepared to speak had said that if they were certain that what they said would not be reported they would speak much more freely. On the other hand, there was no objection to the use in the Press of information or suggestions given or made at the dinner so long as they were not definitely put down to any particular speaker by name.

In deference to the wishes of the authorities, one has refrained from reporting the discussion in the usual way so that credit might be given to those gentlemen who have delivered themselves of brilliant ideas which do them credit.

At any rate one may say that Colonel the Master of Sempill presided in his usual efficient way.

The discussion meandered, when it ought to have raged, round a motion proposed by a prominent Civil Servant. The wording was: "That this meeting is of the opinion that the present rules for the Schneider Trophy Race and the High Speed Record are not consistent with the proper development of high-speed aircraft."

Obviously the motion itself was wrong because most people would like to alter the High Speed Record rules though they would be content to leave the Schneider Trophy Contest rules just as they are, for the good reason that the rules have been ignored to such an extent that they can be interpreted to mean anything you like.

One does not propose to report each of the speeches individually, but rather to give the general effect.

The Proposer Of The Motion said that our only way of attaining our highest speeds is by seaplanes. [This may be questioned for a start. Unless human ingenuity has ceased to exist we certainly ought to be able to devise some way of getting an aeroplane down unbroken on land even after it has attained the highest possible speed.]

He made the interesting point that every time England has won the Contest the step-up in speed over the previous year has been greater than when any other country has won. He said that high-speed aircraft were already outstepping these islands, for all the forces of land, sea and air had to be marshalled to regulate the Contest. He said that the weather seemed ideal to us but that the Italians thought that the state of the sea during the navigability trials was as severe as would be permissible. The opinion of the pilots of our High Speed Flight on that point would be interesting.

The speaker said that he did not suggest alterations which would alter the types of aircraft. He believed in testing each type to the limit of our knowledge. The rules as they stood needed apparatus of exceeding delicacy. The chief drawbacks to the present rules were our weather and the high cost of producing the machines. We could not do with a wind speed of more than fifteen miles an hour and we had to have an alighting place three or four miles long, and we had to have visibility of not less than six miles.

He said that the navigability tests produced a seaworthy aircraft [which they don't] and should be maintained for that reason. The Contest, he said, ought to be retained to ensure progress, but selecting two days out of the year for it was too risky.

Turning to the subject of the Speed Record he said that the record speed was not representative of true top speeds. Losing height on the way to the starting-point would give an impulse which would last to the end of the course. For example the S.5 had a top speed of less than 300 m.p.h. and it did 319 m.p.h. over the course.

One Of The Wisest Men in aviation, actually, apart from the fact that he makes his living outside of aviation, said that in drafting sporting rules other than technical subjects had to be considered. If we only waited to find out which machine was the quickest the rules for such a competition would be little allied to the present rules. The result would be achieved by technical research and not by a race, but human beings want personal competition. As soon as you start a rating you start a competition to beat the rules.

A race must appeal to the multitude. If the same speed had been achieved in an R.A.E. technical test, even though it might have been chronicled in the press under the biggest capital letters the result so far as the public were concerned would have been nearly a zero with the circle wiped out.

If we merely want to develop better seaplanes, then the machines ought to do a test alighting in mid-Atlantic. Though he feared that he might be a minority of one he expressed the opinion that the existing rules are about the best that can be got.

An Air Ministry Official With A Nice Sense Of Humour said that developing these machines was very wearing, as might be gathered from the fact that there had been four Directors of Technical Development in five years. He said that the record course [of three kilometres with half a kilometre outside each end neutralised] was not nearly enough to stop diving at the start.

Corners on a course did not slow machines as much as might be thought. Assuming the cornering was done at 4G [that is a curve which loaded the machine to four times the force of gravity] the speed round such a course was only 3% less than the speed on the straight, according to Martlesham tests. As regards the efficiency of our aircraft he said that no ordinary machine was more than 30% efficient as compared with the ideal streamline laid down by Professor Melville Jones, but that the 1927 Schneider winner was about 60% efficient.

He gave the interesting information that two members of the High Speed Flight had been detached for research work on the 1929 machines. Such tests, he said, were beneficial to research, but he thought that we had already learned as much in this way as the Government was justified in spending money on.

An Eminent Scientist From Cambridge, eminent for his commonsense quite as much as for his science, said that people who watched the race were not seriously interested in the rules. Yachting rules increased in complexity in the effort to produce more valuable craft. The present Schneider rules had not become more complex. The Schneider Contest itself was not much use for publicity. The only thrill this year was when Mr. Waghorn passed one of the Italians. He believed that a race was only useful as a race when the Competitors could start level and the first man won.

An Official Who Does His Best To Get A Move On Civil Aviation said that we wanted speed, and the Schneider Contest had given it. If it had not been for the Gordon Bennett and Deutsche and Schneider scientists would still be denying the possibility of ever exceeding 200 m.p.h. We had not reached the limit, but he thought scientists themselves were the limit.

He said that all over the world the spirit of hot-stuffing is rampant. Make rules and promptly the best brains try to beat them.

In a competition you must have a gallery as an incentive. Records mean nothing but a race means a lot. The Schneider show at Venice was better than on the Solent because the competitors started at shorter intervals, and there were no thrills on the Solent.

He thought it was up to us to take over the Schneider Contest from the Air Force and keep it going if only to keep our scientists from vegetating.

Another Humorous Official pointed out that the form of the motion was wrong. A race and a record attempt were incompatible and ought to be divorced. Where records only were concerned there was no reason against catapulting the machine off without any undercarriage, and letting the pilot step out with a parachute after he had beaten the record.

He said that this year the speed of our machines had been limited by the rate at which the machines could get rid of waste heat and keep on doing it. The limit of our power unit was our radiator. This looks like a chance for Ethylene-Glycol cooling—commonly known as Prestone—which was invented in this country by Dr. Gibson in 1919 and is now a success in America].

A Well-Known Designer said that the value of Government competition in the Schneider Contest was shown by the fact that before America won in 1923 we took five years to spend as much on research as we now spend in two years. [This is a fallacious argument. Before America came in this country was broke and we had no money to spend.]

Continuing, he said that the racing float of 1927 was the service float of to-day, wing radiators had advanced efficiency, metal airscrews had been developed by racing. He argued that racing had also brought out geared engines which were now used in our fighting machines and commercial machines. We had now produced real streamline wires instead of lenticular wires. We now had aeroplanes which control at over 200 m.p.h. We had got more ahead in six years with racing than in ten without it. He felt that we ought to win the Trophy outright two years hence [Optimist!] and then reconsider the rules.

An Officer Who Has Done Much High-Speed Flying enough to know what he is talking about, said that speaking for others with similar experience he thought it would be a pity to alter the character of the Contest by carrying a load on the machine or increasing the range. He and his friends thought that the greatest risk was in spreading it over two days and being held up by bad weather on one of them.

They wanted to hold the whole contest in one day and so have the chance of postponement. We should never again have two such days as we had on the Solent. The High Speed Flight had waited from dawn to dusk day after day for ten months to get in what little test flying had been possible. The odds were thousands to one against such days in any future year.

He and his friends believed that more than two or three machines on the course at a time would be impossible unless the designers improved visibility and spoilt their performance. [This one believes to be a fallacy. It is probably quite true of existing machines, but one believes that faster machines could be made with perfect visibility.]

He suggested that the machines should be moored out for two hours early on the day of the Contest and that after doing half the course the competitors should come down, alight, navigate between points and then start up again. [This strikes one as being quite a sound idea.]

Continuing he said that the record rules were unsatisfactory. The record would always be won by the pilot who broke the rules by the largest margin and got away with it. He suggested that the approach to the starting-point should be better supervised, and that the level portion of the course should begin five kilometres before the starting-point. He would also cancel the rule about beating the existing record by five kilometres. He thought that photographic timing was accurate enough to justify this.

Another Officer Who Has Done A Great Deal Of Flying said that the last Contest was an attempt to interest the public but it would not interest them again. We ought to try to make the Contest into a real race. This might be done by shortening the time between the starters to thirty seconds and making the designers provide a proper view.

Another Officer With Experience said that any attempt to make a race of it was hopeless. More imagination than the average man possessed was needed to appreciate the fact that the machine was doing 300 m.p.h. Alighting in the middle of such a race would spoil the whole thing. [Would it? Might it not be rather part of the excitement, something like taking the cars round the sand-banks at Brooklands?]

He suggested that the record course ought to be lower because of the difficulty of measuring whether the machine was at 450 ft or not.

An Aeronautical Engineer Of Note said that if more exact rules were imposed people would start fighting the rules instead of fighting Nature. He pointed out that the size of the pilot was now becoming important. He admitted the desirability of thrilling the public and

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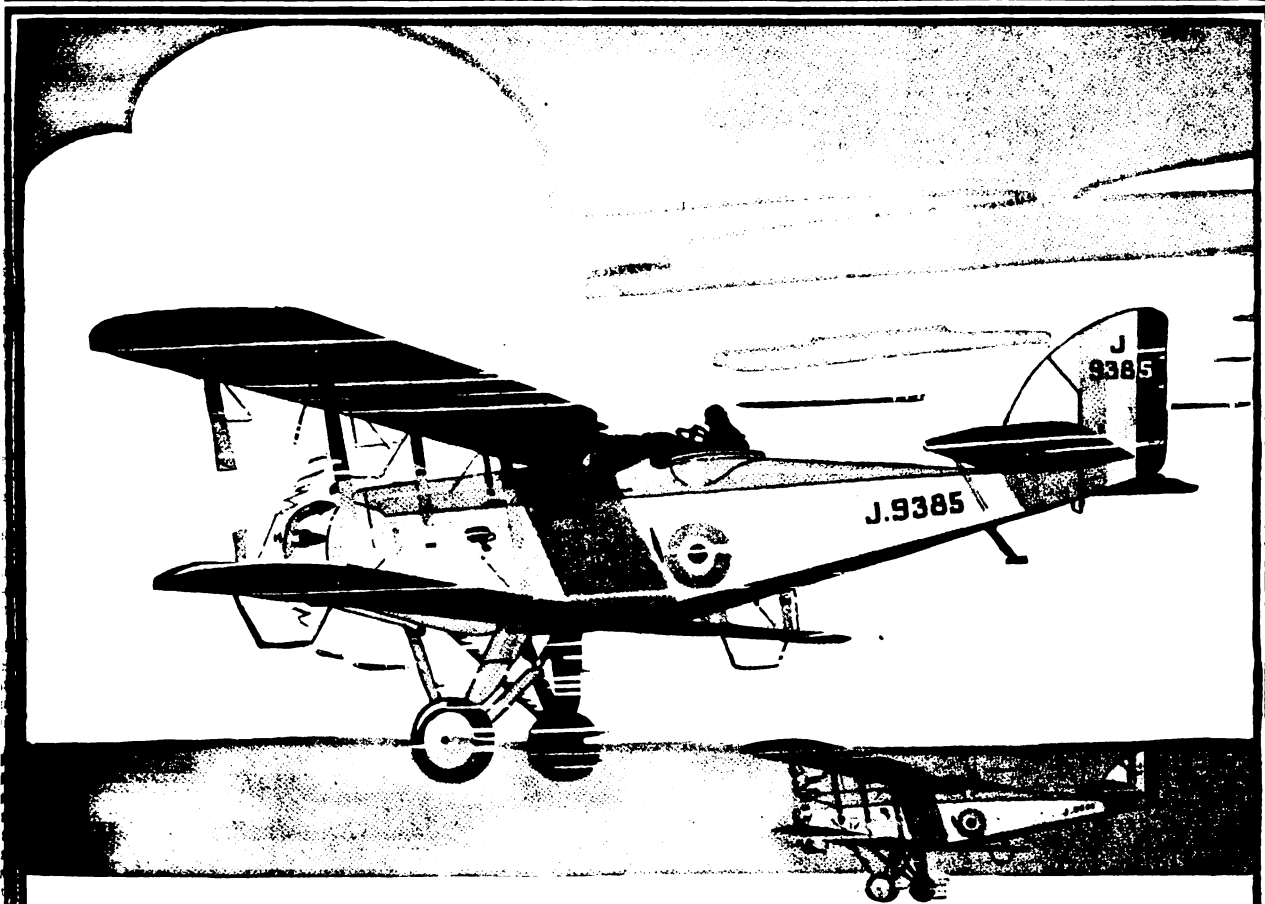

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of making the Contest propaganda for aviation, and also as a means of making money. But he said that if the object of the Contest was simply technical development then— . . .

A Famous Manufacturer Of Aircraft And Engines suggested limiting the size of engines. He said that the existing racing engines were too big, and as good speed could be got out of smaller engines.

An Engineer said that we ought to give the public a thrill without imposing risks and suggested starting all the competitors to fly over a straight line, and then making them do a circuit at the end of the course.

One Of Our Greatest Aircraft Designers said that having had to work to rules himself he regarded them as necessary evils. When the question of fuel consumption arose he could not think why the course was fixed at 230 miles instead of the level 200, and when one of the machines showed signs of sinking near the end of the mooring-out test he could not think why they had to be moored out for six hours instead of five. Nobody, however, thought like that about Air Ministry specifications.

He said that, thinking as an engineer, he believed that the increase in speed in successive competitions must become less, but personally he thought it would not, so he saw no reason why the Contest should stop. He said that fear of the weather conditions was exaggerated. When the pilots had flown the 1927 machines for a couple of years they flew them in all sorts of weather as practice machines. He admitted that the rules were difficult to alter. Alighting speeds could not be fixed.

He said that the lack of thrills on the Solent was due to the breakdown of the Italians. If all the machines had been about equal there would have been thrills enough for everybody. [Here he is absolutely right. If all the machines had gone the whole course at approximately equal speeds all the spectators would have been in a state of nervous prostration until they had heard the results.]

When the motion was put to the meeting approximately thirty-eight voted against altering the rules and twenty in favour of altering them, but nobody seemed quite clear as to why they did not want the rules altered or why they did.

THE GLIDING MOVEMENT.

The First Step.

Mr. Douglas Culver, one of the many gliding enthusiasts who have written to this office, suggests that a lunch be organised at which people interested in gliding can become acquainted, one with another, and start the movement with proper organisation.

Mr. Culver has already written to various people suggesting Wednesday, Dec. 4, as a suitable date. The place would be in the West End and conveniently situated. The lunch would probably cost between 2s. 6d. and 3s. 6d., depending on the number present. The money would be collected at lunch.

So that proper arrangements may be made, will all those able and willing to attend such a function write The Aeroplane, as soon as possible and mark their letters "Gliding Lunch." If there are enough to make up a reasonable lunch-party, further details will apear in The Aeroplane of next week.

Although for obvious reasons not every gliding enthusiast from the outlying counties will be able to come in, there seems a possibility of a good many representative people from such districts coming to Town and airing their views. This would be a good thing, because on their return they could start local organisations in touch with that formed in London.

Below is published the latest list of names to be sent to this office. One gathers that many letters have already been exchanged amongst enthusiasts as a result of the publication of their names in this paper.

There have been so many requests for technical data about gliders that one hopes to obtain some really authentic figures for publication in The Aeroplane at an early date.

Mr. R. F. Dagnall, of the R.F.D. Company, 17, Stoke Road, Guildford, Surrey, says that if some qualified aeroplane designer who is keen on gliding likes to co-operate with him he will be very pleased to build a glider at his own expense. Also he will be glad to build gliders to anybody's designs at the most reasonable possible price.

Mr. Dagnall is primarily a builder of balloons and ballonnets, and of flotation gear for aircraft, but he has well-equipped workshops and has himself had some fifteen years' experience of the building of aircraft.

A number of people have written and stated that they can undertake the building of gliders, so there should be no difficulty about that part of the business. People who are used to aeroplane design are also interested.

One of the pioneer aeroplane builders in this country, a man who before the war made a number of gliding experiments, says that he has surveyed the country south of London and there are plenty of conveniently placed sites in this part of the world. The North Downs, which face the prevailing south-westerly winds, should provide some good spots too.—T. J.

A further list of those who wish to communicate with other gliders is as follows:—

Mr. Horace Wright, 45, Merstow Green, Evesham, Worcs.
Mr. C. H. Latimer Needham, Royal Air Force, Halton, Bucks.
Mr. Herbert Jeffree, 14, Vincent Road, Norwich, Norfolk.
Mr. S. G. Shand, Three Oaks, Pinewood Avenue, Addlestone, Surrey.
Mr. B. S. Whidborne, Lucas and Sons, 21, Surrey Street, Victoria Embankment, W.C.2.
Mr. A. G. Puttnam, 41, Daleview Road, Stamford Hill, N.15.
Mr. C. E. Purves, Chilliswood, Trull, Taunton.
Mr. W. H. Frost, 9, Netherhall Gardens, Hampstead, N.W.3.
Mr. A. L. Haward, Lloyds Building, 3-4, Lime Street, E.C.3.
Mr. R. S. Dickson, 23, Radstock Road, Woolston, Southampton.
Mr. W. D. H. McCullough, 1, Courtfield Road, S.W.7.
Mr. L. F. H. Woolston, Garnes House, The School, Wellingborough.
Mr. E. K. Blyth, 112, Gresham House, Old Broad Street, E.C.2.
Mr. R. E. Brook, Carlton Dene, Ewell, Surrey.
Mr. R. G. Cazalet, Hillcrest, Whittlesford, Cambridge.

An Australian Gliding Venture.

A Gliding Club, the first in Australia, has been formed at Geelong. This town is some forty miles S.W. of Melbourne, and is situated on an extension of Port Philip, the enormous natural harbour on which Melbourne is built.

A number of enthusiasts have formed this new Club and have had a training glider built by the Aircraft Manufacturing Co., Ltd. This glider is of the high-wing type made familiar by the Germans and since imported into America.

The monoplane wing is carried on the top of a very deep and narrow girder framework, to the bottom of which is fixed a forwardly projecting skid. This girder extends aft and supports a monoplane tail unit. The pilot sits in front of the wing. His back is against the front post of the girder, and he sits on the skid. He has the usual stick and rudder-bar controls.

The Geelong glider was tested on the local aerodrome by towing behind a car, after which the machine was taken to some rising ground in the neighbourhood of the town.

Here a large number of flights were made. The machine was launched by towing, a motor-truck pulling the glider up one side of a hill so that the machine could glide over the crest and down the other side. The longest flight lasted for about two minutes, the type of glider used did not permit of very long flights.

After some more practice, the Gliding Club hope to go farther afield and find a suitable terrain for catapult launching in the approved fashion, with a rubber tow-rope.

The Gliding Club intend to raise enough money by public subscription to buy first an advanced training glider and then a super-streamline "sailplane," such as the Germans use for their long-distance glides of over 100 miles.

Why Glide?

There is a tendency nowadays to de-strenuate sport, or, at any rate, to suit it to lazy men. People do not learn to sail boats, for that is difficult. Instead they buy outboard motors or something similar. Gliding is attractive to the true sportsman because there is no power-plant to pull one through difficulties, and one has to learn to get by sheer skill the best results from up-currents as one finds them.

The sport is not expensive, and if a suitable terrain is available, should be a means of enabling many who could otherwise not afford the luxury, to take to the air and learn to fly.

In view of the way gulls find places all over the downs and Scottish hills where they can indulge for hours in soaring flight, one has often wondered whether gliding would not be possible in this country, although the interest aroused at Itford soon disappeared.

HINTS TO HOLIDAY MAKERS IN N. AFRICA.

Some people favoured by good fortune can go holiday-making along the North African coast. Those who go by air are advised to read Air Ministry Notice to Airmen No. 68 of the year 1929, which advises as follows:—

1. Pilots should, on alighting, notify the last place of departure by telegraph. The next objective should also be notified by telegraph when the flight is to be continued. The telegrams should invariably be addressed to the Officer Commanding the air station or to the British Consul at the place concerned, and not solely to a petrol company's representative or other local agent.

2. Telegrams to the next objective should be despatched the night preceding departure, as delays frequently occur in the transmission of the messages. These telegrams should state the registration marks of the aircraft, the name of the pilot, and the anticipated date and time of arrival.

3. In the case of Benghazi or similar places where hotel accommodation is limited, the telegrams should include details as to the number of persons requiring accommodation and the proposed duration of the visit. Telegrams to H.M. Consul, Benghazi, should be prefixed with the word "Notte" and sent *via* Syracuse to avoid delay.

4. Owing to unsettled tribal conditions in certain territories in North Africa, pilots are advised to fly along the coast, as a forced landing inland might be attended by considerable danger.

FLIGHTS TO EGYPT.

Flying to Egypt, or through it, is no easy matter, and private owners are reminded that the Egyptian Government requires 15 days' notice of such flights. As the Air Ministry requires six weeks to obtain permission from the Egyptian Government for such flights, intending visitors by air are warned to make their arrangements well in advance. They should at any rate read Air Ministry Notice to Airmen No. 67 of the year 1929.

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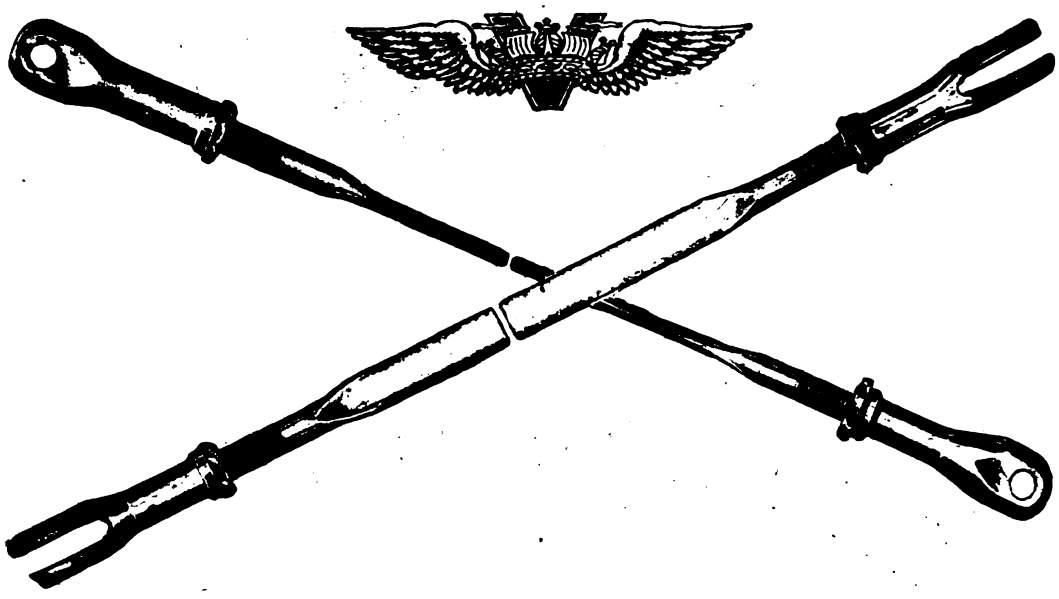
VICKERS

STREAMLINE WIRES

AND

SWAGED TIERODS



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THE LIGHT AEROPLANE
AND THE FLYING CLUBS.

THE CLUB NOTES.

eader of THE AEROPLANE writes criticising the policy of AEROPLANE in dropping the Club Notes. He says:—

e fully realising that a few were taking unfair advantage in ıg your valuable space to immortalise the adventures of a cer- ımbrella, there were on the other hand a number of Clubs ıt, I believe, a majority) who were sending in for publication e and sane reports of their weekly activities, which I believe read by many; or were, at the time of their discontinuance, just ıg an atmosphere of healthy competition and to my certain edge were providing a number of Club Secretaries and officials valuable data for analysis, with reference to such points as the ıum and average flying hours practicable under varying con- s and with varying numbers of machines, and surely the en- sm and position of the admittedly small number who did make analyses, justified their continuance.

n aware that some time back, you promised the publication of interesting facts that Clubs might care to send along, but gh perhaps unintentional I must say that the general attitude st persons concerned on reading your remarks, was to believe he less you heard from them the better you were pleased. I is only as the outcome of some seven or eight conversations with officials whom I have had the pleasure of meeting during s excursions around the country in my machine.

r careful analysis of the apparent policy of THE AEROPLANE I ally believe that nothing is farther from your idea, and it is ore on this account that I, a humble and inexperienced "A" pilot, venture to criticise one who has been in the game the start, and who by pursuing an outspoken policy has done so to foster it. Again on all sides I hear universal regret ex- d that Club reports now appear so rarely.

e reason the Clubs' Reports have been cut out is that y any of them had either the enterprise or the intel- ce ever to send anything which was of practical value e progress of aviation. The space which they took up purely local gossip and alleged jokes is now available ıews of general interest, except when an enterprising happens to send in some useful information, such as the ıe Ports Club seems to send more frequently than any . The Secretaries are not to blame, for many of them said that they cannot get useful or interesting material either the pilots or the ground staffs.

ıen once a sort of general standard of Club flying, ıured in hours per week and per machine, had been ılished there was no particular object in wasting space ding each week how much each Club flew. If Club etaries want to know such figures they ought to estab- a kind of clearing house at the Royal Aero Club, which ıt to issue a typewritten list to all the Club Secretaries week saying what each Club has done in the previous . And anyhow the figures are not worth much be- e they are affected more by weather than by efficiency. nally, the subsidised Clubs have much less influence ıese days on the progress of British aviation than they a year or two ago. The Clubs do not buy anything like nany machines as are bought and used by private ers and by proprietary schools, and the members do not ridually do as much flying as do the private owners.

far as making History is concerned the Club movement decreasing force, though the Clubs themselves may go ndefinitely as purely social affairs, or until they are ac- ed by commercial concerns.—C. G. G.

N.F.S. CLUB NEWS.

ıere are now over 600 members of the Flying Club at ıworth. Since its opening on Aug. 31, 145 have begun ruction, and 35 have taken their "A" licences.

uring the eleven weeks since the opening of the Club, flying time has amounted to 1,446 hours.

he Hull Aero Club, which is one of the N.F.S. subsidi- s, had a total of 87 flying hours in its first month from . 11. The Nottingham Club, another subsidiary, flew ıours in September and 45 in October.

nother N.F.S. subsidiary, the Berks, Bucks, and Oxon oplane Club, started active flying on Sept. 23, and by . 12 had flown 111 hours.

he Yorkshire Aeroplane Club, which joined N.F.S. on . 15, had flown 80 hours by Nov. 15.

ational Flying Services now have 25 aircraft in com- ssion, and this number will be shortly increased by the ıvery of the Desoutter "Sports Coupé," the first of which l be demonstrated at Hanworth on Nov. 22, 23, and 24.

LONDON—CAPE TOWN.

On Nov. 18, Mr. Roy Tuckett, who is attempting to fly the Cape in a D.H. Gipsy-Moth, arrived at Alexandria.

He left Athens at 06.45 hrs. to cross the Mediterranean when midway across an oil pipe split. He succeeded in ıching the African coast and after making temporary re- rs and filling up with a spare can of oil which he carried reached Alexandria at 18.00 hrs.

A more permanent repair is being made at Alexandria.

SIR CHARLES THE MUNIFICENT.

Sir Charles Wakefield has presented a Gipsy-Moth to the Aero Club of East Africa.

This is the seventh Moth which has been presented by Sir Charles to various Aero Clubs throughout the Empire.

His first presentation was to the Lancashire Aero Club in 1925. His other presentations have been to Major-General J. H. McBrien, President of the Aviation League of Canada; the Delhi Flying Club (India); the Singapore Flying Club; the Johannesburg Light Plane Club (South Africa), and the Lyttleton Flying Club (New Zealand).

The machines presented to the Singapore and Lyttleton Clubs were seaplanes.

A REGISTER OF CIVILIAN AIRCRAFT.

[*A Register of Civilian Aircraft.* Compiled by R. L. Preston (Hon. Sec. of the Household Brigade Flying Club). Obtained through Flying Clubs or direct from the Secretary, The Household Brigade Flying Club, Heston Air Park, Hounslow, or from THE AEROPLANE Book Dept., Cannon House, Pilgrim Street, London, E.C.4. Price 2s. 9d., post free.]

This little publication has been produced to help pilots and others to recognise the ownership of aircraft both in the air and on the ground. To arrange such a book so as to make the search for any one particular registration a matter of a few seconds, is not easy. The compiler has tackled this by allotting a page to each group of lettering which only involves the change of one letter—for example, G-AAAA to G-AAAZ, G-AABA to G-AABZ, etc. The book is arranged alphabetically so that aircraft lettered from G-AAAA to G-AARZ precede those lettered from G-EAAA to G-EBZZ.

Chronologically this should be round the other way, as G-EAAA was the first machine to be registered in this country and the introduction of the new registration G-AAAA is of comparatively recent origin. However, this is quite a minor point and except for a disrespect for the divine right of age matters but little.

The real difficulty with a book of this type is the fact that it so soon becomes out of date owing to changes of ownership, crashes, etc. The compiler recognises this fact and states that amendments will be issued every three months. The copy under review allows for the ready insertion of amendment sheets as it is arranged for a loose-leaf binding.

At the end of the book is given the list of registration lettering recently allotted to Great Britain, the Dominions, British Colonies and Dependencies. This is interesting in showing that such possessions as St. Helena, Weihelwei, the Leeward Islands, Trinidad and Tobago, to mention a few, have not been ignored as the ultimate proud owners of domestic aircraft.

Unfortunately this list, which includes names of Colonies and Dependencies which may never have their own registered aircraft, is followed by a very incomplete and inaccurate list of the registration letters of only nine foreign countries. Except for this and a few minor spelling errors, the register will be of considerable interest and value to those who want to know the breed and ownership of British Civil Aircraft.

THE MOTH IN COLOMBIA.

The Sociedad Colombo-Alemana de Transportes Aereos (Scadta), which company has been operating a very successful air mail service in Colombia, South America, since 1919, has recently acquired two Gipsy-Moths to supplement its regular fleet of Junkers monoplanes.

One of these Moths with a load of mail has been flown from Buenaventura to Bogota over the Andes. This flight was an experiment to determine the suitability of the Gipsy-Moth for such service over difficult country. The crossing of the Andes was successful and uneventful and the Scadta now intend to establish feeder mail-routes with Gipsy-Moths to connect with their main routes.

The two Moths were supplied to the Scadta by Herr Alfred Friedrich, the D.H. German representative, who has established a Moth Service Station at the Tempelhof Aerodrome, Berlin, for the convenience of Moth owners in, or visitors to, Germany.

THE WRONG WAY.

Some members of the advertising trade have queer ideas about what is good advertising. During the last few days a number of photographs and paragraphs have arrived in this office either illustrating or recording the fact that an American prize-fighter has flown in some British aeroplanes.

Surely British Aviation has not come to such a pass that it need depend for editorial notice on the fact that a British aeroplane with a British engine has taken into the air an American prize-fighter whose head was about to be punched by an Italian?

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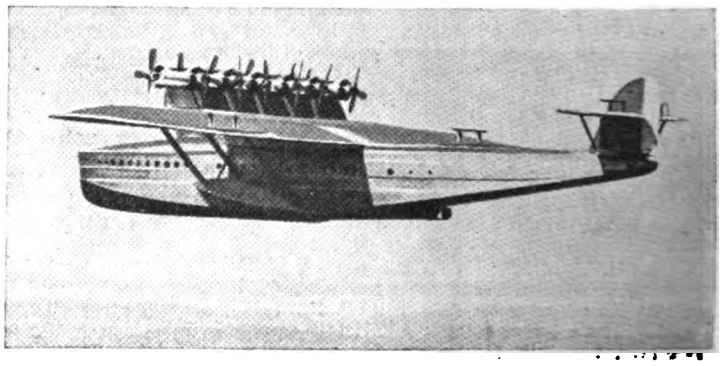
World's Largest Flying Ship



On October 21st the 6,000 H.P. DORNIER Do.X flew with

169 Passengers

aboard — the greatest number ever carried by any aircraft. The twelve Siemens-Jupiter engines were lubricated with

WAKEFIELD CASTROL MOTOR OIL

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COMMERCIAL AERONAUTICS.

THE NEW WESTLAND FOUR.

Westland IV three-engined cabin monoplane was the hree-engined light cabin monoplane to be produced in ountry. It was designed to fulfil the requirements of perator who has insufficient traffic for big multi-ed aircraft but who needs a small four- or five-passen-eroplane which has the added security of the multi-ed type.

first Westland IV monoplane made its first public rance in February of this year, and this machine was tted to a long series of practical tests. As the result ese tests certain modifications suggested themselves, hese were incorporated in the design. The modified ine was exhibited at the Aero Show at Olympia in This machine was actually one that had been bought ıperial Airways Ltd. for use by their private charter tment in place of small single-engined aircraft.

s latest version of the Westland IV has three Cirrus-es engines in place of the Cirrus III engines. The ng of these engines has been improved and the new has been found to reduce the drag appreciably. In machines the nacelles will be made even narrower f a better streamline form.

present undercarriage is of the oleo-pneumatic type he complete oleo leg and vertical torque-rod are now ed in streamline fairing. The mudguards are of a nline section which reduces their drag and does not ere with efficient use as mudguards.

controls are throughout of the push-and-pull type, all bearing surfaces are made extra large to reduce as much as possible. The fairing under the fuselage, previously enclosed the controls where they passed the cabin, has now been removed. Besides facilitat-maintenance, this modification improves the aero-mic section of the fuselage.

the convenience of the pilot a rear mirror is mounted the front of the pilot's cockpit so that he can see wards over the wing. This enables him to see whether ail-controls are operating and also to see whether thing is clear behind the machine not only on the nd but also in the air before he attempts to take off. is a very important feature for enclosed cabin air-where the pilot's view is often limited to a forward tion only.

rge boiler-type petrol gauges are fitted in front of the fuel-tanks on the leading edges of the main plane, re they are in full view of the pilot.

The Williamson Manufacturing Co. Ltd., the makers of the "Eagle" aircraft camera, have inspected the Westland IV, and they have advised the Westland Aircraft Works Ltd. that the machine is admirably adapted for Air Survey work and for the installation of an "Eagle" camera. In their words: "It could not be better suited if it had been specially built for such work."

In addition to one sold to Imperial Airways Ltd. the Westland company has sold a Westland IV to Wilson Air Lines Ltd. of Nairobi, and another to the Shell Co. of Australia Ltd.

Imperial Airways Ltd. has taken delivery of their machine. The other two will shortly be flown to their destinations, the former to Nairobi by Flt. Lt. F. A. Swoffer and the latter to Melbourne by Mr. E. J. Jones, M.C., D.F.C., formerly Australian Deputy Controller of Civil Aviation, and Mr. H. C. Owen.

The Westland IV has passed its Martlesham tests for a certificate of airworthiness, and the following data concerning dimensions, weights, and performance are based on the official Air Ministry Tests:—

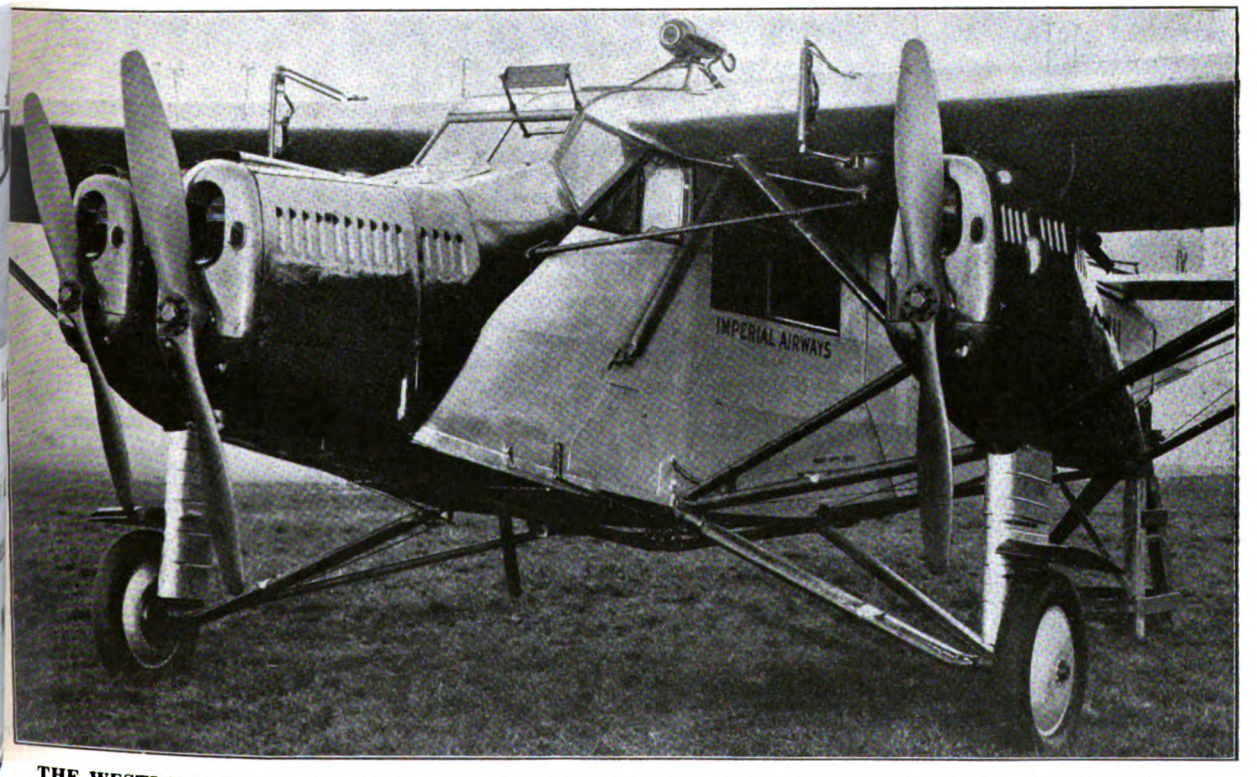
DIMENSIONS.—Span 57 ft. 6 in. (17.5 m.), Length 37 ft. 6 in. (11.4 m.), Height 9 ft. 6 in. (2.9 m.), Chord 9 ft. 6 in. (2.9 m.), Wheel track 15 ft. (4.56 m.), Wing area 490 sq. ft. (45.5 sq. m.), Volume of cabin 108 cub. ft. (3.05 cub. m.), Volume of luggage lockers 42 cub. ft. (1.19 cub. m.).

WEIGHTS AND LOADINGS.—Weight empty 3,476 lbs. (1,574 kgs.), Fuel and oil 830 lbs. (376 kgs.), Pilot 180 lbs. (82 kgs.), Pay load (passenger machine) 1,098 lbs. (497 kgs.), Pay load (freight machine) 1,190 lbs. (540 kgs.), Weight loaded 5,750 lbs. (2,605 kgs.), Wing loading 11.7 lbs./sq. ft. (57.1 kgs./sq. m.), Power loading 18.3 lbs./h.p. (8.3 kgs./h.p.).

PERFORMANCE.—Speed, maximum, 110 m.p.h. (177 km.p.h.), Cruising speed 95 m.p.h. (153 km.p.h.), Initial rate of climb 530 ft./min. 162 m./min.), Service ceiling 10,000 ft. (3,050 m.), Absolute ceiling 12,300 ft. (3,750 m.), Maximum height maintained on two engines 2,000 ft. (610 m.), Range (full fuel) 5½ hrs. or 520 miles (838 kms.).

AIR MAILS FOR PERSIA.

The Postmaster-General draws attention to the fact that a considerable proportion of the correspondence posted for transmission to Persia by the Indian Air Mail is being posted insufficiently stamped. The air fee for all correspondence for destinations in Persia is now 5d. per half-ounce in addition to the ordinary foreign postage. This fee covers air transmission from London by the direct Indian Air Mail to Baghdad or Bushire and thence by air into and within Persia as necessary.



THE WESTLAND IV.—A view of the nose of the Westland IV which has been bought by Imperial Airways for use by their Private Charter Department. It has three 105 h.p. Cirrus-Hermes engines and accommodation for four passengers and a crew of two.

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THE FIRST AVRO FIVE IN KENYA.

The Avro Five with three Armstrong Siddeley Genet Major engines, in which Mr. Campbell Black left Croydon on Oct. 24, arrived at Nairobi on Nov. 11. This machine, which was named *Knight of the Grail*, and of which photographs appeared in THE AEROPLANE of Oct. 23, has been bought by Wilson Air Lines, Ltd. A second machine of the same type has been ordered by the same company.

N.F.S. IN BRITISH EAST AFRICA.

As reported in THE AEROPLANE of Oct. 9, an N.F.S. contingent which consisted of Sq. Ldr. the Rt. Hon. F. E. Guest, C.B.E., D.S.O., Miss W. E. Spooner, Flt. Lt. R. C. Preston, A.F.C. (R.A.F. Special Reserve), and Mr. E. G. Hordern, R.A.F., left this country recently for East Africa.

The expedition, which was organised to investigate the possibilities of commercial aviation in East Africa, duly arrived in Nairobi and made its initial survey arrangements. It has now been divided into three parts.

One has gone to Rhodesia to discuss with the Northern and Southern Governments of that country the possibilities of linking up their territories with the main air route.

Another part, which includes Sq. Ldr. Guest himself, has gone to Dar-es-Salaam to discuss with Sir Donald Cameron, the Governor, the provision of feeder services in Tanganyika.

Miss Spooner has flown to Uganda for a similar purpose.

NEW YORK—HAVANA IN 37 HOURS.

Pan-American Airways Inc. and the railway companies have completed arrangements which bring Havana within 37 hours of New York.

As an express already runs between Boston and Miami, the only alteration needed to make this journey possible was the addition of a special New York coach to the express and air transport from Miami to Havana. This last stage is flown by Pan-American machines.

3,000 MILES IN 36 HOURS.

Arrangements are being made by the Aviation Corporation, one of the big aviation amalgamations in the United States, to operate a 36-hour passenger service between New York and Los Angeles.

One of the subsidiary companies of the Aviation Corporation will operate the line from New York to Kansas City. From Kansas City to Los Angeles the journey will be made by Western Air Express, who have been operating this section of the route for several months.

The first stage of 11 hours will be made to Kansas City. Here passengers will stay overnight, continuing the 13-hour stage to Los Angeles the following day.

Stops will be made at Cleveland and Chicago on the first stage, with further stops at Wichita, Amarillo (Texas), Albuquerque (New Mexico), Holbrook (Ariz.), and Kingman (Ariz.).

The machines used will be three-engined Fokkers.

AIR TRANSPORT PROGRESS IN SWEDEN.

The Swedish Aerotransport Company, whose managing director is Captain C. Florman, have operated their air lines regularly and successfully for six years without injury to any passenger.

This company announces a big increase of mail transport business. 59,400 kgs. (131,000 lbs. or 58½ tons) have been carried this year as against 38,800 kgs. (85,600 lbs. or 38½ tons) for 1928. [One finds this last sentence a little vague. 1929 is not yet complete, so either the figures are partly estimated, or are only up to a certain date in this year.—ED.]

The number of passengers on the Stockholm-Helsingfors route have increased by 70 per cent. this year.

One would gather from these figures that the Swedish Aerotransport Company, like most other air transport concerns, finds that mail transport is the most paying proposition.

DORNIERS IN THE UNITED STATES.

The General Motors Corporation and its subsidiary the Fokker Aircraft Corporation of America have announced the formation of the Dornier Corporation of America, to be incorporated in Wilmington, Delaware. Dr. Maurice Dornier is now in the United States helping in the organisation of the company. This corporation will manufacture flying boats under Dornier licence.

With the production of Dornier flying-boats in America, General Motors now have a field for the development of sea-going aircraft in addition to land-going aircraft of the Fokker type.

This is the eighth expansion of General Motors during the year which is concerned with the development of aeronautics.

The General Motors Radio Corporation, in conjunction with General Electric, Westinghouse, and the Radio Corporation of America, is said to be developing radio sets for aircraft use.

ARGENTINA TO ENGLAND.

A correspondent sends the envelope of a letter which was delivered in London on Nov. 14 after having left Buenos Aires on Nov. 2, which is about nine days' faster than the time of the fastest ship. The letter had come by the air line run by the Latecoère company.

This line starts from Santiago de Chile, crosses the Andes to Buenos Aires, runs up the east coast of South America flying largely by night over properly lit aerodromes, to Porto Natal in Brazil. Thence the mail is carried by Messageries Maritimes steamers to Dakar in West Africa. Thence it is flown by land aeroplanes to Paris and thence the letters are brought by ordinary post to London.

That is to say, by using a French air-mail line the English merchant can save nine days out of twenty-one in any direction on his business correspondence. The point here is that the amount of mail between England and South America is four or five times as great every week as is the amount of mail between England and India.

Consequently if we consider our air mail lines purely as a commercial proposition and do not regard our Indian mail line in the light of a strategic railway it would pay us very much better to run an air-mail line of our own to Buenos Aires than it does to India. In fact the mass of business done between England and South America would fully justify the starting of an air mail line on that route purely as a commercial concern if the co-operation of the Post Office could be assured.

As an example of how other countries do things this correspondent points out that the envelope, which bears the name of the Compagnie Générale Aéropostale and the Aeroposta Argentina, S.A., is a free issue by this company—which company also supplies the public with notepaper free of charge. This notepaper is of specially light weight and of very good quality, and, curiously enough, it is made in England.

The extraordinary thing, which is also a trifle humiliating, is that we should have to have an example of this kind set us by a country like Argentina which has a mixed population of less than 10,000,000 persons.

GERMAN AIR-MAIL ENTERPRISE.

On Oct. 25 Herren von Schroder, Albrecht, and Eichentopf in an Arado V-1 commercial cabin monoplane (525 h.p. B.M.W. Hornet engine) belonging to the Deutsche Luft Hansa, left Berlin at 03.25 hours, and after 10¾ hours' flying arrived at Constantinople. On Oct. 29 they left Constantinople at 02.25 hours and arrived back at Berlin after a 10¼-hour flight.

The same crew in the same machine had on Sept. 14 flown from Berlin to Seville and back in 29¼ hours flying time, with an intermediate stop at Marignane.

The same crew also made the first experimental flights for the Deutsche Luft Hansa to Vladivostock and the Far East last year in a Junkers monoplane.

Herr von Schroder, who is one of the pilots, is also a Director of the Luft Hansa.

These experimental flights are being made to examine the possibilities of high-speed mail carrying, which aspect of air transport has been interesting the directorate of the Luft Hansa for some considerable time. The company last year established two routes, one from Berlin to London by way of Hannover, Essen, and Cologne, and the other from Stralsund to Stockholm solely for mail and light freight.

The reduction in the subsidy to the Luft Hansa this year has resulted in the company reducing its network of small cross-country air routes in Germany, many of which, partly subsidised by towns or states, have previously been run at a loss. Instead, the company announced that it would concentrate on the establishment of a certain number of purely air mail routes in addition to its already more soundly established passenger routes.

These experimental flights with the Arado monoplane are of interest in showing the possible expansion of Luft Hansa. The experimental flight to Seville was in connection with the projected route to South America for which the Rohrbach Romar flying-boat has been bought by Luft Hansa for the operation of the marine section of the route from Spain to South America by way of the Azores.

REIGATE PROTESTS.

The Daily Telegraph for Nov. 11 stated that the Mayor of Reigate (Mr. Temple Newall) on Saturday protested strongly against the low flying of air liners.

He declared that in cloudy or misty weather this involved very low flying over Reigate. Recently two 'planes had circled over the Earlswood district, only occasionally visible and apparently invisible to each other.

"This is a very serious matter in view of the recent tragedy," he added, "and constitutes a grave danger, not only to passengers in air liners, but to the inhabitants of the borough. The matter will be brought before the appropriate committee, for I feel that a strong protest should be made."

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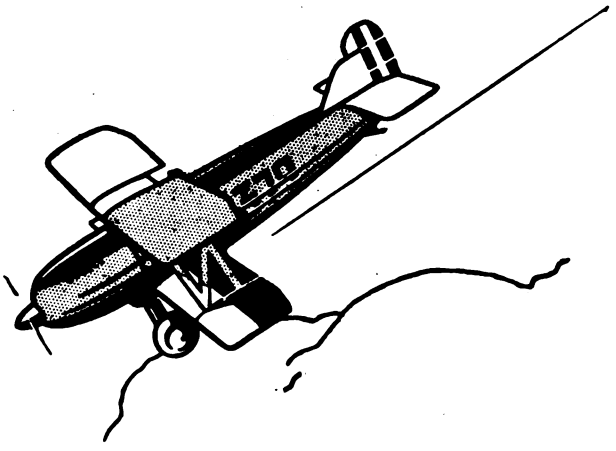
ABOVE AND BELOW



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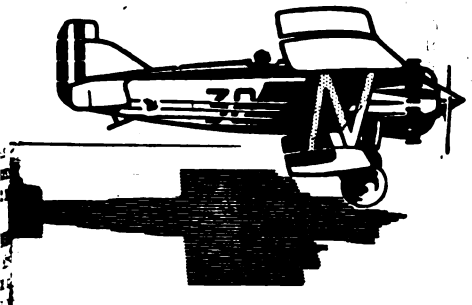

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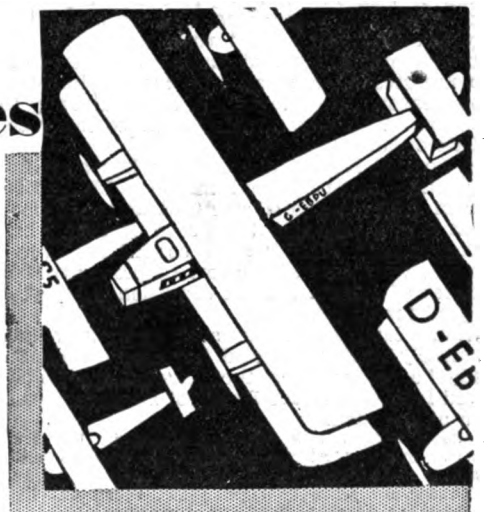

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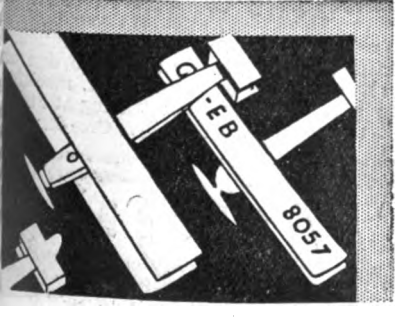

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THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 8; Monday, 14; Tuesday, 17, Wednesday, 9; Thursday, 19; Friday, 16; Saturday, 2.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 29, passengers 148, freight 10¼ lbs. India Route: Inward, passengers 0, mail 791 lbs.; outward, passengers 0, mail 771 lbs.

AIR UNION:

Paris—London: Machines 26, passengers 75, freight 12¼ tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 7, passengers 15, freight 3¾ tons.

SABENA:

Brussels—London: Machines 6, passengers 7, freight 2 tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London: Machines 16, passengers 8, freight 4 tons.

MISCELLANEOUS:

British machines 1, passengers 0.

Foreign machines 0, passengers 0.

Total number of trips by British machines, 30, carrying 148 passengers. Foreign machines, 55, carrying 105 passengers.

COMPARATIVE FIGURES.

Week ending Nov. 16:
Machines, 85; Passengers, 353; Crews, 213; Total personnel, 566.
Corresponding week, 1928:
Machines, 89; Passengers, 362; Crews, 175; Total personnel, 537.
Corresponding week, 1927:
Machines, 79; Passengers, 304; Crews, 144; Total personnel, 448.
Corresponding week, 1926:
Machines, 50; Passengers, 133; Crews, 65; Total personnel, 198.
Corresponding week, 1925:
Machines, 43; Passengers, 111; Crews, 52; Total personnel, 163.
Corresponding week, 1924:
Machines, 61; Passengers, 134; Crews, 76; Total personnel, 210.
Corresponding week, 1923:
Machines, 31; Passengers, 57; Crews, 49; Total personnel, 106.
Corresponding week, 1922:
Machines, 65; Passengers, 151; Crews, 121; Total personnel, 272.
Corresponding week, 1921:
Machines, 44; Passengers, 87; Crews, 71; Total personnel, 158.
Corresponding week, 1920:
Machines, 47; Passengers, 85; Crews, 57; Total personnel, 142.

CROYDON NOTES.

For the past ten years, those of us who have spent Armistice Day each year at Croydon Aerodrome have found the two minutes' silence less impressive and less inspiring than it ought to be. We have never had more in the way of organisation than a couple of maroons, the first of which has almost invariably caught us in the most awkward positions and places.

We have been suddenly paralysed whilst buying a penny stamp or whilst attempting to obtain a packet of cigarettes from a refractory machine, and we have stood uncomfortably to attention on the tarmac, or half-way upstairs. One year an unfortunate individual was frozen to immobility for two minutes on a small iron ladder, half-way up the old neon beacon in an icy wind, and naturally nearly died of exposure. This sort of thing could so easily be avoided with a little organisation.

In London human organisation has gone far towards the production of an annual miracle. Man-made or not, the sudden stillness and silence that descends upon that tumultuous city is very like the Peace of God, which passeth all understanding. Under such conditions, even the worst of us come very near to the sort of prayer that matters. Two minutes of such a mental condition every year is bound to be good for us all.

With a large population such as we now have at Croydon, a suitably reverential and impressive ceremony could very easily be arranged on the lines of the following letter received from one of the Heads of Departments of an Air Line here at Croydon.

I do not know how you feel about it, but it seems to me that the two minutes' silence on Armistice Day in an office is a very awkward period, and I certainly must say that I miss a service which I attended for seven or eight years, which was held on the Baltic Exchange, of which body I was a member.

The main Hall of this building is very suitable for a short service of this kind, and I do feel that the centre of Civil Aviation should officially recognise this service.

On the Baltic we used to borrow two or three trumpeters, which we placed in a gallery who sounded the Last Post and the Reveille. The service generally consisted of a hymn followed by an address by the Bishop of Willesden.

I am sure some local Clergyman would be only too pleased to officiate in a similar capacity.

I am giving this suggestion for what it is worth, feeling that you have possibly similar ideas on the subject as myself.

It only remains to be said that such simple organisation as is necessary should be undertaken by the Chief Aerodrome Officer, and to suggest that a local clergyman who would be very pleased to officiate would be the Rev. Donald Robins, who is an old friend of many of us. He is an ex-air-line pilot, and is the ideal man to invite for November the eleventh, next year.

Once upon a time the environs of Fleet Street were known as Alsatia, where the worst rogues, crop-eared pick-locks, cut-purses, gallows-birds and scoundrels of the Kingdom had their haunt. Just as the grey rat from Norway, being the more unscrupulous rodent, was able to drive the black rat from the sewers of London, so Journalism ousted the simple-minded cut-throats from Alsatia and reigned in their stead.

Truth was said to reside (precariously no doubt) in the bowels of a well connected with the Fleet Ditch, but the first act of Journalism was to brick up that unfortunate lady and build a Printing House on the site of the well. After that they went about their business with a clear conscience.

The Devil chuckled when he saw the Journalists take their place next door to the Lawyers, but he simply howled with mirth when the B.B.C. came to Savoy Hill all nice and handy, and since subterranean mirth must have a vent the gas and water mains in Holborn were disrupted and paving stones flew about, which is a mere matter of history.

The above is merely a prelude to the fact that one of the Daily Papers has gone ga-ga on Aviation matters lately, and on possible and impossible occasions, has burst forth into a pimply eruption of scare headlines containing such gems as "dire peril," "unparalleled escape" and "thrilling adventure" all applied to aircraft or airships which were mostly quietly pursuing their lawful occasions.

The paper in question has recently led its public to believe that an aeroplane landing at Lympne on a windy day, did so on one wing tip, which it then proceeded to drag along the ground for some distance. After this, the aeroplane flew to Croydon *undamaged*.

Another comic paper story was that a machine had "crashed" scattering a large crowd, but was found to be quite O.K. to continue its journey next day.

This particular story the paper had to contradict with humility the following morning. Like the dog in the Bible however, some people rather enjoy eating their own words.

Incidentally, one particular newspaper has a so-called correspondent at Lympne who is a first-class liar—an example of a grave-yard ghoul thinly disguised as an imitation human being with bubonic plague and mental leprosy. He is asking for a bath in the local horse-pond and a smart rub down after it with tar and feathers. He thinks nobody knows who he is, but his anonymity is rather rapidly wearing thin. *Verb. Sap.*

Wandering Troubadours in Argosies and W.10's are infesting the Near East at present. One of them, well known at Croydon for having the gift of tongues pretty highly developed, is said to have impressed the natives at Athens when he descended amongst them from on high, with a slight bump, by remarking, "*Oi, Polloi! Where's the pub-opolis?*"

The Near East is now uncertain whether to collar this pilot as a souvenir and keep him in the local museum in a bottle, or to regard him as a mixture of messiah and mad mullah and start a Holy War about him. At present they are temporising by paying him divine honours, served in a quart mug.

Services have been considerably interrupted by fog and bad weather lately. Friday, the 15th, was one of those days when Croydon was enveloped in fog all the morning whilst the sun shone at Biggin Hill, and a number of services were cancelled. Saturday was a much worse day and only one little Golden Ray pierced the gloom,—outward bound at any rate.

Sunday was not so bad, but thick fog enshrouded Croydon all the morning on Monday. First away from Croydon on Monday morning by several hours was the K.L.M. machine which flew in perfectly good weather above the fog at about 1,000 ft. or so, and got through quite happily. Croydon be-

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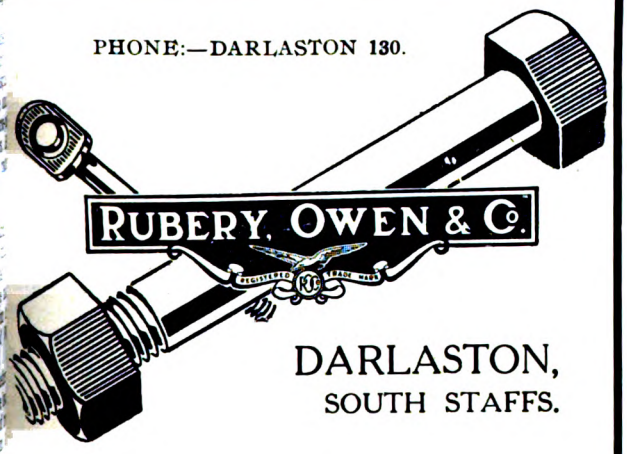

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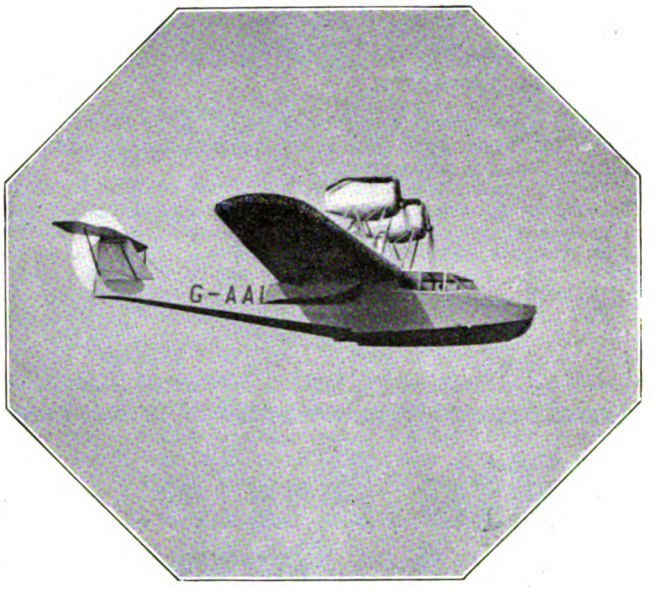
CABIN FLYING BOAT.



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Equipped with one, two, or three engines, the smaller model accommodates 4 cabin passengers, the larger type seating eight people. The twin or triple-engined machines fly level even with one unit out of action.

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haved alarmingly in the afternoon of Monday, when large solid chunks of white fog drifted across the Aerodrome and then completely faded away. One minute there was excellent visibility and the next moment about one yard.

The sort of fog, tempest, rain and frost we have had recently takes about a million years to destroy a mountain by erosion. Not so with our Terminal Block, which will probably be gone in another three weeks or so of bad weather. Not long ago the Meteorological Office had the day's rainfall come into the office and measure itself before their eyes and several Customs Officers have taken free baths up to the ankles when they opened their door in the morning.

All the roofs, walls, doors and windows let in rain and wind, and we expect springs to bubble up through the flooring at any moment. The Authorities say its quite all right and that the building is merely settling on its foundations. This is just what we feared, and there is nothing we dislike so much as working in an office where the roof touches the floor.—SPRY.

CELLON DOPE.

Although the new works of Cellon Ltd. at Ham are not yet fully in operation, two output records have been broken during the past two months.

In September, when the firm had not started to manufacture at the Ham Works, they were called upon to deliver the largest amount of dope since the end of the War.

In October, the first month in which a portion of the new works was operating, they had the largest output of "Cerric" Lacquers in the history of the company.

For the first four months of the present financial year, the dope output was far in excess of any previous year, from which it would appear that apart from the aircraft industry having absorbed larger quantities of Cellon dope, the demand has also increased in other directions. So far only one Mixing Shop is working at Ham and the old Mixing Shop at Richmond is still working at full capacity.

Mr. A. J. A. Wallace Barr, who is the founder of the firm, who is also the moving spirit, is to be congratulated on this new business success.—G. D.

COMPANIES INCORPORATED OUTSIDE THE UNITED KINGDOM.

COMPAGNIE GENERALE AEROPOSTALE.—Particulars of Compagnie Generale Aeropostale were filed on Oct. 25, pursuant to Section [illegible] of the Companies (Consolidation) Act. The capital is Fcs. [illegible] in 40,000 shares of Fcs. 500 each. The company was incorporated in France, to carry on commercial and industrial business relating to the manufacture, purchase and sale of aeronautical material; to create and exploit any lines of aerial navigation, etc. The registered office is at 92, Avenue des Champs-Elysees, Paris. The British address is at 52, Haymarket, S.W.1, where E. P. Grosfils, London Manager of the Air Union, is authorised to accept service of process and notices on behalf of the company. The directors are: M. Boulloux-Lafont, M. Boulloux-Lafont, The Marquis Beppo de Massimi, R. de Burlet, O. P. Dhe, R. Fould, P. G. Latecoere, A. Lazard and Marquis Thibaud de Solages, all of Paris; A. Fortoul of Neuilly; J. Praissman of Marseilles; M. Portait of Santiago; and Count Emmanuel de Sieyes of Buenos Aires.

PERSONAL NOTICES.

FORTHCOMING MARRIAGE.

DUNCAN—DURRAN.—The wedding arranged between Mr. Gordon K. Duncan, D.F.C., younger son of the late Mr. John Duncan and Mrs. Duncan, and Miss Augusta Mildred Durran, elder daughter of the late Dr. John G. Durran and of Mrs. Durran, will take place on Dec. [illegible]

BIRTHS.

DU CANE.—On Nov. 10, Victoria, wife of Peter Du Cane—a daughter (premature).

GORDON-DEAN.—On Nov. 11, at "Hillside," Caterham Valley, Surrey, to Helen, wife of Wing Cdr. H. Gordon-Dean, R.A.F.—a son.

MACLEAN.—On Oct. 11, at Portmore Nursing Home, Simla, to Phyllis, wife of Wing Cdr. Lachlan Maclean, R.A.F.—a son.

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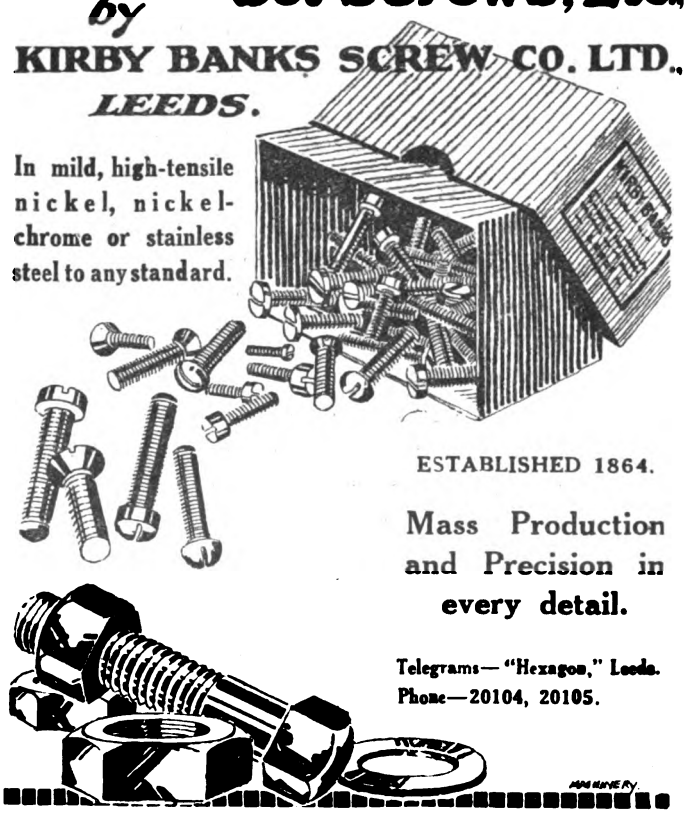

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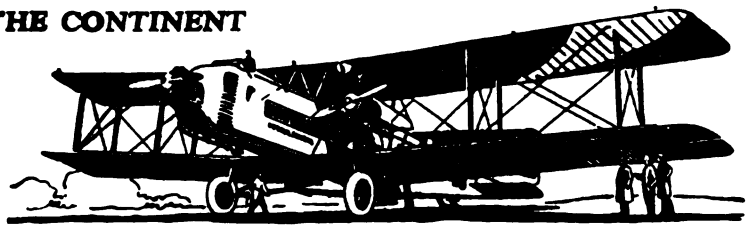

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the convenience of Advertisers, replies can be received the office of THE AEROPLANE, Cannon House, Pilgrim Street, London, E.C.4.
cial PREPAID Rate—18 words 4/6, 3d. per word r; 13 insertions, 18 words, 4/-; 26 insertions, 18 ds, 3/6; 52 insertions, 18 words, 3/-, 2d. per word after. Situations Wanted ONLY—18 words 1/-.

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Petrolmotor Castings, partly machined, ½ horse (9s. 9d. per set). Catalogue 3d. Madison's Works, Wade Street, Littleover, Derby.

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THE AEROPLANE

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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C.G.Grey

DEC 16 1929

THE CONTROL TOWER.

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NOV. 27, 1929.

THE AEROPLANE

Incorporating

Aeronautical Engineering

VOL. XXXVII No. 22.

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ON VARIOUS THINGS.

One of the most curious things about running a newspaper, and one of its charms, is the fact that quite unconsiderable, if not unconsidered, words or phrases which are published in any issue are apt to bring forth protest or commendation from readers, with the result that a day or so after a paper has been published the Editor's postbag partakes of the nature of a "Lucky Dip" with all its attendant charm. So let us discuss some of the things which have come in this week.

THE CLUB QUESTION.

Last week one happened to remark that the Flying Clubs are not quite so important as some people seem to think they are. This, together with a suggestion that the influence of the Flying Clubs is somewhat on the wane, has produced indignant protest from two such important persons as Mr. Harold Perrin and Mr. Alan Goodfellow, both of whom agree with a correspondent last week in complaining that the Flying Clubs' notes have been omitted from THE AEROPLANE for some considerable time.

Mr. Goodfellow's views whether in attack or defence are always worth having, so his letter is published herewith:—

The views of your correspondent accurately represent the feelings of most of us in the Light Aeroplane Clubs about your attitude towards Club Notes. For years we racked our brains to supply you with light reading matter on the lines of your Croydon Notes, believing that they might at least act as a sedative to your subscribers, whose nerves had been shattered by a perusal of your blood-and-thunder editorials.

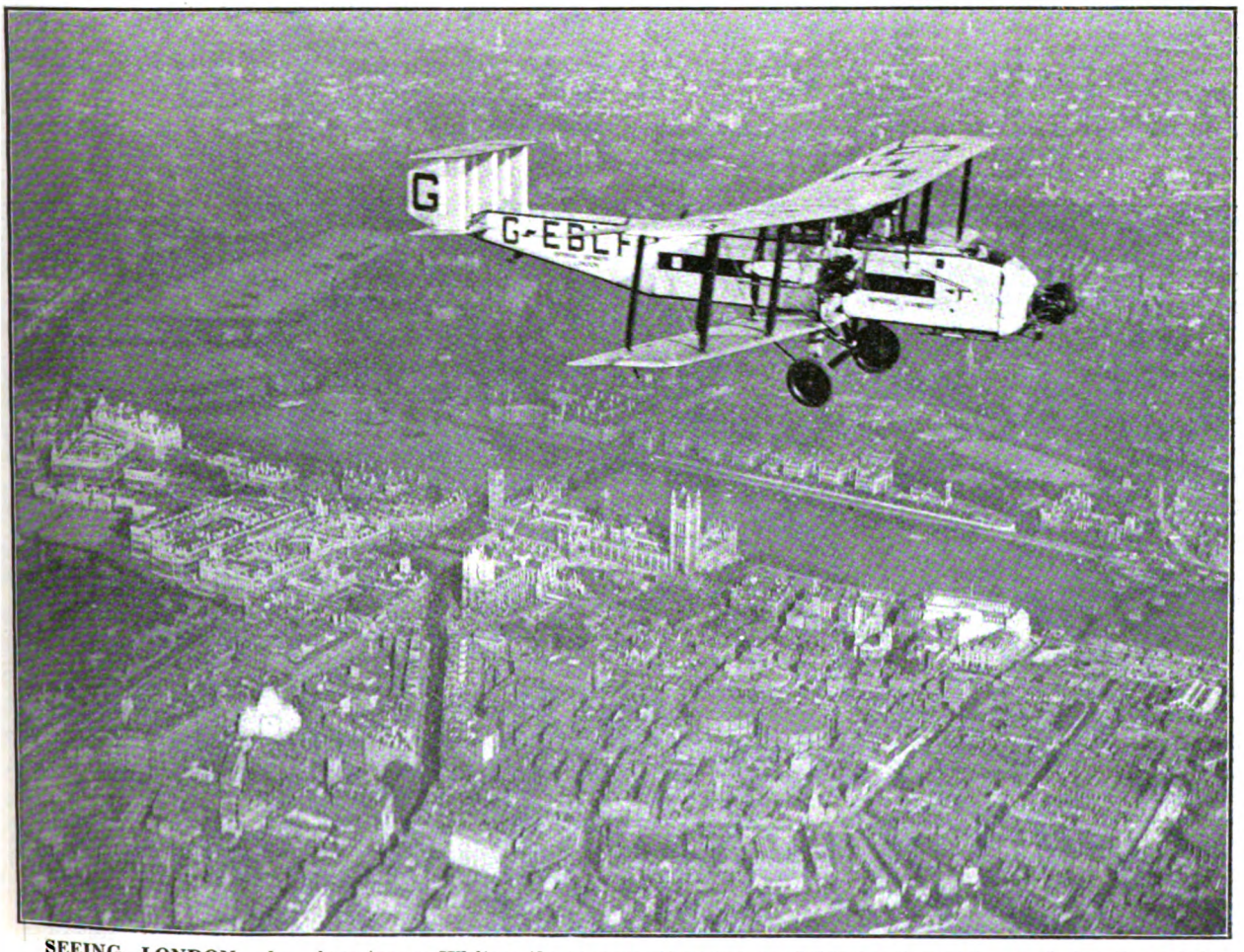
Possibly we lacked the brilliance of "Spry" and "G.D.," but at least we did our best, and your attitude was not very encouraging. In spite of this my own Club still sends you *The Elevator*, together with Club Notes, whenever we can think of anything sufficiently solemn and portentous to be worthy of THE AEROPLANE'S pages. You cannot fairly blame any Club which does less in view of your rather discouraging attitude towards them in the past and at the present.

Some time ago you were referred to in the House of Commons as "a caustic but not uninformed writer." Judging by your recent remarks on the Light Aeroplane Clubs, you are in danger of forfeiting one word out of that description.

To assert that the Clubs are a decreasing force when the statistics

"THOU ART IN LONDON—IN THAT PLEASANT PLACE WHERE EVERY KIND OF MISCHIEF'S DAILY BREWING."

(BYRON—*Don Juan*.)



SEEING LONDON.—An Armstrong Whitworth Argosy (Armstrong Siddeley Jaguars), used by Imperial Airways Ltd. as a tea-plane, over the City of Westminster. The Houses of Parliament are in the middle of the picture, with Westminster Abbey below them, and the Government Offices bordering on St. James's Park on the left. Victoria Street runs vertically up the middle of the picture. St. Thomas's Hospital is on the far bank of the river, directly under the right wheel of the Argosy.

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show that their membership and flying hours are increasing year by year is hardly logical. To assert that more machines are purchased by private owners than by the Clubs ignores the fact that a very substantial percentage of the private owners are drawn from the ranks of the Club members.

It is perfectly true that the importance of amateur organisations in flying will ultimately decrease as the importance of commercial organisations increases. It is perfectly obvious, however, that under existing conditions it will be a good many years before commercial aviation within our own shores can become a substantial economic factor.

Meanwhile, unless private and Club flying is fostered and supported the progress of flying as a whole in this country (including commercial aviation) will suffer.

In conclusion, one of the chief obstacles to flying at home is the uncertainty of our weather. *Must* you add to the prevailing bad visibility by constantly going up in clouds of steam?

Our Policy.

This letter shows that Mr. Goodfellow has to some extent rather misunderstood the general policy which inspires the conduct of The Aeroplane. It is true that this paper does try to amuse as well as instruct. But when the amount of space in the paper is restricted, then amusement must give way to instruction, and we who compose the Staff even cease being funny ourselves.

While the Club movement was still quite young, perhaps there was more need for amusement than for instruction. The Club Instructors were supposed to do all the instructing that was necessary, and the idea of The Aeroplane was, rather, to amuse the Members and to give them something to talk about besides what they learned from their Instructors.

In those early days of the Club movement, those who wrote the Club Notes were allowed a considerable amount of latitude, and a great deal of space was given to jests and jokes which could only interest the members of individual Clubs, or to inter-club jokes which might in a way stir up friendly rivalry between Clubs.

When the Club movement got going properly and quite a considerable amount of flying was being done, we had hoped that really valuable knowledge which was gained by one Club might be transmitted in the Club Notes to other Clubs. We hoped that thus in course of time we might collect something like a series of useful hints and tips for those who flew or maintained or operated aircraft.

Unfortunately, either the Club Secretaries or the Club Members never quite seemed to grasp this idea. The jokes became more and more feeble, and so much was happening in the development of aviation as a whole just then that space could not be spared for these jokes and for strings of figures and strings of names which were of no real interest to anybody except the members of the Clubs.

So, in the hope of making the Club notes more interesting, and at the same time, hoping to save space, we asked the Club Secretaries whether they would in future send in their Club notes once a month, instead of once a week. The idea was that they would then have, at any rate, three weeks in which to extract useful information from the ground engineers and the instructors, and from those Club Members who were really doing any serious flying, and would have time to put them on paper in a way which would make them of value to all readers as well as the actual Club members.

The Clubs' Failure.

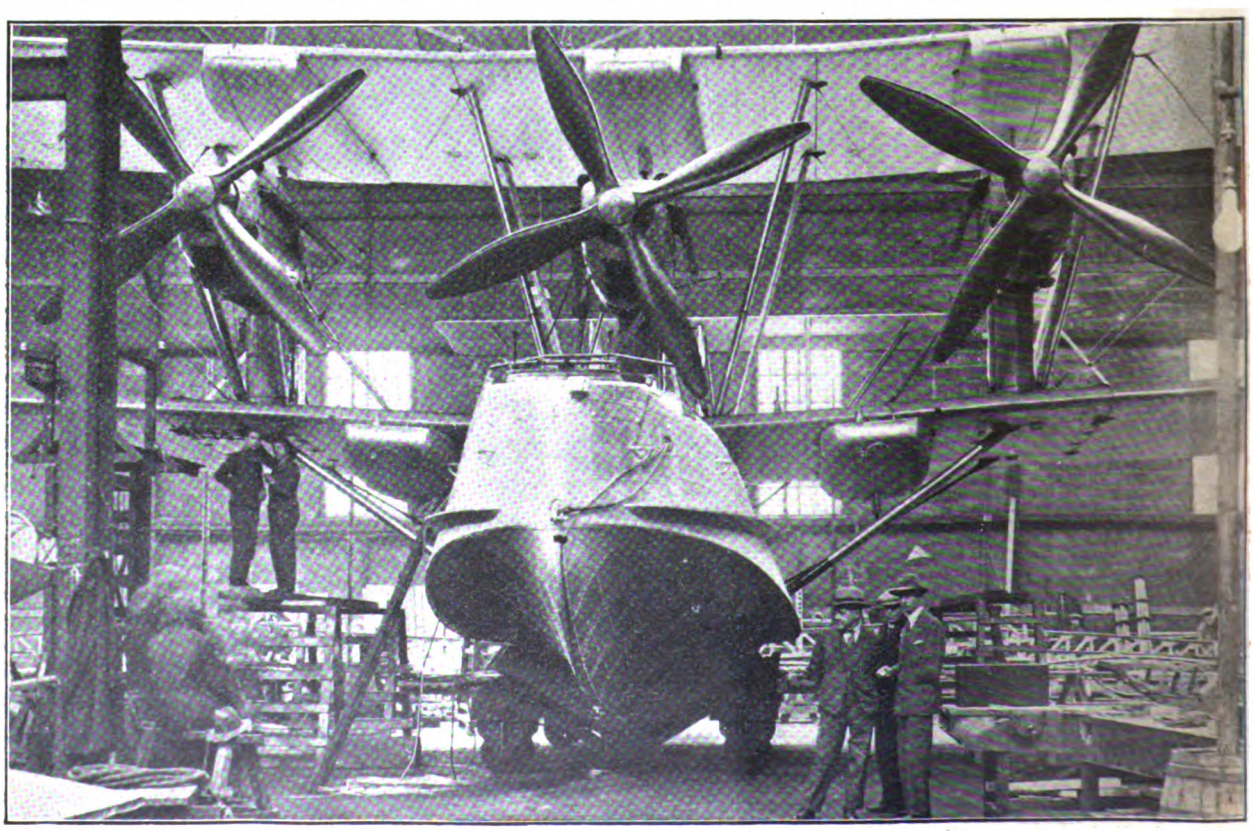
Instead of such in fact happening, what did happen was that Club Secretaries forgot altogether to send in their Club notes at the end of the month, or at the beginning of the following month. And so instead of having, as we used to have before, something like a regular weekly record of Club doings, we only got a very irregular record of the Clubs' doings during the previous month. Also, much to our disappointment, these notes which were sent in once a month were even less interesting than those which had previously been sent in once a week.

Probably one of the reasons why the Club Notes have not contained the type of information that would have been really valuable to the progress of aviation, not only in this country, but all over the World, is simply that the majority of Club Secretaries are not technical men of any kind, and are far more concerned with the number of hours' flying done by their Club members than they are with the method by which the ground engineers and their skilled mechanics in the workshops manage to get so many hours flying at such small expense. From the purely secretarial point of view hours of flying are wrapped up in the effort to acquire the Government subsidy as cheaply as possible.

Obviously the smaller the number of hours flown the less is the cost of getting each pupil through his test for the "A" class certificate which entitles the Club to claim the Government subsidy on that particular pilot. But equally obviously it is not part of the Secretary's job to discover precisely how the number of hours is reduced. Here and there one particular Secretary might take a keen interest in the mechanical processes by which the cost of flying was kept down, but if so he was probably much too busy on his ordinary secretarial duties to have time to write up anything like a description of those methods for publication.

Helping the Clubs.

The end of it was that we had no alternative but to give up the Club Notes altogether, except when some individual Secretary or Member sent along something which was of genuine general interest. Naturally, full publicity was given to the dates of Club Meetings, whether Displays or Pageants on a big scale or merely purely local events,—that is so far as Club Secretaries thought it worth their while to keep this paper in touch with their doings.



EMPIRE PATROL.—Iris III (Rolls-Royce Condors) just before being launched from the Blackburn Factory ugh. Major Rennie, the designer, is seen on the right.

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Moreover, whenever a Club has put up anything in the way of a Display or a Pageant this paper has made a particular point of being very fully represented and of giving an account of everything that was done at the display. And we can fairly claim that no other paper can compare with THE AEROPLANE in the fulness of its descriptions or the quality of its pictures of flying meetings.

Certainly no Club which has displayed any energy in this particular way can complain that its activities have not been fully dealt with in THE AEROPLANE. In fact, if the space which last year and earlier was devoted to Club Notes had been given to that same subject this year, the only way in which it could have been done would have been by cutting down the space given to descriptions and illustrations of the many highly successful Club Meetings which have been held during the past Summer. In this way, at any rate, THE AEROPLANE can claim that it has given the Clubs all the publicity which they deserve.

Whether so much publicity can be given to Clubs during next year is another question. That must depend entirely on what sort of activities the Clubs themselves show.

THE PARTING OF THE WAYS.

The dividing line between light aeroplanes and commercial aeroplanes seems to be fading out. The International limitations of weight which define a light aeroplane are obviously useless, except for pure competition purposes. The light aeroplane which a private owner buys in which to go touring is considerably heavier than is the light aeroplane as defined by International agreement.

Developments may trend in either of two directions. Either somebody may produce a very much lighter aeroplane, which can be used either for Club work or for touring by the private owner, and may be inside the International limit of light aeroplanes. Or on the other hand somebody may produce a very much bigger and more powerful and heavier aeroplane at such a low price that the Clubs and private owners will find that it pays as well, or is just as cheap to run, as is what we call a Light Aeroplane to-day. A robustious aeroplane which uses more petrol may be cheaper to run than a delicate machine with light consumption.

From another standpoint, both the lighter and more efficient aeroplane and the bigger and more powerful aeroplane may both cost considerably more than does the existing type of so-called Light Aeroplane, and so the Clubs may go on using their existing type of training machine for years to come, while the private owners' aeroplanes drift off in the direction of higher efficiency and lighter weight and the genuine commercial aeroplane tends on the other hand towards greater size, weight and power.

PROGRESS.

After all, the chief function of THE AEROPLANE newspaper is to help forward the progress of aviation and not to record merely the doings of those who are standing still. Of all the various phases of aviation, that which is usually called commercial aviation is now becoming the greatest factor towards progress. This seems very natural, for after all if commercial aviation is to become a commercial proposition obviously it must have the most highly efficient aircraft and engines which are most economical to run.

Admittedly, great progress is being made in the design of Service aircraft. For example we have in the Hawker Hart and the Fairey Firefly and one or two other forthcoming developments, aeroplanes which have a speed of well over 200 miles an hour with full war equipment. In fact, our fastest high-speed fighter approximates quite closely to the purely racing aircraft which won the Schneider Trophy not so very many years back.

This, by the way, is rather an argument up against those who constitutionally object to the expenditure of Government money on what they are pleased to call racing flying, —though in fact this particular class of flying deserves rather to be classed as scientific research, or at any rate as technical development.

Apart from that the designs of Service aircraft are more or less stereotyped by what the technical experts of the Air Ministry consider to be the needs of the Royal Air Force. Furthermore, the Air Force is still more concerned with performance than it is with economical operation. Consequently aircraft built for the Royal Air Force are not likely to be designed with such a keen eye on sheer efficiency and cheapness of operation as are those designed purely for commercial work.

On the other hand, Club methods of training are fairly well standardised and the requirements of Club flying seem to have a tendency to stereotype the designs of Club training machines, almost as rigidly as do the requirements of the Royal Air Force. Therefore, naturally we must look for progress to the demands of commercial aircraft operators for more efficient machines and the demands of private owners for machines which are cheaper to buy and cheaper to operate and safer to fly and more comfortable to fly.

The private owner is a very considerable factor in aviation. Those who have already got, or who have had a chance of seeing, the interesting little Register of Aircraft recently published by Mr. Rupert Preston, cannot fail to be struck by the large number of private owners of aircraft in this country. Actually at the present moment there are probably many more aeroplanes owned by private owners than there are by aircraft operating companies. But sooner or later the bulk of the aircraft in this country must be owned by commercial firms. We are, in fact, only at the very beginning of commercial aviation.

NEW DEVELOPMENTS.

For the matter of that, we are only at the very beginning of aircraft design. There may be, in fact there must be, ways of making aeroplanes very much more efficient than they are at the present moment. Some day, no doubt, we will find that flying is the cheapest and the safest as well as the quickest method of transport. But that time is not yet, and we must be content at the moment with things as we can find them.

The most important thing to remember is that now, for the first time in the history of aviation, powerful financial groups are beginning to take a real live interest in commercial aviation. When people of this kind, who are accustomed to getting value for their money, start out to use aircraft as they should be used, they will find existing types of aircraft are of very little use for their needs. The result must be that they will insist on new designs, and that will immediately produce definite progress in aviation.

There is one outstanding example for a start,—the demand of the Aircraft Operating Company Ltd. for a special type of aeroplane with a special performance for air survey work. This machine was built to their requirements by the Gloster Aircraft Co. Ltd.

In building this particular aeroplane the Gloster people seem to have produced a machine which definitely has a higher performance in certain directions than has any other aircraft of its power. It does not happen to be designed particularly as a passenger-carrying aeroplane but it has extraordinary possibilities purely as a freight machine.

Specialised demands in other directions are bound to produce specialized designs. For example, in the United States there has been a demand for a special type of aeroplane to carry mail at high speed without any accommodation for passengers at all. This type of machine is now being built in vast quantities, according to our ideas at any rate, and it is doing very good work on the American Mail lines.

(To be continued.)

MODERN METHODS.

The following letter was received at this office on Nov. 20:—

22, Birchin Lane, Cornhill, London, E.C.3.

Dear Sir,—As several gentlemen connected with that Section of the Technical Press in which our Advertisements have been appearing have requested me privately to let them have advanced copies of the Prospectus to enable them to acquire a holding on bedrock terms, I am extending the privilege to all the Technical Press concerned and enclose herewith Prospectus and Application form for your personal use.

An interesting announcement will appear in *The Times*—*Financial Times*, etc., on Wednesday.

I enclose a notice which you might wish to reproduce or comment upon in your next issue.

I take this opportunity of thanking you for your interest and support in the matter of Editorial Notices, Articles, etc.

With compliments, Yours faithfully,
(Signed) P. W. SHOWELL (Publicity Manager).

With this letter was enclosed a prospectus of Metals Coating Company Ltd. soliciting subscriptions for an issue of 500,000 shares of 5s. each.

The Directors are:—

Frank B. Goodchild, "Shortmead," Hadleigh Road, Leigh-on-Sea (Chairman); Ernest Beck, 21, Fitzgeorge Avenue, West Kensington, London, W.14; William John Thompson, Harborough Hall, Blakedown, Kidderminster; Harry James Williams, 7, Iverna Gardens, Kensington, London, W.

This is one of the most amazing communications that one has received in something like twenty-five years' connection with newspaper work in its various phases. About the first thing which one learned in that excellent school the House of Iliffe of Coventry was that nobody connected with a newspaper could possibly have a financial interest in any firm in the business with which his paper was connected. Only by such entire dissociation can a newspaper be impartial, and do its duty by its readers.

So that there may be no doubt on this subject so far as THE AEROPLANE is concerned no notices concerning this firm and no comment about it will appear in THE AEROPLANE, nor will any more of its advertisements be taken. Perhaps the Directors whose names are given above would like to explain this extraordinary action on the part of their Publicity Manager.—C. G. G.

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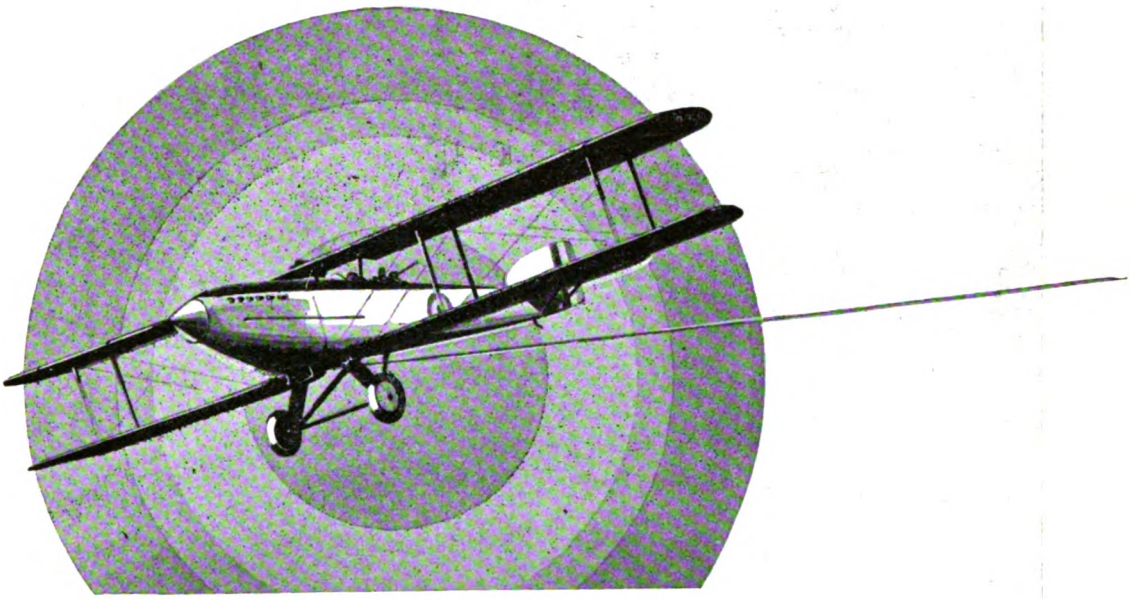

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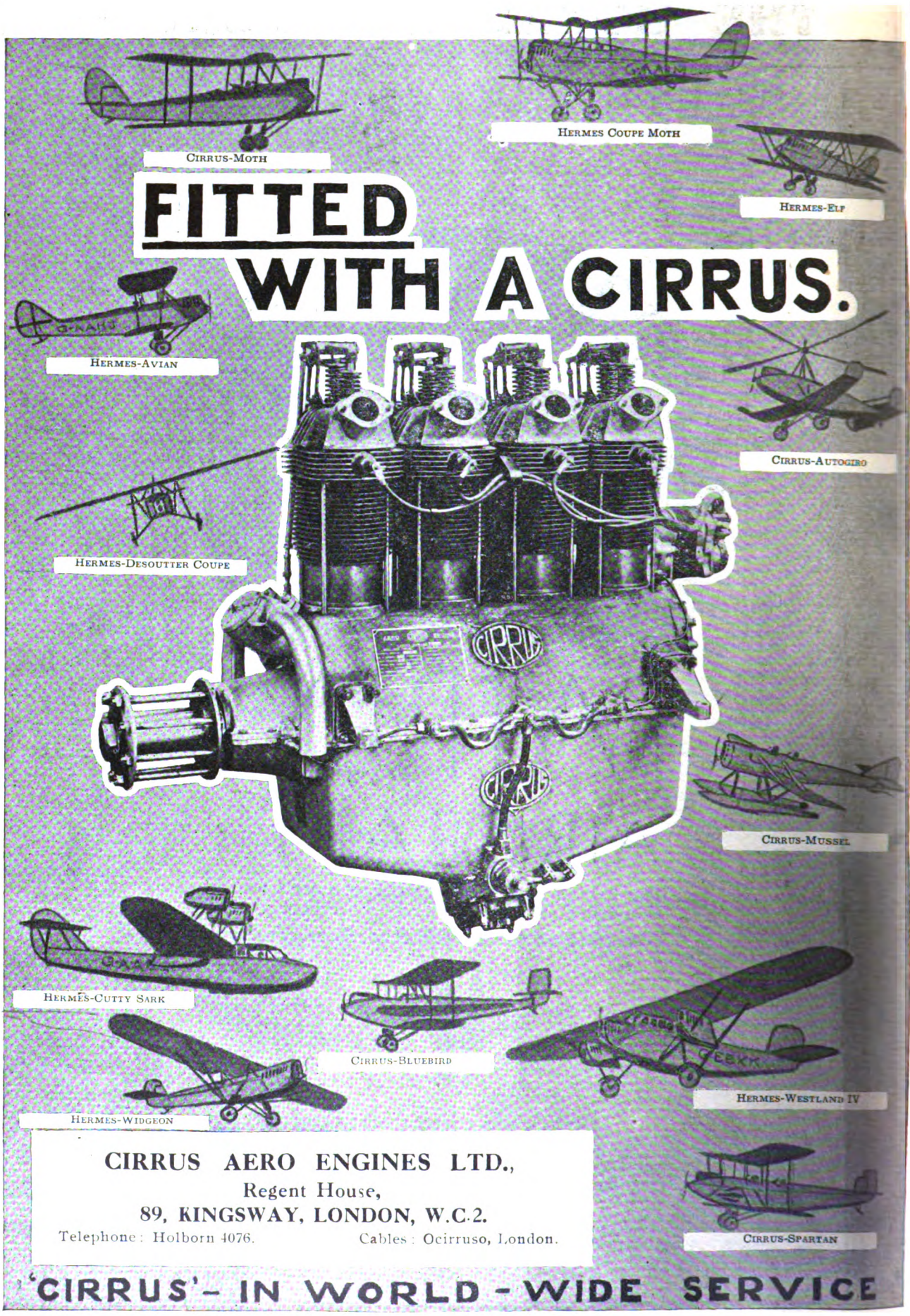

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THE ROYAL AIR FORCE.

The London Gazette.

Air Ministry, November 19.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—Capt. D. A. Fletcher (Camerons, R.A.R.O.) granted a S.S. comn. as a Flt. Lt. for three years on the active (Nov. 4); Lt. G. R. M. Robertson, R.N., is re-attached to the A.F. as a Flg. Off. with effect from Nov. 2 and with seniority of ne 16, 1924. Plt. Off. G. C. Butler is promoted to the rank of Flg. (Oct. 8); Flg. Off. R. Matheson takes rank and precedence as if appointment as Flg. Off. bore date Sept. 17. Reduction takes effect m Sept. 21; Plt. Off. B. F. Cox is placed on the retired list on ount of ill-health (Nov. 6).

The following Air Commodores are placed on the retired list at ir own request (Nov. 15):—B. C. H. Drew, C.M.G., C.B.E., E. L. rrard, C.M.G., D.S.O.

Plt. Off. E. J. Brighton is transferred to the Reserve, Class A ov. 19); Lt. Count A. D. R. Metaxa, R.N., Flg. Off., R.A.F., re- quishes his temp. comn. on return to Naval duty (Sept. 26).

MEDICAL BRANCH.—The following Flg. Offs. are promoted to the nk of Flt. Lt. (Nov. 15):—D. A. Wilson, F. E. Lipscomb, M. Clancy, P. O'Toole, G. H. J. Williams, S. B. S. Smith, V. V. Brown, J. F. Govern, M.B., W. Heron, M.B. Lt. C. M. Leckie (General List, my, Dental Surgeon) is granted a temp. comn. as a Flg. Off. ental) on attachment to the R.A.F. (Oct. 18). Capt. R. E. Edwards rmy Dental Corps) is granted a temp. comn. as a Flt. Lt. (Dental) attachment to the R.A.F. (Nov. 8); Flt. Lt. P. P. Hogan (Capt., my Dental Corps) relinquishes his temp. comn. on return to Army ty (Nov. 8).

ERRATUM.—Gazette of Nov. 12.—Promotions to Flt. Lt. and Sq. r.—For Oct. 13 read Nov. 13.

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—The Honourable Henry C. H. Bathurst is anted a comn. in the Special Reserve as a Plt. Off. on probation ct. 26); Flg. Off. R. P. D. Brailli is transferred from Class A to ass C (Nov. 8).

Appointments.

Week ending November 25.

GENERAL DUTIES BRANCH.—Air Vice-Marshal T. I. Webb-Bowen, C.B., M.G., to R.A.F. Depot, Uxbridge.

Wing Commanders E. A. B. Rice, M.C., to No. 216 Sqdn., Middle ast, to command, 9/11. A. C. Wright, A.F.C., to R.A.F. Depot, xbridge, attending course at Senior Officers' School, Sheerness, 2/11. P. Don, to No. 502 Sqdn., Aldergrove, to command, 2/11.

Squadron Leaders C. B. Cooke, to Night Flying Flight, Biggin Hill, /11. R. M. Drummond, D.S.O., O.B.E., M.C., to R.A.F. Depot, xbridge, 15/11. A. P. Maurice, D.F.C., to E. and W. School, Cran- ell, 11/11. R. Young, to No. 9 Sqdn., Manston, 18/11. C. E. W. Foster, to R.A.F. Depot, Egypt, 9/11. P. C. Sherren, M.C., to A. and G. School, Eastchurch, 3/11.

Flight Lieutenants E. A. C. Britton, D.F.C., to No. 1 (Indian) Group H.Q., 8/10. T. C. Luke, M.C., to No. 21 Group H.Q., West Drayton, 1/11. L. Wanless-O'Gowan, to R.A.F. Depot, Uxbridge, 10/9. C. W. Attwood, to R.A.F. Depot, Uxbridge, 11/11. W. R. Day, to H.Q., Fighting Area, Uxbridge, 17/10. B. Ankers, D.C.M., to No. 2 (Indian Wing) Station, 13/10. A. Jerrard, V.C., to No. 5 F.T.S., Sealand, 23/10. M. D. Ommanney, to No. 28 Sqdn., India, 9/10. N. S. Paynter, to No. 1 (Indian) Group H.Q., 23/10. I. E. Brodie, to R.A.F. Depot, Uxbridge, 12/10. J. E. L. Drabble, to No. 45 Sqdn., Middle East, 1/11. W. J. Pearson, to No. 55 Sqdn., 'Iraq, 9/11. D. A. Fletcher, to H.Q., 'Iraq, 9/11.

Flying Officers A. H. Wheeler, to Aircraft Depot, 'Iraq, 9/11. L. B. McGoverne, to R.A.F. Depot, Uxbridge, 28/9. W. J. Pickard, to Aircraft Park, India, 7/10. P. G. J. Atkinson, to No. 11 Sqdn., India, 3/10. R. C. Greenhalgh, to No. 1 F.T.S., Netheravon, 7/11. J. S. Phillips, to No. 1 School of T.T. (Apprentices), Halton, 26/10. J. Rodger, D.S.M., to Station H.Q., Mount Batten, 5/11.

Pilot Officer M. E. Morris, to No. 12 Sqdn., Andover, on appointment to a S.S. Comn., 6/11.

MEDICAL BRANCH.—Flight Lieutenants C. W. Coffey, to H.Q., A.D.G.B., Uxbridge, 30/10. M. O'Regan, to R.A.F. Depot, Uxbridge, 17/10. P. P. Hogan, to R.A.F. Depot, Uxbridge, 21/10. R. A. W. Kerr, M.B., to Station H.Q., Mount Batten, 4/11.

Flying Officers A. E. Vawser, to R.A.F. General Hospital, 'Iraq, 8/10. H. C. S. Pimblett, M.B., B.S., to R.A.F. General Hospital, 'Iraq, 8/10. C. P. O'Toole, to M.A.E.E., Felixstowe, 7/11.

STORES BRANCH.—Flight Lieutenants H. Jones, to Station H.Q., Tangmere, 5/11. F. W. Taylor, to Station H.Q., Manston, 5/11. J. J. Ironmonger, to Station H.Q., Mount Batten, 4/11.

Flying Officers C. I. Fray, to R.A.F. Depot, Egypt, 19/10. W. A. Stagg, to No. 2 (Indian Wing) Station, 8/10. M. J. Scott, to No. 6 Sqdn., Middle East, 26/9.

ACCOUNTANT BRANCH.—Flight Lieutenant F. C. Langley, to M.A.E.E. Felixstowe, 11/11.

Flying Officer R. Cassels, to H.Q., 'Iraq, 9/11.

The Royal Air Force College.

The Air Ministry announces that the following appointment will take effect from Dec. 16, 1929:—

Air Commodore Arthur Murray Longmore, C.B., D.S.O., to be Air Officer Commanding, Royal Air Force, Cranwell, and Commandant of the Royal Air Force College in succession to Air Vice-Marshal Frederick Crosby Halahan, C.M.G., C.B.E., D.S.O., M.V.O., on the latter completing his three years' appointment.

AUXILIARY EFFICIENCY.—Marshal of the R.A.F. Sir Hugh Trenchard, Bart, G.C.B., D.S.O., presenting the Esher Trophy to Sq. Ldr. J. Fullerton, No. 602 (City of Glasgow) Bomber Sqdn., Auxiliary Air Force, in the City Chambers, Glasgow. Left to right: Sir David Mason, Group Capt. McNeece Foster, Sq. Ldr. Fullerton, Marshal of the R.A.F. Sir Hugh Trenchard, Lord Provost Kelly, and Capt. Menzies.

—(Photograph, McCrae, Glasgow.)

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Another Pioneer Departs.

Yet another pioneer of Service aviation is gazetted out of the Air Force this week, and will be deeply regretted.

Air Commodore E. L. Gerrard, C.M.G., D.S.O., R.A.F., was one of those first four officers who were allowed by the Admiralty in 1910 to learn to fly at somebody else's expense, —to wit at the expense of Mr. Frank McClean and Mr. G. B. Cockburn and the Royal Aero Club. His Royal Aero Club Certificate No. 76 bears the date May 2, 1911. Of the original four, Lieutenants Gregory, Samson and Longmore, R.N., and Lieutenant Gerrard, R.M.L.I., Air Commodore Longmore is the only one now left in the R.A.F.

Eugene Louis Gerrard was born in Dublin in 1881 and was educated at Warwick. He joined the Royal Marines in 1900 and was promoted Captain in 1911, when he had already learned to fly. He was promoted Major by Brevet in 1914 for his services in Belgium.

One has clear and very pleasant memories of Air Commodore Gerrard in those days when he was learning to fly. Being a Marine he was naturally known as "Soldier" to his three companions in this nefarious business of flying, and that curious feeling, which amounts almost to antagonism, between the Marines and their shipmates of the Navy produced in those early days of Service aviation that same keen spirit of emulation which it produces in naval gunnery to-day between guns manned by Marines and those manned by the Navy.

Captain Gerrard in 1911, the first aviator in the Royal Marines, worthily maintained the high reputation of that distinguished Corps for smartness and energy. Among all the pioneer pilots at Eastchurch, not only those who joined the Royal Naval Flying School there later on but among the early civil pilots, there were none who handled an aeroplane better than he did.

When War broke out in 1914 he had already been promoted Squadron Commander R.N. He went to Belgium with the first naval contingent and established his headquarters at Antwerp, where among his pilots were Squadron Commander Spenser Grey, and Flt. Lieuts. Marix, Newton Clare and Sippe, who had joined the Naval Air Service before the War.

Squadron Commander Gerrard led a number of raids into Germany from Antwerp. Among them was the famous raid in which Sq. Comm. Spenser Grey bombed the railway station at Cologne and Flt. Lt. Marix blew up the Zeppelin shed at Düsseldorf. And there was also that humorous incident in which Sq. Comm. Grey and Flt. Lt. Newton Clare dropped a small bomb by accident into the projecting piece of Holland and shook Holland morally to its foundations. Thereafter Sq. Cdr. Gerrard did a great deal of valuable work at Dunkerque until the Summer of 1915.

After that he was promoted to Wing Commander and put in command of a wing in the Eastern Mediterranean, first of all in the Gallipoli campaign and later in the operations against the Bulgars from Salonika. In 1916 he was made a Companion of the Distinguished Service Order, and few men have better deserved that distinction.

When the R.A.F. was formed in 1918 he was a Colonel commanding a Group. In June 1920 he was appointed to command the R.A.F. at Malta and in August 1921 he came back to England to do a course at the R.N. Staff College.

In February 1922 he was appointed to command No. 1 Group R.A.F., then at Kenley, where in January 1923 he was promoted Air Commodore. In 1924 he went to Palestine as Air Officer commanding and in August 1927 he returned to England as Air Officer Commanding Air Defence Group, which rank he held until he left the Service.

Besides the D.S.O., which he won in 1916, he was made a Companion of the Order of St. Michael and St. George in 1919. And he was given the Belgian Order of Leopold in September 1919.

During his long and distinguished Service career Air Commodore Gerrard has made a number of firm friends who will deeply regret his leaving the Service, and all of them, not only those who knew him in his earliest days as a pioneer, but those who served with him recently as an officer of high rank, will wish him every success in his future undertakings.—C. G. G.

Air Commodore Drew.

Air Commodore B. C. H. Drew, C.M.G., C.B.E., whose retirement from the R.A.F. is also notified this week, was not one of the pioneers of aviation, but his personal charm has made so many friends for him in the R.A.F. that his going will be as much lamented as if he were one of the pioneers.

Bertie Clephane Hawley Drew was born in 1880 at Ryde, Isle of Wight, and was educated at Marlborough and the R.M.C., Sandhurst. He was gazetted to the Indian Army in 1898 and appointed to the Indian Staff Corps in 1901. He was promoted Lieutenant in 1901 and Captain in 1907.

During this period he served in China in 1900 and on the North-West Frontier of India, 1901-2 and in Tibet, 1903-4.

He was appointed Brigade Major shortly after the outbreak of War in 1914 and after becoming a G.S.O.3 and then a G.S.O.2. and serving as a Major with the 23rd Sikh Pioneers (Indian Army) he was badly wounded. He became a G.S.O.1 at the War Office early in 1917 and temporary Lieutenant-Colonel in the Indian Army.

In February, 1918, he was gazetted to a temporary commission in the R.F.C. as Lieutenant-Colonel and was appointed temporary Brigadier-General while employed as Director in the Department of Military Aeronautics.

He transferred to the R.A.F. on April 1, 1918, as a Lieutenant-Colonel, temporary Brigadier-General, and was promoted full Colonel on Jan. 1, 1919.

In August, 1919, he was given a permanent commission in the R.A.F. as Group Captain. At that time he was serving on the Air Staff at Headquarters, Middle East Command. He was promoted Air Commodore on Jan. 1, 1922, and was appointed to command the Egyptian Group, Middle East, which command he held until May, 1924, when he was appointed Chief Staff Officer at Headquarters, Inland Area.

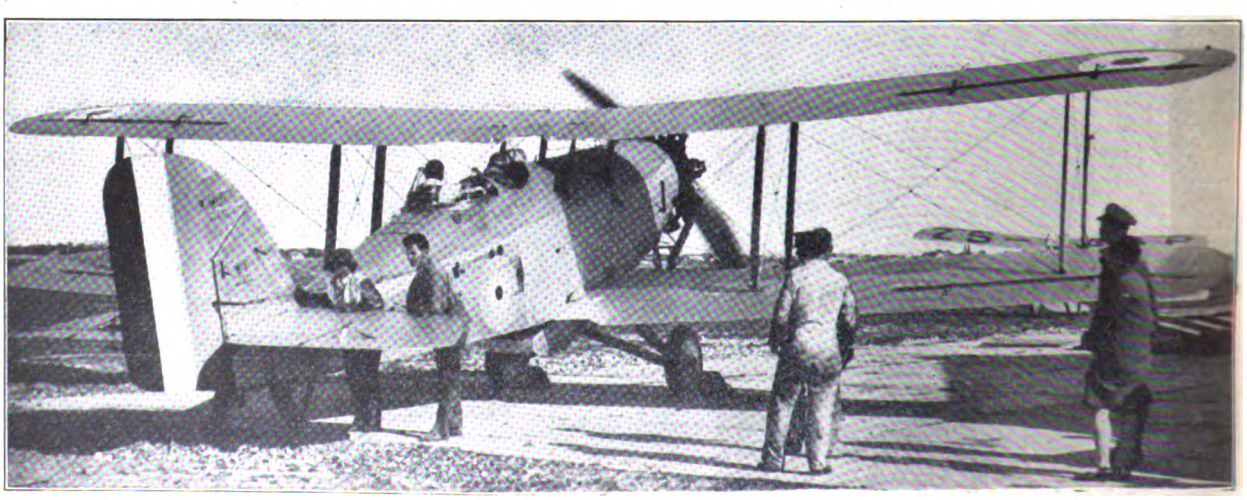
In December, 1927, he was appointed Air Officer Commanding 23 Group at Grantham, which office he now vacates.

He was made a Companion of the Order of St. Michael and St. George in June, 1918, and a Commander of the Order of the British Empire (Military Division), in June, 1919.

The Flying-boat Cruise to Norway.

The first authentic news of a cruise by two Service Supermarine Southamptons (Napier engines) from Felixstowe to Norway and back, has been received in the form of a copy of the Swedish newspaper, the *Stavangeren* of Oct. 8, sent to THE AEROPLANE by a correspondent.

The *Stavangeren* states that the two flying-boats arrived at Stavanger at four o'clock in the afternoon of Oct. 7, having flown from Felixstowe in five hours, fifteen minutes in storm and rain. The *Stavangeren* recalls that it is more than fifteen years since Mr. Trygve Gran in a small single-seat aeroplane (a Blériot) flew across the North Sea to Jaeren, a 400 kilometres' journey which took four and a



SOUTH AFRICAN AIR FORCE EQUIPMENT.—The Westland Wapiti (part of the new equipment of the S.A.A.F.) in which Colonel Sir Pierre van Ryneveld, K.B.E., D.S.O., M.C., Director of the Union Air Services, recently flew from Cape Town to the Rand, a distance of 850 miles, at an average speed of 140 m.p.h.

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lf hours. Mr. Gran's was the first flight across the rth Sea and "gave a tremendous impetus to the belief flying . . . . His only equipment consisted in a feeding ttle and some chocolate. All the remaining carrying pacity of the machine had been used for fuel."

ince then Stavanger, although ideally situated, has had no direct nection by air with the British Isles until yesterday afternoon, when, a south-westerly hurricane, two English seaplanes of the latest e came down in the harbour after having crossed from Felixstowe Suffolk, about 800 kilometres, in five hours and fifteen minutes.

The cruise was under the command of Group Capt. G. R. omet, D.S.O., O.B.E., with Sq. Ldr. C. L. Scott, D.S.C., as cond in command. The other members of the crews of the o flying-boats were Flg. Off. L. L. King, D.F.C., Plt. Offs. T. Shelley and F. C. Sturgiss and six airmen.

A member of the staff of the *Stavangeren* who went on ard the machines and interviewed the pilots wrote:—

Members of the Royal Air Force are men of few words and they not care to say much about the trip. "This is a practice cruise," d Captain Bromet, "arranged to give the pilots experience in g distance flights across the sea." "There was good visibility and strong south-west wind. We had prepared for rain and heavy ather during the latter half of the trip, and that came true. After ee hours' flight the rain commenced and the wind increased. was abaft the beam and it caused a leeway of 25 degrees N.E. aring this in mind we first sighted land at Obrestad lighthouse. herwise everything went according to programme."

Flying Officer King smilingly told us that he boiled ham and eggs on Primus stove during the trip. We cannot help thinking of Mr. an's feeding bottle and are glad to know that the time is past en one need be afraid of using a light in an aeroplane.

Motors and petrol tanks are placed above the hull between the ngs and thus permit the fliers smoking their beloved English arettes in the cabin.

"What do you think, Captain Bromet, of the possibility of a regular vice across the North Sea between Stavanger and England?" we ked.

"The time for that is not yet," answered the Captain. "The trip n be done, and when the wind is behind it may blow almost as hard it likes, as is proved by our trip to-day. But a regular service ght not to be started unless it can be maintained, and it could not maintained in such weather—the difficulty in getting back would too great. We had better wait till more powerful machines are ilt. But it will come sooner or later, and I think Stavanger would very suitable as a port on the Norwegian side."

R.A.F. Decorations.

A revised Royal Warrant governing the award of the istinguished Flying Cross, the Air Force Cross, the Disnguished Flying Medal and the Air Force Medal was sued by the Air Ministry and published in the *London azette* of November 1, 1929.

The amendment occurs in the twentieth paragraph and eads:—

Twentiethly, it is ordained

(1) That it shall be competent for Us, Our Heirs and Successors by n Order under Our Sign Manual and on a recommendation by or rough our Secretary of State for Air to cancel and annul the ward to any person of the above decorations or medals and that ereupon the name of such person in the Register shall be erased; ut that We, Our Heirs and Successors shall at all times have power restore any decoration or medal which may have been forfeited hen such recommendation shall have been withdrawn.

(2) That the forfeiture shall involve the cessation of any gratuity r pension in lieu thereof to which the possession of any of the foresaid decorations or medals might entitle the recipient, but no uch forfeiture shall extend to any sum of money which has already een paid.

(3) That when a forfeited decoration or medal shall have been estored, any gratuity or pension in lieu thereof which attaches to it hall also be restored.

(4) That a notice of forfeiture or of restoration shall in every case e published in the *London Gazette*.

Lastly, We reserve to Ourself, Our Heirs and Successors full power f annulling, altering, abrogating, augmenting, interpreting, or dispensing with these Regulations or any part thereof by a notification nder Our Royal Sign Manual.

Given at Our Court at St. James's, this 31st day of August in the wentieth year of Our Reign and in the year of Our Lord one thousand nine hundred and twenty-nine.

By His Majesty's Command, THOMSON.

The Abingdon Aerodrome.

In the House of Commons on Nov. 21, Capt. Crookshank asked the Under-Secretary of State for Air if his attention has been called to the protests against the establishment of a great aerodrome for military purposes in the immediate proximity of Oxford; and, if so, whether His Majesty's Government propose to continue a project which will go far in destroying the amenities of the University and in increasing the danger to which it might be subjected in time of war?

Mr. Montague said that his Noble Friend was aware that objections had been raised, and they had naturally received his most careful consideration. The site at Abingdon was, however, only decided upon after an exhaustive reconnaissance had failed to discover any feasible alternative in the vicinity, and the aerodrome now under construction was an essential part of the scheme for the air defence of this country. It was, in fact, more than five miles distant from the centre of the city of Oxford and arrangements would be made that transport proceeding to and from the aerodrome would normally avoid passing through Oxford and thus adding to the traffic congestion. It was not admitted that the establishment of this aerodrome would have either of the results which the hon. and gallant Member feared, and indeed, to judge by their tenor, the representations which had been made were largely due to misapprehension.

Transfers to the Reserve.

The following officers serving on short service commissions are due to transfer to the Reserve or to relinquish their commissions on the dates indicated on completion of their service on the active list of the R.A.F.:—

JANUARY-MARCH, 1930.

Flight Lieutenants:—Maurice O'Regan (Jan. 4); Arthur Leicester St. Aubyn McClosky (Feb. 2); *Charles Maurice Elton Gifford (Feb. 15); Joseph Patrick Hederman (Feb. 23).

*James Noel Douglas Anderson, *Harry Gayton Kirkman, *Archer Robert Prendergast, *Vyvyan John Somerset-Thomas, *Robert Stiven (Mar. 15).

*Ian Eustace Brodie (Mar. 18); Edmond Joseph Theophilus McWeeney, M.B. (Mar. 24).

Flying Officers:—William Francis Bryanton, Philip Bernard Chubb, Edwin John Ellis, Francis Stanhope Homersham, D.C.M., M.M., Lionel Beaumont McGoverne, Brian Elgar Moody, William Alfred Shorten, Vincent John Sofiano, Arthur Charles Watkins (Jan. 6).

Richard Dingle Adams, Edward Addis, Robert Leslie Burnett, Ernest Lewis Drew, Donald Salisbury Green, Nigel Kenneth Howard, John Cecil Noel, Charles Pakenham Vines (Jan. 17).

John Howard Barringer, James Stanley Blomfield, Colin Heard-White, James William Milne Nancarrow, Stanley Charles Parker, Walter Richard John Spittle, Frederick Basil Tomkins, Charles James Veevers, Duncan Stratford Eyre Vines (Mar. 14).

*Ulric Campbell De Burgh (hon. Flt. Lt.) (Mar. 20).

Maurice Brunton, Francis Walter Field, Francis Henry Hannaford, Geoffrey John Comyn Mahony, Vincent Corbett Taylor (Mar. 31).

(* To relinquish commission. Not liable for reserve service.)

Special Assessments.

The following officer and airmen have been awarded special assessments as shown on completion of a course of *ab initio* flying training at No. 3 F.T.S.:—

Special Distinction.—No. 363621 Acting/Sjt. King, A. F.

Distinguished Pass.—Plt. Off. A. N. I. Worger-Slade; No. 364251 Acting/Sjt. Roxburgh, H. A.; No. 365111 Acting/Sjt. Rook, T. G.; No. 365126 Acting/Sjt. Cann, G. H.

Notations have been made in the official records of the officer and airmen.

Engineering.

An Air Ministry Order states that Flt. Lt. A. F. Scroggs is entitled to the classification E*. on having successfully concluded a post-graduate course in Engineering at the Imperial College of Science and Technology.

Indian Cadets in the R.A.F.

In the House of Commons on Nov. 25, in reply to Lt.-Cdr. Kenworthy, the Secretary of State for India said that no Indian cadets had been trained as yet at the R.A.F. College, Cranwell, nor were any under training at present. Facilities existed for the training of Indian gentlemen at Cranwell, but as a result of the two Army and Air Force examinations so far held in India no candidate who had given Cranwell as his first choice had succeeded in qualifying for Cranwell.

Indian cadets who passed out of Cranwell would not be commissioned in the R.A.F. but in a separate Indian air force. As far as he knew, there were no Indians in the R.A.F. in India at the present time, and naturally it was desired to secure them.

[Mr. Benn's last two sentences seem to contradict each other,—unless he means that commissions in the R.A.F. will not be given to Indian subjects, but that the India Office is anxious to secure them for service in the ranks in India.]

H.M.S. Glorious.

The cruiser *Glorious*, which has been reconstructed as an aircraft carrier, will be ready to commission on Jan. 7, 1930. In March she will probably proceed to the Mediterranean to relieve H.M.S. *Courageous*, her sister-ship.

The following Units of the R.A.F. will be embarked in H.M.S. *Glorious*:—No. 405 (Fleet Fighter) Flight, No. 406 (Fleet Fighter) Flight, No. 408 (Fleet Fighter) Flight, No. 441 (Fleet Spotter Reconnaissance) Flight, No. 447 (Fleet Spotter Reconnaissance) Flight, No. 461 (Fleet Torpedo Bomber) Flight, and No. 462 (Fleet Torpedo Bomber)Flight.

A Court-Martial.

A Court-Martial was held at Chelsea Barracks on Nov. 19 and 20, under the presidency of Group Capt. C. D. Breese, A.F.C., R.A.F., when Flg. Off. H. O. Fellowes, R.A.F. (Stores Branch), was charged with obtaining money by offering cheques which were not met on presentation at the bank. He was further charged with desertion. In all there were sixteen charges.

The Court found Flg. Off. Fellowes guilty on ten of the charges including that of desertion. Sentence will be promulgated.

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A Lecture on the Middle East.

A lecture of particular interest to the R.A.F. will be given at the Royal United Service Institution on Dec. 11 at 15.00 hours. The lecture will be given by Sir Edward Denison Ross, C.I.E., Ph.D., F.R.G.S., and the subject will be "The Situation in the Middle East." Major-General Sir Percy Cox, G.C.M.G., G.C.I.E., K.C.S.I., will be in the Chair.

Members of the R.U.S.I. may introduce two friends to lectures.

George is Not Amused.

The following letter has not been received:--

The Royal Air Force,
At-at-Sea.

Sir,—I learn with great disgust of the would-be humorous paragraph in THE AEROPLANE of Nov. 13 and the astonishing amount of publicity in the Daily Press which has resulted from it. I cannot imagine why anyone of such a retiring disposition as myself should have been put in this painful position.

I have become notorious in a night, and the peaceful privacy that I have enjoyed for so many years is now a thing of the past. My ancestry and even my anatomy are matters of public discussion. I cannot leave my quarters without being heavily disguised. I am pursued by the Press and haunted by historians.

I have even been dubbed a "Pilot's Assister,"—I, who have never been a sister to any pilot!

Yours more in sorrow than in anger,

GEORGE.

Cranwell Aerodrome.

An Air Ministry Order forbids aircraft to land, except in cases of emergency, at Cranwell Aerodrome on Dec. 13 and Dec. 17, the two days on which passing out inspections are being held.

Some Service Contemporaries.

The Journal of the Royal Air Force College has attained the second number of the ninth volume with its Autumn issue. In addition to the usual Station news, sports notes, etc., there are a number of interesting articles by Cadets and former Cadets.

Prominent among these is one called "Disregarding Advice," by Flg. Off. Clarke, a brilliant young officer who was killed at Brough last October. In the article Mr. Clarke tells how he came to build the Clarke Cheetah, a remarkably good light aeroplane, mostly out of scrap material rescued from the crash-dump, plus an assortment of odd spare-parts. The article is interesting and amusing and a valuable lesson in energy and enterprise.

Wing Cdr. G. S. M. Insall, V.C., M.C., has contributed an article on "The Aeroplane in Archæology," in which he discusses the finding of the Woodhenges on Salisbury Plain and some important ancient remains on the western side of the Mesopotamian Plateau.

An entertaining article on "Summer Hunting and a Little Cricket in Somerset" is one of the best things one has read anywhere.

Flt. Cdt. Sjt. Barrett describes a visit paid by the Fourth Term to the Royal Airship Works at Cardington, and another Flight Cadet has chosen the title "Some Wings and a Rope" to describe an article on very early experiments in aeronautics.

The Planesman has emerged in a striking new cover which seems to have been produced under the influence of Mr. Epstein. The magazine improves with every issue, and now includes news of most of the important Units in the Service. A particularly amusing contribution from H.M.S. *Courageous* gives some impressions of that vessel's trip from Malta to Palestine during the recent disorders. The R.A.F. Unit was temporarily established at and operated from Gaza.

The Felixstowe Foghorn enters its second year of existence in the November, 1929, issue and continues to be a cheerful little paper. Part II of "An Airman Joins the Navy" is all too short, but if it had been longer something might have happened to somebody.

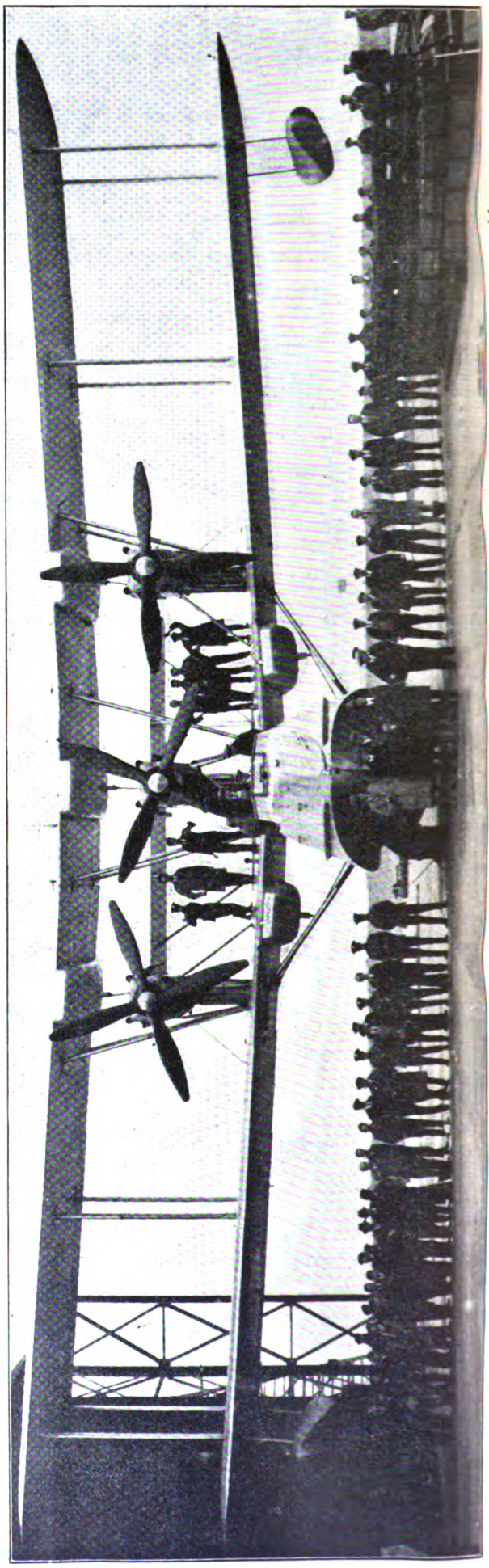
The R.N. Staff College Dinner.

The 1929 session dinner will take place at the Royal Naval College at 20.00 hours on Dec. 19. The attached officers of the present course have been invited as the guests of the evening.

All officers who have been through the Royal Naval Staff College are welcome to attend as honorary members. The cost of dinner will be 3s. 6d. a head, excluding wines.

Accommodation is available for honorary members at the Royal Naval College on the night of Dec. 19-20.

Officers wishing to attend are requested to inform Cdr. J. H. Edelsten, R.N., R.N. College, Greenwich, S.E.10, before Dec. 12, at the same time stating if they require accommodation. Dress for honorary members—mess undress, or dinner jackets.



PERSONNEL AND MATERIEL.—The Iris III (Rolls-Royce Condors) at Brough, with the R.A.F. personnel in charge and men of the Blackburn Works.

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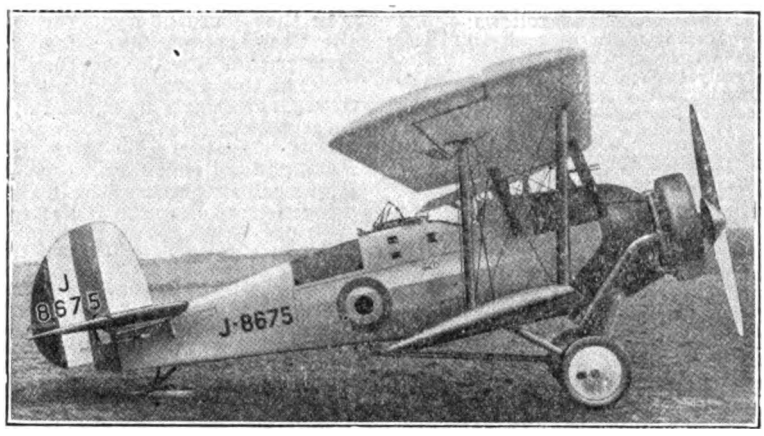
ARMSTRONG WHITWORTH
AIRCRAFT



THE ALL STEEL ATLAS
(ON WHEELS, FLOATS OR SKIS)

THE all-steel Atlas is the best aircraft for land or sea reconnaissance.

It is the standard Army Co-operation two-seater of the Royal Air Force.

Its steel construction accounts for its unrivalled durability and ease of maintenance. Fitted with the world-famous Armstrong Siddeley Jaguar engine (plain or geared type), its speed, climb and ceiling fulfil the severest Service requirements. It is produced on the grand scale by the best equipped aircraft works in Europe.

PERFORMANCE FIGURES

ATLAS WITH JAGUAR ENGINE AND TOWNEND RING

Fuel. 75 gallons (337 litres). Oil, 7 gallons (32 litres). Military Load, 880 lbs. (400 kgs.)

	Plain Engine	Geared Engine
Approx. total weight	4000 lbs	4115 lbs.
	1820 kgs	1870 kgs.
Speed at ground level	143.5 m.p.h.	149 m.p.h.
	231 km.p.h.	240 km.p.h.
" " 5000 ft	139.5 m.p.h	145 m.p.h.
" " 10000 ft	134 m.p.h	140 m.p.h.
" " 15000 ft.	125 m.p.h.	131 m.p.h.
" " 1000 metres	226 km.p.h.	236 km.p.h.
" " 3000 metres	216 km.p.h.	225 km.p.h.
" " 5000 metres	193 km.p.h.	204 km.p.h.

	Plain Engine.	Geared Engine.
Time to 5000 ft.	5.25 minutes	4.25 minutes
" " 10000 ft.	12.5 "	10.5 "
" " 15000 ft.	26 "	21.75 "
" " 1000 mtrs.	3.5 "	2.5 "
" " 3000 "	12.5 "	10.25 "
" " 5000 "	34 "	27.5 "
Absolute Ceiling	19000 ft.	19100 ft.
	5800 metres	5830 metres
Service Ceiling	17300 ft.	17700 ft.
	5280 metres	5400 metres

Maximum allowable R.P.M. 2200. Normal R.P.M. 2000

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Brevity.

The Hon. Lady Bailey, Flt. Lt. R. L. R. Atcherley and Flt. Lt. H. R. D. Waghorn, A.F.C., were among the Guests at a dinner given by the British Sportsmen's Club to famous sportsmen and sportswomen on Nov. 20. All three were called upon to make speeches and the time taken by the three speeches was just over three minutes.

The Junior United Service Club.

At an extraordinary general meeting of the Junior United Service Club on Nov. 20 a resolution was carried altering the rules in such a manner as to admit to election for membership, among others, of officers of the Auxiliary Air Force.

The R.A.F. Fencing Union.

The annual fencing competition for novices will be held at the School of Physical Training, Uxbridge, on Dec. 12 to 13; it will be divided into two classes as follows:—

(i) *Senior class.*—Open to all officers and airmen except (*a*) Previous winners in the event, for the weapon concerned, in the novices' competitions during the last three years. (*b*) Previous winners in the event, for the weapon concerned, at the Royal Tournament. (*c*) Personnel attached to the School of Physical Training. (*d*) Fencing "Blues."

(ii) *Junior class.*—Open to all officers and airmen who have not previously taken part in the novices' competition.

No competitor may enter under both classes.

The events in both classes will be for all weapons; foil, épée, sabre, and bayonet.

Entries should reach the Commandant, School of Physical Training, R.A.F. Depot, Uxbridge, by Dec. 5. Fencing will begin at 9 a.m. on Dec. 12.

If necessary, accommodation for competitors will be provided from 4 p.m. on Dec. 11; applications for accommodation should be forwarded with entries.

Squash Rackets.

The R.A.F. Club beat the Bath Club in the first division of the Inter-Club Squash Rackets tournament for the Bath Club Cup in the R.A.F. courts on Nov. 20, by two matches to one. H. Coverdale (R.A.F.) beat K. A. Wagg (Bath Club), by three games to two. J. S. Heagerty (R.A.F.) lost to I. Akers Douglas (Bath Club), by three games to one. P. Q. Reiss (R.A.F.) beat V. A. Cazalet (Bath Club), by three games to none.

Boxing.

A boxing match between the R.A.F. and officers and cadets of the R.A.F. College, Cranwell, will take place at Cranwell on Nov. 28.

A boxing match between the R.A.F. and the Danish Amateurs will take place at Cranwell on Nov. 29.

Association Football.

R.A.F. v. London University:—The R.A.F. beat the London University at Henlow on Nov. 20 by seven goals to nil. The *Morning Post* account of the game states:—

With such skill and enterprise did their inside forwards play that the Royal Air Force ran London University off their feet at Henlow yesterday, and won in easy fashion by 7 goals to nothing. Knight, centre-forward, got four of the goals, but he owed much to the support he got from his inside men, Kelly and Aquaroff.

Kelly, inside-right, who played for Ireland in amateur international games, was the big man of the match. He made opening after opening for the rest of his line. His shooting was very much on the mark. Had he a little more fire behind his boot he could hold his own in any company.

I liked Aquaroff also, who worked thoroughly and unostentatiously at inside-left, and, as usual, Robinson stood in a class by himself in the half-back line. His flank men, both new to representative football, were untiring workers. Indeed so good were the half-backs that Pond, James, and Chaston had little to do. Kelly (2) and Aquaroff got the other goals.

VICKERS ORDERS.

An interesting order has recently been received by Vickers (Aviation) Ltd. from the Irish Free State Department of Defence for a number of Vickers Vespas. These are two-seater Army co-operation machines with Armstrong Siddeley geared Jaguar engines. There is interest in noting that machines of the same type have been supplied to Bolivia. They have to operate from the La Paz Aerodrome at a height of 14,000 feet, where Mr. H. W. R. Banting is in charge of them. One hopes to be able to say some more about these machines in Bolivia before long.

A CHANCE FOR THE BRITISH.

A correspondent of *The Times Trade Supplement*, writing from Berne (Switzerland), states that an extensive scheme for the reorganisation of the Swiss Army Flying Corps is being considered by the Federal Military Department. This scheme will necessitate the grant of 20,000,000 Swiss francs and involves the purchase of 60 fighting and 45 reconnaissance machines.

This correspondent says that offers and detailed specifications should be forwarded without loss of time to the Swiss Military Authorities direct. In no case should the firm making a tender fail to express willingness to send demonstration aircraft to Switzerland. This is a point of the greatest importance, as in the past such demonstrations have sold foreign machines.

AIRSHIP NOTES.

A Parliamentary Disappointment.

The special Parliamentary flight of the R.101 arranged for Nov. 23, which had been postponed from the previous Saturday, did not take place. One understands that this much-talked-about trip will not happen for some time now, as R.101 will be re-kennelled at the first opportunity, to make room at the mast-head for R.100 which has been formally taken over by the Air Ministry for flying trials.

The various Peers, Bishops, M.P.'s and newspaper correspondents were given lunch on board in two shifts of 50 each, while R.101 was anchored to the mast-head, as the weather was too bad for a flight.

R.101 in the House of Lords.

In the House of Lords, on Nov. 20, Lord Newton asked the Secretary of State for Air why the airship cruise arranged for Nov. 16 had been abandoned, and said that he believed this form of locomotion to be a form of public extravagance largely stimulated by the Press and a concession to sensation.

Lord Thomson said that, with a few exceptions the Press had not encouraged the Government in this "form of public extravagance." The flight on the 16th had not been postponed on account of the roughness of the weather.

The new airship had stood up to weather four times as bad from the point of view of the force of the wind, as that experienced on that day. She had been in the air for 19 days. Moored to the mast she was exposed to far greater strains than she would be loose in the air. The wind rose to gusts of 83 miles an hour while she was moored. The pressure at the nose had been recorded at 15[illegible] tons and her strength was calculated to meet a pressure of 30 tons at the nose. If the pressure of 30 tons was ever reached all that would happen would be that the order would be given to "slip the ship."

The flight had been postponed on the occasion in question because the Air Ministry wanted to give Members of Parliament an enjoyable trip. On a normal cruise on that day there would have been nothing but driving rain.

The Air Ministry were very much on their mettle in this matter; they were praying more earnestly than anybody for a flight. He he would like to remind their lordships, had, since the postponed flight, flown 1,200 miles—a circuit of these islands almost—in the rain, and mist, had found its way back, and was moored in a very dense fog. That was really a rather remarkable achievement, due to the refinement of direction-finding by wireless.

There had been a great deal of inaccurate information in the Press as to the cost of this airship and the airship programme generally. He hoped at no distant date to be able to prove to their lordships that the amount of scientific knowledge acquired by these experiments would alone almost have justified the expense incurred.

The Maintenance of R.101.

In the House of Commons on Nov. 21 in reply to a question by Mr. Naylor, the Under-Secretary of State for Air said that the average weekly cost of maintenance during the few weeks that the R.101 had been in the air, inclusive of hydrogen, as well as overhead charges, wages of staff and crew, and repairs, had worked out at approximately £600. The repairs included were only running repairs while at the mooring tower. Expenditure on fuel was not included as it varies directly with the amount of flying. Much longer experience would be necessary before it was possible to give an all-in average figure which would be useful as a guide to the cost of commercial operations.

[Which means roughly £35,000 per annum to run.—Ed.]

Handling the Airships.

In the House of Commons, on Nov. 20, Lt.-Cdr. Kenworthy expressed an earnest wish that civilian and not military labour should be used in handling the two airships. Mr. Montague said that civilian labour was used as far as possible, but for these purposes it was very necessary to have a disciplined body of men.

GEORGE T. CUDDIHY.

According to the New York correspondent of *The Times*, Lieut. George T. Cuddihy, U.S.N., was killed on Nov. 25 at Washington, when a machine which he was testing for the United States Navy crashed from 10,000 ft. at Anacostia.

The machine, according to the report, was a Bristol Bulldog, bought by the U.S. Navy in September. When the machine had dived 4,000 ft. Lieut. Cuddihy was seen to be making efforts to straighten out. During the remaining drop part of the machine was seen to break off and fall and land some distance away.

If this story be true, the assumption is that the pilot was deliberately doing a "break-up" test, and unhappily failed to get out with his parachute. In any case, we had better await an official report before accepting this evidence.

Lieut. Cuddihy put up a World's Record of 188.82 m.p.h. at Baltimore in 1924 in a Curtiss C.R.3, and he was a competitor in the Schneider Trophy Contest in 1925.

His death will be greatly regretted by many personal friends in this country, and everybody will lament that one who has made history and has helped progress by gallant flying as he has done, should come to such an end.—C. G. G.

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AERONAUTICAL ENGINEERING

SUPPLEMENT TO "THE AEROPLANE"

THE USE OF WHEEL-BRAKES ON AIRCRAFT.

Vith the development of aviation, the problem of reduc- the landing or ground run of aeroplanes has increased importance, particularly because of the restricted and igested areas of many commercial aerodromes. Several thods have been considered and used for this purpose. ese have been largely methods for increasing the drag, ıer aerodynamically or by friction of the tail-skid on ground. The most widely used method, although not of the proportions of universal use, which provides the st detrimental effect aerodynamically, is the use of wheel-kes.

Vheel-brakes were consistently avoided for many years account of the belief that their use would produce an rturning moment which would be dangerous. Within last few years, however, wheel-brakes have been adapted aeroplanes in the U.S.A. with considerable satisfaction. th this in mind, the U.S. National Advisory Committee Aeronautics determined upon a programme of inves- ation into the effects of their use, and it has now pub- hed a Report* dealing with these investigations.

A Douglas M.3 single-engined mail plane was equipped ih an internal-expanding type of wheel-brake with a ecially devised mechanism for operation differentially foot pedals. A tail-wheel replaced the usual tail-skid.

This machine was selected as it had a large range of sposable load and it was desired to investigate the condi- ıns of landing under various loading conditions, as well as ıder various wind velocities. It was found that in the htest condition—that is, with a minimum amount of el and pilot alone—the gross weight was 3,785 pounds. ıe intermediate load consisted of a full fuel load, pilot, ıd one passenger, making a gross load of 4,685 pounds, ıd the heavy load, with the addition of 700 pounds of lead ıot in bags, made a gross load of 5,385 pounds. Landing ith each of these three conditions of loading was studied each of three different wind velocities of approximately 10, and 17 m.p.h. The actual wind velocities at the oment of landing, measured at a point as close to the oint of landing as possible, were used in the preparation the data.

All landings were made on a selected portion of the land- ıg field which was as smooth and dry as possible, and on hich the grass was not more than 6 inches in height. In ddition to the variation of loading and wind velocities, ıe brakes were used in two ways: (1) the brake pedal orce was applied smoothly throughout the landing; and 2) the brakes were locked in the air before the landing as made and held in this condition as far as possible roughout the ground run.

The following instruments and measuring methods were used: (1) an N.A.C.A. recording air-speed meter to obtain the air speed at the moment of landing; (2) an N.A.C.A. single component accelerometer to indicate the point of landing; (3) an N.A.C.A. timer to synchronise the air speed and accelerometer records; (4) a hand-type of anemometer, installed upon a mounting 6 feet above the ground in the vicinity, and observed at the moment of landing, to determine the wind velocities.

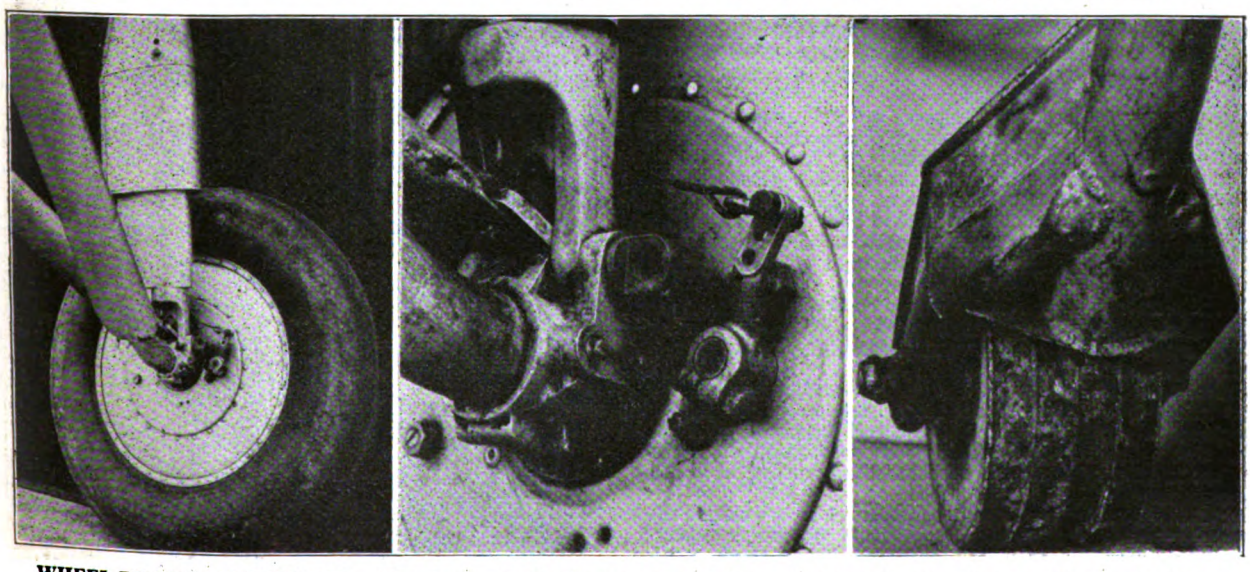
The distance covered in the ground run of the aeroplane was measured by a tape, as it was found that the point at which the aeroplane touched the ground was easily determined by using a number of ground observers before whom the landing was made at close range. As these observers approached the point of contact according to their visual observation they invariably found readily distinguishable marks upon the turf where the wheels had first made contact. The other end of the run was positively determined by holding the aeroplane at the position at which it stopped until the measurement was completed.

From the numerous landings thus observed, the curves of ground landing speed against ground run were plotted. The ground speed was determined by subtracting the wind velocity from the air speed of the aeroplane at the moment of landing, as determined by the methods described above.

For all three conditions of loading the application of the brakes after landing was considered the normal method of operation. This method gave a consistent reduction in length of landing run as compared with the length of run without brakes. A further reduction in length of run may be obtained by applying the brakes before the landing and holding them in the locked position throughout as much of the landing run as is possible. This, however, is an unusual and somewhat rough method of handling. Under some conditions and with some aeroplanes it may be expected that a tendency to nose over or to ground-loop badly will occur with this method of handling. In the case of the machine carrying the intermediate load and, to some extent, the machine carrying the heavy load, it was found that at the higher speeds of landing the curves of ground run with the brakes applied before landing, had a tendency to converge toward the curves of ground run with brakes applied after landing. This is explained by the fact that in these tests the tendency to nose over or to ground-loop became sufficiently great to force the pilot to relieve the braking pressure.

It was also noted that the landing run in the light load condition without brakes was longer than in the intermediate condition of loading. This was due to the fact that in landing in the light load condition it was very difficult to get the tail down so as to effect a good three-point landing. This condition is inherent in this type of aeroplane when so loaded. The landing was therefore made at a low angle of attack, with correspondingly low drag, and hence the air speed at the point of landing was from

[*N.A.C.A. Technical Note No. 311. The Use of Wheel-rakes on Airplanes. By Thomas Carroll and Smith J. De rance. The Langley Memorial Aeronautical Laboratory.]



WHEEL-BRAKE EQUIPMENT.—The type of wheel-brake and tail wheel fitted to the Douglas M-3 mail plane for experimental purposes.

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three to five miles faster than it would have been with a normal three-point landing.

Tests and measurements were conducted in the same manner on a Douglas O2-H single-engined two-seat reconnaissance biplane. The results from these two quite different types were in agreement, which confirms the opinion that the results on the Douglas M.3 are applicable to most other types.

In the preparations for these experiments, brakes were used and studied upon a number of military and commercial aeroplanes. Efficient wheel-brakes of both the internal-expanding and external-contracting types have been used. The methods of operation are, however, of greater diversity. They may be hand-operated or foot-operated, individually operated or equalized and used simultaneously.

While the value of wheel-brakes is clearly evidenced by the material reduction in ground run which they afford, it should be noted that they provide other advantages of very great value. It has been found that they provide easy manœuvrability, aid in making very short turns while taxying; and enable the pilot to offset tendencies to ground-loop. The aeroplane may also be held without chocks while warming up the engine, by locking the brakes. With these secondary ends in view, it can be seen that the equalised, simultaneously-operated brake is of reduced value on single-engined aircraft. Multi-engined aeroplanes, of course, may be manœuvred by use of the outboard engines individually.

The hand-operated control of brakes can hardly be recommended where it is necessary for the pilot to use them, but they prove quite satisfactory where an assistant pilot or mechanic is available to work the brake control, as on large commercial types. Individually foot-operated brakes offer by far the greatest advantages. These usually have taken the form of additional small pedals attached to the rudder bar or rudder pedals or, as has at times been done, by separate brake pedals in no way connected with the usual rudder controls.

The brake controls connected to the rudder control have been so installed as to be operated by the toe or by the heel and in other cases a treadle, which is operated by rocking the whole foot. Many of these are quite satisfactory. Some introduce a difficulty, as it might be possible to use the brakes unintentionally at improper times, such as in taking-off.

It might be possible to alleviate these difficulties, whether the operation was by toe or heel, by fitting a lever control which, in a first position, would lock the wheel-brakes without pressure on the pedal-control, in a second position would permit the individual use of the wheel-brakes, and, in a third position, would entirely cut out the braking system from operation by the pedal-controls. This arrangement would permit the wheels to be locked in a similar way to an automobile hand brake in the first position, in the second position would permit the usual brake operation, and in the third position, would prevent unintentional use of the brakes.

The successful operation of brakes is largely dependent upon the position of the landing gear and wheels with relation to the centre of gravity. The wheel position should be well forward, as is now becoming the common practice, in order to counteract the tendency to nose over. This will not present any unusual difficulty due to tail heaviness on the ground, because with the use of the tail-wheel the necessity for lifting the tail in ground handling will be eliminated.

It should also be borne in mind that tail-skids are very destructive to the surfaces of landing fields. It will only be a matter of time when the use of the tail-skid will be prohibited or penalised on all regulated airports. The replacement of the tail-skid with a tail-wheel will, of course, necessitate the use of wheel-brakes.

The use of wheel-brakes imposes a load upon the tyres which the usual aeroplane type of untreaded tyre is not capable of standing. Aircraft tyres for use with brakes should have an additional heavier tread. Whether the additional tread should be smooth or of the non-skid type, is a matter of selection. The non-skid type will undoubtedly give more effective braking, although its tendency to tear may be as great as in the smooth tread aircraft type of tyre.

Aircraft upon which it is intended that wheel-brakes are to be used, should be so designed as to eliminate the tendency to nose over by placing the landing gear far enough ahead of the centre of gravity.

There can be no doubt that wheel-brakes are of very great advantage on any aeroplane, particularly when the aeroplane is equipped with a tail-wheel in place of a tail-skid. Their use is not limited to the reduction of ground run, but is of very practical additional advantage in ground manœuvres.

From these experiments and experiences it is evident that wheel brakes are necessary equipment on an aeroplane. The only tenable reason for omitting them from a new design must be the desire to reduce the cost to the lowest possible figure.

WHEEL-BRAKE PROBLEMS.

On Nov. 8, Mr. Hall, of Bendix-Perrot Brakes, Ltd., of Birmingham, read a paper on "Aero Wheel-Brakes" before the Westland Aircraft Society at Yeovil.

The Lecturer began by making a few general remarks on the present situation of aircraft brakes and explained how the Trade was only just emerging from the stage when aero-wheel-brakes were merely adapted forms of automobile wheel-brakes. The Bendix-Perrot Company is making research, after abandoning the ordinary motor-car two-shoe brake as inefficient.

The Lecturer stated that the average reduction in the landing run of machines fitted with the modern Bendix-Perrot brake was 50 per cent., and that the fitting of brakes has the effect of assisting the ground crew. Furthermore it permits the use of a tail-wheel instead of a skid, which thereby prevents the destruction of the surface of aerodromes and eliminates wear and vibration to the aeroplane structure to a very large extent.

Servo-control has been found to be necessary and in combination with this, the ideals aimed at by the brake industry are safety and simplicity. In this instance the type of brake is the self-energising servo system which gives full action under slight pedal pressure. In this type of brake the primary shoe has no fixed anchor but hinges on the floating end of a secondary shoe. In this respect the action of the primary shoe in engaging with the drum tends to hold it in position and through the floating hinge the primary shoe energises the secondary one.

The Lecturer, however, did not venture on the other systems of braking, such as hydraulic, etc., but merely remarked that the Bendix-Perrot Company had quite an open mind on the subject and were still experimenting along these lines.

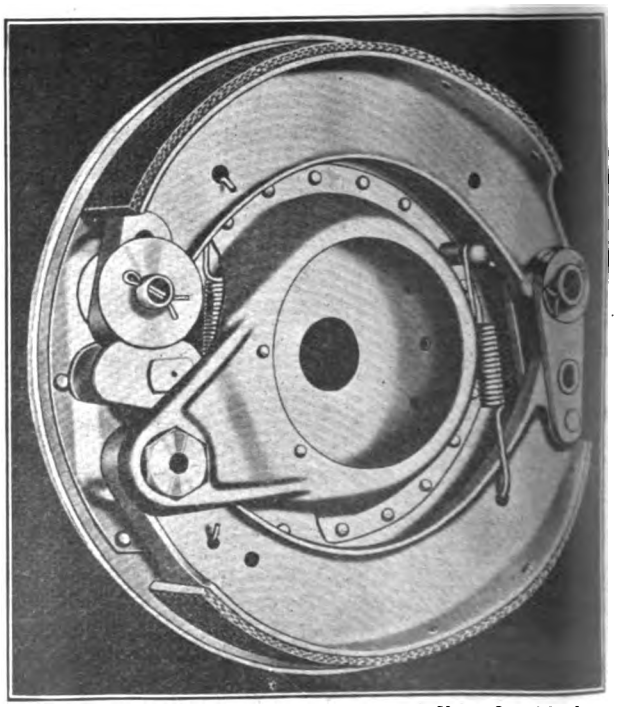
Various slides were then shown on the screen and the Lecturer indicated how the best position of the cam spindle is just vertically above the axle. It can, however, be placed anywhere on the periphery, according to the type of aircraft to which it is fitted. This vertical position is best, as it is farthest from the ground with the operating lever clear of ground obstruction so that it is therefore not likely to suffer damage. Furthermore, when wear takes place the vertical position of the cam permits of adjustment being made to allow for such wear on the axle.

The whole of the brake backing-plate and drum is press work, or bar work, and the use of electron is now being considered. The standard sizes of brakes at present in use are the 10, 12 and 20 inches, but larger sizes are contemplated. The clearance for a 12-inch brake is about 15/1000th and the construction of the brake is all-steel, which is cadmium-plated.

Mr. Hall laid it down as a strict rule that whenever brake-shoes needed to be re-lined it was necessary they should be sent back to the Bendix-Perrot factory where they would be exchanged for new shoes. This course was preferred, as in certain cases where shoes had been relined locally the results had been poor.

The following questions were paramount in discussing the problem of aircraft brakes:—

(1) The design of the undercarriage and the question of how the torque is to be transmitted to the fuselage.



The operating mechanism of the Bendix wheel-brake.

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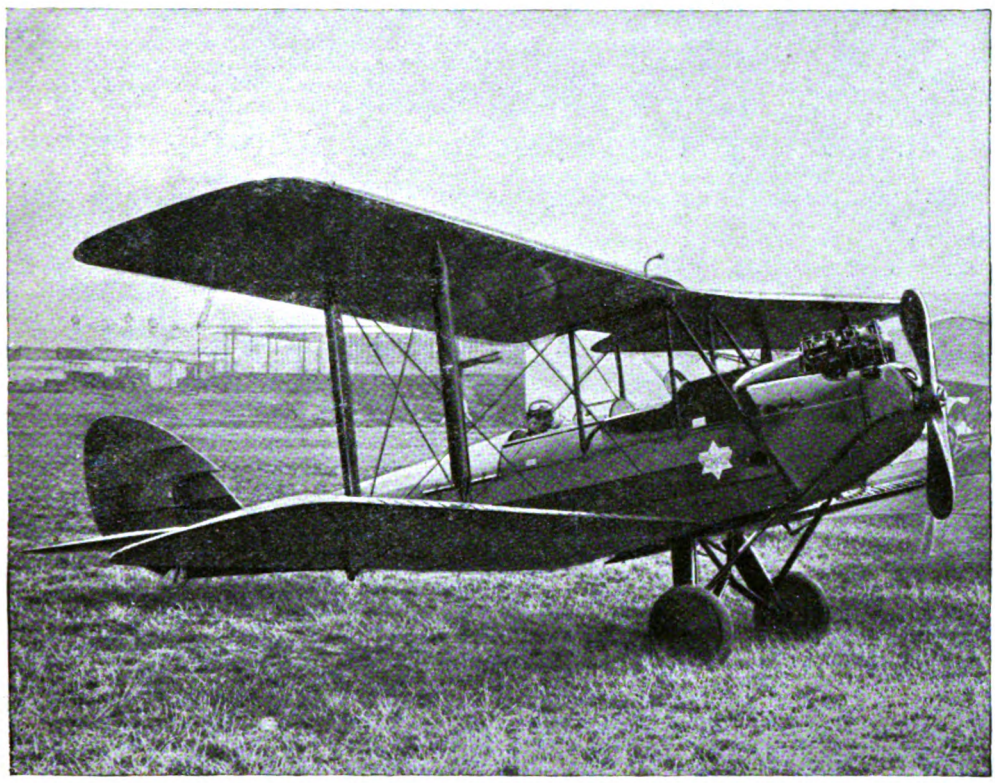

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(2) The fore-and-aft position of the wheels and their brakes. (The farther forward the brakes and wheels are located the more torque is transmitted—but more load is placed on the tail in such a case.)

The torque load formula is:—One half weight of machine on one wheel multiplied by the effective tyre radius, multiplied by the co-efficient of friction of tyre on the ground, multiplied by the factor of safety of a shock landing.

(3) A wide wheel-tread is desirable. Bendix-Perrot work to a deflection of a quarter of the diameter of the tyre and they take the co-efficient of friction in excess of .8 on clean concrete with the tyre on the ground.

With regard to deceleration, a comfortable retardation for cars is at the rate of 22 ft. per second squared. With aeroplanes, however, the deceleration of 14-16 ft. per sec. squared is desirable. At the moment, good brakes give a retardation of about 8-10 ft. per second squared.

In this consideration it should be remembered that concrete aerodromes will probably become standard in time.

Other points of interest in the lecture were:—

(1) Brake effectiveness remains constant below 30 miles per hour. After that the wings begin to take up the lift.

(2) The accuracy needed for the axle is plus or minus 1/1000th.

(3) Hook-up control. For single-engined machines a separate control is needed for each wheel, or they may be differentially operated. There should be only a 7 degree movement of the control lever from the position *off* to the position *on* if all is in order.

Bendix-Perrot Brakes Ltd. prefer rod control with bell cranks to other methods.

With regard to pedal-operated brake-gear, a parallel motion linkage is necessary. In this the stirrup type is the best and this type is largely used in America, though at the present moment Great Britain seems to prefer the radius bar control. It was found that hand-operated brakes are not quick enough in operation.

THE GUGGENHEIM SAFE AIRCRAFT COMPETITION.

The final date for the entries for the Guggenheim Safe Aircraft Competition to reach Mitchel Field, New York, was Oct. 31.

Of the original twenty-five entries, nine have been withdrawn without any attempt to submit a machine. Four were delivered to Mitchel Field and withdrawn either before or after part of the eliminating trials had been made. And one was eliminated for failure to meet the qualifying tests.

There are still four entrants which have given no intimation whether they still wish to submit entries. Included in this four are the two Autogiro entries, one from Senor Don Juan de la Cierva and the other from the American Autogiro licensees, the Pitcairn Autogiro Co.

At the time of the drawing up of the rules for the competition it was frequently suggested that they had been written round the Autogiro, and that if that type of machine could meet the high speed and take-off requirements it would be assured of winning the contest. The failure of the Autogiro to be present is therefore regarded with astonishment

Nine entries are definitely in for the Contest. These are by Handley Page Ltd.; the Curtiss Aeroplane and Motor Co.; the Schroeder-Wentworth Associates; the Cunningham-Hall Aircraft Corporation; Fleet Aircraft, Inc.; V. J. Burnelli; Ford-Leigh Safety Wing, Inc.; the Bourdon Aircraft Corporation, and the Taylor Bros. Aircraft Corporation. Only three—the Curtiss, the Handley Page, and the Fleet—have actually completed tests at Mitchel Field.

Hereafter follows short descriptions of those entries which have presented themselves at Mitchel Field.

The Curtiss Tanager.

The Curtiss Tanager is an enclosed cabin biplane with a 170 h.p. Curtiss Challenger six-cylinder radial air-cooled engine. It is a conventional single-bay biplane with a total wing area of 330 sq. ft.

Automatic slots are provided over the entire leading-edges of all wings with manually operated flaps on the trailing-edges. The auto-slots are of the type developed by the Curtiss company on the Handley Page patents and have all operating mechanism inside the leading edge of the wings.

In addition, the Tanager is fitted with floating ailerons which are said by the designers to provide lateral control in any attitude. These ailerons are fitted outside the wing-tips of the bottom planes and are suspended from the top planes by steel tube Vee struts, the apices of the Vees being hinged to the single spars of the ailerons. They are operated by torque tubes running through the bottom planes.

The mechanism is so designed that the ailerons can be operated in the usual manner at any setting that they may assume or virtually at any angle of attack of the wing. Their leading edges form a continuation of that of the bottom wings and their chord is somewhat less than the wing chord. In all other respects the machine is conventional except that the oleo-undercarriage has double the travel normal in aircraft of this type and weight.

The Cunningham-Hall X Biplane.

The Cunningham-Hall is a two seat open-cockpit biplane with a 60 h.p. Walter radial air-cooled engine. It embodies an aerofoil designed by Messrs. R. F. and T. P. Hall some three years ago.

In general appearance it represents an inverted equal-spanned sesquiplane with a top wing one-third of the chord of the bottom, with the two wings inter-connected by inverted Vee struts. The top wing is a single spar structure and the rear half of the entire wing forms the ailerons.

The bottom wing is actually formed by two thin aerofoil sections superimposed one above the other and staggered in relation to one another. Just behind the underside of the leading edge of the top surface and in front of the leading edge of the bottom surface is a small aerofoil-sectioned and pivotted flap which closes the passage between the surfaces.

Hinged to the trailing-edge of the bottom surface is a flap which is operated in conjunction with the forward flap so that when the rear one is pulled down the front flap opens and so allows air to pass between the surfaces.

In the closed position the wing is of the Clark "Y" section.

It is stated by the designers that the C.P. travel of the bottom wing is virtually the same when used in either high or low lift conditions. It is also planned to instal spoilers on the top wing so linked as to be operated by the last two degrees of aileron travel.

The structure of the machine is of steel and duralumin with fabric covering. The undercarriage has a vertical travel of 9½ inches and is fitted with wheel-brakes

The Schroeder-Wentworth Monoplane.

The Schroeder-Wentworth entry is a high-wing braced monoplane with a 130 h.p. Comet radial engine. It has one big monoplane wing with the engine mounted on the leading-edge. Slung below the wing is the fuselage, which has closed accommodation for the crew.

The wing is in three sections. The front section is fixed and rigidly braced to the fuselage.

The middle section is hinged to the front section and is moved up and down by a transverse Vee strut, the upper ends of which are attached to the rearward edges of the middle section, with the apex within the fuselage.

The third, or trailing, section is composed entirely of flaps and ailerons and is linked with the middle section so that it moves in conjunction with it.

The middle section has an angular travel of 16 degrees and the rear section an additional travel of 40 degrees.

On the front section are spoilers, which are operated by a cam mechanism acting in conjunction with the aileron control.

The Vee operating strut is raised and lowered by a hydraulic mechanism in the present model, but it is planned to make the control automatic in any future models.

The oil-cylinder used to actuate the flap-mechanism is of the double-acting type with a bye-pass for the oil. The bye-pass is provided so that the oleo-mechanism will act as a dash-pot to retard the motion when the mechanism is operated automatically by travel of the centre of pressure. In hydraulic operation the loads on the operating mechanism are taken by shock-absorber cord.

The machine is also fitted with a Schroeder variable-pitch airscrew. This airscrew is controlled automatically by travel of the centre of pressure and centrifugal force on the airscrew blade, and provision is made for two settings having a six-degree variation. A ratchet mechanism holds one blade in either of the two positions, and a linkage between the two blades produces equal changes of pitch in both blades.

The Handley Page Biplane.

The Handley Page biplane is a two-seat tractor biplane with an 150 h.p. Armstrong Siddeley Mongoose engine and Townend ring cowling.

The entire leading and trailing edges of the wings have automatic slots and flaps. The outer sections of the top wing flaps perform the duties of ailerons and are manually controlled.

The performance of the Handley Page biplane in the hands of Mr. Cordes has astonished everyone at Mitchel Field. After a run of not more than 100 ft. at a speed of about 25 m.p.h. the pilot pulls the control column hard back and the fore part of the machine takes off with the tail skid trailing on the ground. As the angle of the machine increases, so that slots and flaps all operate, the requisite lift is obtained and the machine takes off. The machine will continue to fly at the exaggerated angle without loss of forward speed.

If the extreme stalling angle is reached the machine simply corrects itself, the pilot always retaining complete control over his lateral balance.

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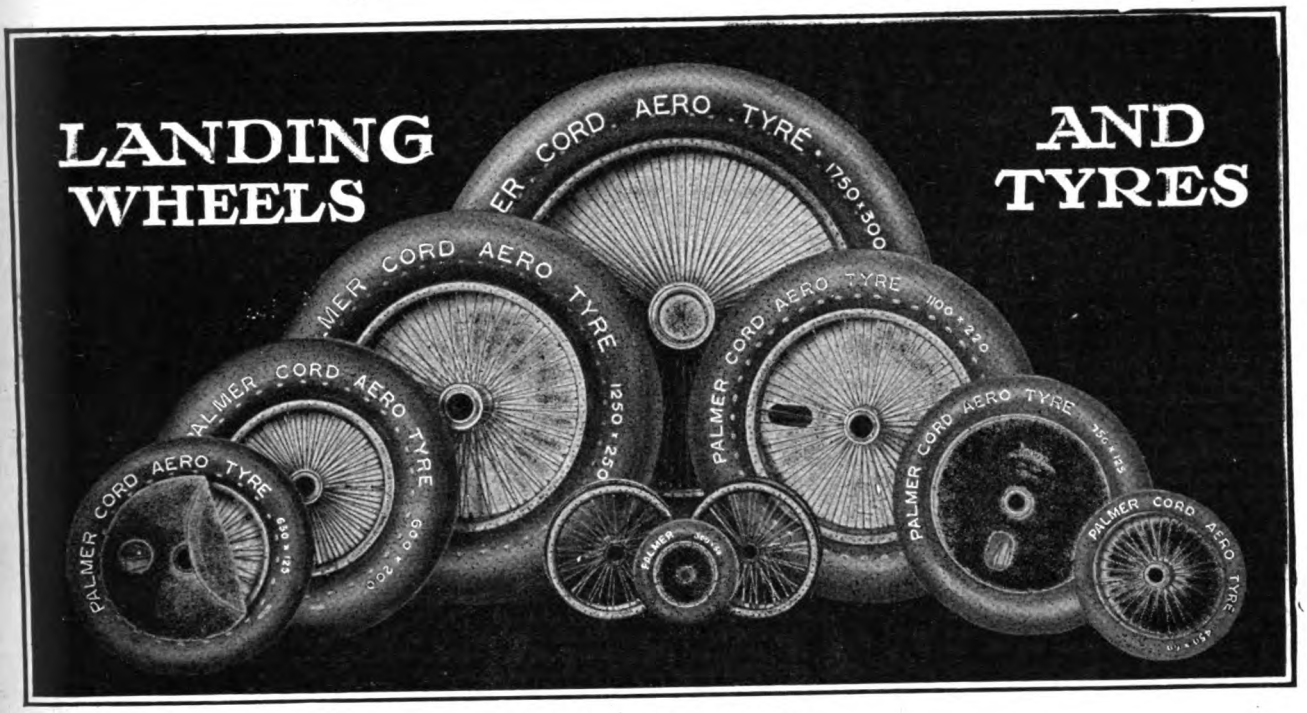

STANDARD SIZES.

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375 × 55	168	111.12	25.4	Central
"	195	130.	38.09	Central
300 × 60	16	111.12	25.4	Central
450 × 60	30	89.	31.75	Central
"	172	130	38.09	Central
575 × 60	21	160.	28.	Central
"	180	150.	38.09	104/46
"	186	120.	34.92	Central
"	190	150.	38.09	Central
600 × 75	21	160.	28.	Central
"	180	150.	38.09	104/46
"	186	120.	34.92	Central
"	190	150.	38.09	Central
700 × 75	78	178.	44.45	132/46
"	79	178.	44.45	Central
"	00	178.	38.09	132/46
"	101	178.	31.75	132/46
"	196	178.	55.	Central
600 × 100	188	120.	34.92	Central
"	304	150.	38.09	104/46
"	333	120.	34.92	Central
700 × 100	77	178.	44.45	132/46
"	92	185.	55.	135/50
"	95	185.	55.	Central
	99	178.	38.89	132/46

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
700 × 100	112	150.	38.09	Central
"	176	178.	44.45	Central
"	179	178.	55.	132/46
650 × 125	119	178.	55.	132/46
"	147	178.	55.	Central
"	188	120.	34.92	Central
"	336	178.	44.45	132/46
750 × 125	77	178.	44.45	132/46
"	92	185.	55.	135/50
"	95	185.	55	Central
"	99	178.	38.89	132/46
"	112	150.	38.09	Central
"	176	178.	44.45	Central
"	179	178.	55.	132/46
800 × 150	161*	185.	55.	135/50
"	162*	185.	55.	Central
"	163*	185.	66.67	135/50
"	169†	185.	55.	135/50
"	177	185.	55.	135/50
"	183	185.	55.	Central
"	211*	185.	60.32	135/50
1000 × 150	167	185.	55	125/60
"	174	250.	80.	Central
"	182	185.	55.	Central
"	187	220.	66.67	Central
"	201	185.	60.32	125/60

Tyre Size	Wheel No	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
1000 × 150	210	185.	60.32	Central
1000 × 180	148	220.	80.	Central
"	149	185.	55.	Central
"	155	220.	66.67	Central
"	166	185.	55.	125/60
900 × 200	107	185.	55.	Central
"	108	185.	55.	125/60
"	128	220.	66.67	Central
"	137	250.	80.	Central
"	157	185.	80.	Central
"	202	185.	60.32	Central
1100 × 220	134	220.	66.67	Central
"	136	250.	80.	Central
975 × 225	192	185.	60.32	Central
"	194	185.	55.	125/60
1100 × 250	364	220.	60.32	Central
1250 × 250	314	250.	80.	Central
"	154	304.8	101.6	Central
1500 × 300	305	304.8	152.4	Central
"	306	304.8	101.6	Central
1525 × 325	197	304.8	101.6	Central
1750 × 300	139	400.	152.4	Central
"	191	350.	150.3	Central
1750 × 350	193	400.	125.	Central
2000 × 450	363	500.	152.4	Central

*Wheels Nos. 161, 162, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres. †Wheel No. 169 is fitted with Ball Bearings. Grease gun equipment is now a standard fitting on all wheels.

(A/NL)

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Dr. Dunstan says that the engine designer demands various criteria for aviation spirit, only three of these are really of importance and these three are volatility, stability and anti-knock quality.

From the early days of aviation to the present time aviation fuel has been derived from carefully selected crude oils, but this cream of petroleum no longer suffices. The future of gasoline lies in cracking and the aero-engine will be compelled more and more to use cracked fuel, which has the disadvantage of being extremely gummy.

The general range of volatility of a spriit is judged by a distillation test which records the percentages distilling at intervals of 25 degrees Centigrade. The percentages distilling at 50 and 75 degrees give an indication of the amount of those volatile components which give easy starting and rapid acceleration from cold. The final boiling point shows to some extent the nature of the least readily volatile hydro-carbons present. The loss indicates the presence of hydro-carbons so extremely volatile that they may create gas-locks or boiling in the carburettor at high altitudes or tropical temperatures.

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Broadly speaking, paraffin hydro-carbons detonate most readily, naphthenes and olefines at a higher compression ratio, while aromatic hydro-carbons preignite before they detonate. There are many exceptions to this generalisation. Up to the present anti-knock quality has been obtained by adding coal-tar benzole to the petroleum spirit.

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designer has done his best it is always up to the fuel manufacturer to produce better fuel so that the engine-designer can raise his compression still higher. He, Mr. Pye, was surprised that Dr. Dunstan thinks that our salvation lies in cracked and purified spirit and wished to ask the lecturer whether he can produce sufficiently purified spirit at a competitive price. Dr. Dunstan had said very little about dopes. The history of Lead Tetra-ethyl as a dope was romantic,—it was introduced into some petrol which was destined for use in German Submarines, with the idea that such horrid stuff would be sure to spoil the engines, but subsequent test showed it to be the best anti-knock dope, and nothing has been discovered since on either side of the Atlantic which is so good. He considered that there is need for a better dope than lead tetra-ethyl, one that is better for the engine and non-poisonous, and that improvement in dope should be attempted as distinct from improvements in fuels.

MR. FORD said that aero-engine design can be improved in induction and turbulence. He was disappointed that no stress was laid on low-temperature carbonisation of coal to produce fuel, as that is of national importance. He remarked that the lecturer stated that where the maximum volumetric efficiency was required the induced gases should be as cold as practicable, distribution is more important than volumetric efficiency, and that means artificial heating, hence the importance of volatility. He thought that the engine-designer and fuel-producer should co-operate for better distribution. Owing to crashes happening owing to freezing of the benzol content of fuels it is important to find a substitute for benzol. He expressed surprise that the lecturer recommended Alcohol-Benzol-Petrol mixtures. However good results may be obtained on the ground with this mixture with high compression engines, it will remain too heavy to use in the air owing to the low calorific value of alcohol.

WING CDR. HYNES said that good distribution requires volatility, and in spite of great effort to reduce weight, a multi-cylinder engine only gives about 90% of the power obtained from a single cylinder, owing largely to distribution troubles. And anything which tends to make this more difficult must be avoided. The speaker was surprised that Dr. Dunstan was so optimistic about producing a non-detonating dope-free spirit and would like to know if he had produced any, even as a laboratory experiment.

The inspection of petrol has great difficulties and the tendency towards placing anti-knock values as the chief consideration was appreciated because it simplified inspection. He would like to know whether standard fuel remains relatively the same in different engines. He said that the designer is already tied up in knots on the mechanical design and that cylinder-heads are generally determined by the mechanical design.

MR. TAYLOR questioned the accuracy of tests on an engine (the Armstrong test engine) with plain crankshaft bearings, as the higher friction-losses tend to inaccurate tests, and although ideal for lubricating oil tests, were not so good for fuel tests. He said that some people say of the compression-ignition engine that fire-risks do not matter, and that it is only the economy that is important. The speaker did not agree but he wanted to know whether the fact that petrol was not used would reduce its price to such a figure that it would pay better to use petrol than oil. When the compression-ignition engine comes to the fore a new form of fuel-dope will be required to accelerate combustion or detonation. Has Dr. Dunstan information on such a dope?

MR. EVANS mentioned the historical point of view. For 50 years engine designers have been troubled with detonation and have found that the only method of eliminating it is the Diesel engine. It still seems to press the oil engineer and engine designer very hard, but there is still the solution in the Diesel engine. As regards the supplies of fuel-oil, a motor-ship uses as much oil in a day as a motor-'bus would use in three years.

MR. BRAMSON asked for a simple definition as to what happens during detonation. Is the loss of power due to extremely high temperatures? He also wanted to know whether anything similar happened in compression-ignition engines, and wanted to know the relation between flash-point and fire-danger.

MR. STANSFIELD (engine-test laboratory of the Anglo-Persian Oil Co.) said that in reply to the question on the use of standard fuels in various engines, if the reference fuels are pure tests can be brought to within 2% or 3%. The Armstrong engine has plain bearings because it was designed to be cheap and to be used by unskilled labour. The crankcase has a capacity of only one litre with splash-lubrication which results in very small changes in temperature, about one degree in a three-hour test. The bouncing pin is not so sensitive as the R.A.E. test-apparatus, but it gives good comparative results.

In asking the Lecturer to reply, Col. Sempill said that the Society had the honour of having the President of the Institute of Technologists as the lecturer, and asked about the supply of fuel-oil if petrol was no longer used for aircraft and cars.

The Lecturer in reply said that the paper was prepared at short notice after the title had been announced, otherwise "dope" would have been dropped from the title. He said that the oil chemist can turn light oils into heavy oils. As regards cracked oil to satisfy the Air Ministry, it depends on what was wanted. The total amount of coal treated by the low-temperature carbonisation process is about 100 tons a day, a small percentage of which weight is produced as oil, so the supply is not important when the quantity of petrol imported in a year is 800,000,000 gals. Cracked spirit is superior to benzol except for gum. The Ricardo Head is the result of collaboration between designer and fuel-engineer. He refused to be drawn into the question on prices. According to Professor Wheeler, where there is detonation there is an after-burning which causes loss of power. The higher the flash-point the greater the risk, but the fires in the works in Persia happen with paraffin because at high temperatures gasoline makes a mixture which is too rich to ignite.

THE INSPECTION OF METALS.

On Nov. 21 Mr. L. W. Johnson read his paper on the Inspection of Metals and their Alloys before a joint meeting of the Institution of Automobile Engineers and the Royal Aeronautical Society at the Royal Society of Arts.

This lecture was held at 7.45 p.m. instead of the more usual 6.30 p.m. and members of the Royal Aeronautical Society who arrived at 7.15 to obtain light refreshments found the cupboard was bare. The light refreshments (which, incidentally, are supplied by the wealthy motor-makers) were dispensed afterwards. One would have thought nourishment was needed before, not afterwards. Anyway "light refreshment" seemed a bit inadequate, and the writer had dinner first so he was prepared

Mr. Johnson's paper was full of the most interesting information and in fact was so voluminous that the author made no attempt to read right through it. He contented himself with explaining the slides.

It is not possible to do justice to the paper in a report of this kind nor to quote all the practical information contained in the appendices. One can only advise people who are interested, and every member of any inspection staff should be numbered amongst these, to get a copy.

As Professor Morgan, the chairman of the Institution, was unable to arrive in time, Col. The Master of Sempill deputised and introduced Mr. Johnson, who, so we were told, after four or five years' work with Prof. Aitchieson joined Mr. Fedden and is now metallurgist to the Bristol Co.

MR. JOHNSON said he did not propose to deal in detail with tensile tests. He commented on the fact that the ratio of gauge-length to diameter was important.

Referring to Yield Point the lecturer said that whereas this was easily determinable for mild steel it was difficult to find for a hardened and tempered alloy steel, and as a result, two different operators working the same machine could obtain results differing by at least 5 tons per sq. in. for the same steel.

As the Yield Point does not really exist in certain hardened and tempered steels, cast alloys, cold worked steels and alloys, Proof Stress is being used to replace it.

Proof Stress may be defined as the load which will produce a permanent extension of not more than .1 per cent. of the gauge-length. For non-ferrous materials a permanent extension of .5 per cent. is also used.

The lecturer then passed on to the Brinell Test, which is described in the paper as being performed by pressing a hardened steel ball into the material under a definite load. The Brinell Hardness Number is obtained by dividing the load in kilogrammes by the area in millimetres of the spherical surface of the impression.

Considerable variation of Hardness Number is obtained by varying the load, and the large diameter (10 mm.) of the steel ball used makes a big enough impression to make this method of testing not always suitable.

Mr. Johnson then showed a number of slides illustrating various testing machines using modifications of the Brinell Test.

The Firth Hardometer is a very compact machine and uses a 120 kg weight with 2 mm., and 4 mm. balls for testing steels, and a 30 kg weight with 1 mm. and 2 mm. balls for testing non-ferrous materials.

This machine, which is chiefly suitable for finished and partly finished machined articles, will test at the rate of about 200 articles per hour.

The Vickers Pyramid Hardness Testing Machine though elaborate is probably the most accurate of all the small impression types.

Another well-known machine is the Rockwell from which the direct hardness number is obtained by direct reading from a clock indicator with two scales. Before the clock indicator is set to zero an initial load of 10 kg. is applied to the specimen.

There is also the Herbert Pendulum Hardness Tester and the Shore Scleroscope Hardness Tester which obtains a Hardness Number by recording the height of rebound of a small steel drop-hammer.

Mr. Johnson showed a slide of the Herbert "Cloudburst" Hardness Tester which affords the only logical means of testing case-hardened steel. In this instrument the case-hardened surface is subjected to a continuous bombardment by steel balls, all dropped from a definite height and covering the whole surface to be tested. Any soft patches will be revealed by a roughening of the surface. Batches of the same parts may be tested at once in this machine and no measurements are needed to interpret the results.

A useful test consists of passing a magnetic current through an iron or steel specimen. The presence of a crack lying more or less across the path of the current will cause magnetic poles to appear at each side of the crack. The specimen after magnetising is flooded with kerosene containing a quantity of soft iron dust in a very fine state of division. This dust adheres to the poles formed at each side of the crack. Mr. Johnson remarks that parts should be demagnetised after this test as magnetic components are not welcome inside engines.

A method of magnetic analysis has been developed in the United States. In this method of test the bar is slowly passed through coils and after suitable sorting and filtration its magnetic characteristics are reproduced on an oscillograph. A steel of any given chemical composition gives a fundamental wave form in an oscillogram upon which strains, decarburisation, surface defects and inclusions will be superimposed.

Surface defects are liable to be hidden by scale or rust on hot-worked materials and by a very thin "flowed" surface layer on cold worked or machined materials. These defects can be revealed by removing the surface coverings.

For rough stampings the reagents can be fairly vigorous and the process is called pickling. For finished parts no measurable quantity of metal is removed and the process is known as "etching."

The lecturer showed a very interesting slide illustrating the value

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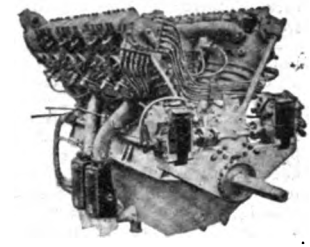
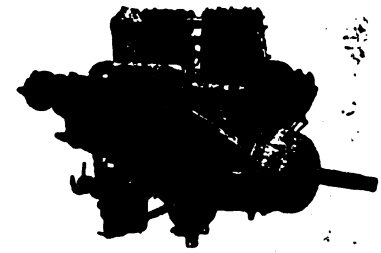
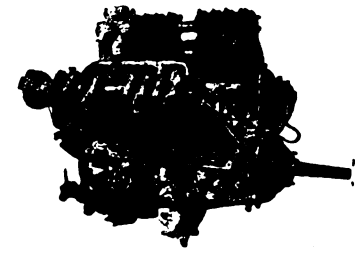


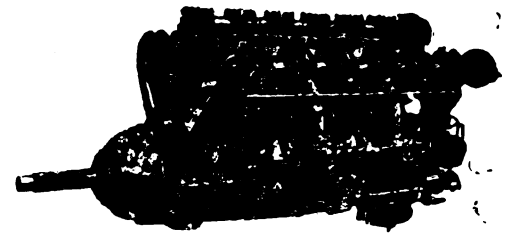
400/410 h.p. 12 Cyl. in V.



450/500 h.p. 12 Cyl. in W.
Direct Drive or Geared.



480/510 h.p. 12 Cyl. in W.

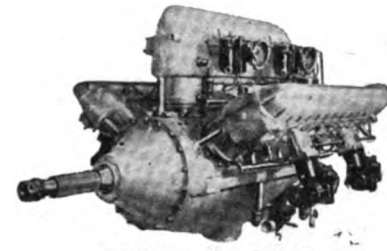


650/750 h.p 18 Cyl. in W. Direct Drive or Geared.

MOTEURS D'AVIATION

LORRAINE

AERO ENGINES.

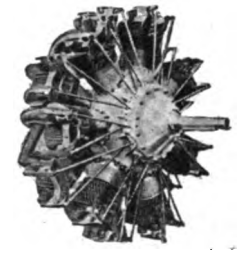


600/700 h.p. 12 Cyl in W.
Direct Drive or Geared.

100/120 h.p. 5 Cyl. Radial.

240/270 h.p 7 Cyl. Radial.

240/270 h.p. Geared.



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of etching. A tap had broken in a hole in a nickel-chromium steel part and the fitter in all innocence had applied a blowpipe with the idea of softening the tap and then drilling it out. This proved impossible as did an attempt to trepan.

Etching showed that the blow pipe had heated the steel above its hardening temperature and on withdrawing the flame the large amount of cold steel had quenched the hot area giving it a tensile strength of about 100 tons.

Sulphur printing may be used to trace the sulphur distribution in steels, excepting the high chromium stainless group. Bromide printing paper, soaked in a 5 per cent. sulphuric acid solution is placed in contact with the polished surface for five minutes. The print is finished by fixing and washing in the usual way.

The grain flow must be the best available in important forgings and this can be ascertained by macro-etching. Roughly this form of etching consists in polishing the surface with No. 0 or No. 1 emery and being careful that each successive direction of polish is at right angles to the last. The surface is thoroughly freed from grease and etched in 10 per cent. nitric acid. A better method is that due to J. C. W. Humphrey.

Mr. Johnson next outlined the origin of defects in steels and traced their development from the ingot stage. Following on this came the advantage of forming gear blanks by up-ending.

Sandblasting and pickling are the most satisfactory methods of inspecting welds, but cannot be relied on to show up internal defects. The preferable way of checking welds is to take check welds at irregular intervals and submit these to tensile, bend and microscopical tests.

Mr. Johnson closes his paper with the plea that whereas in the past the inspection of raw materials had been considered a thing that a labourer could do, the time had come for the raw-material inspection staff to be composed of highly-trained men with a status equal to that of the "Finish View."

DISCUSSION.

DR. MORGAN, who is President of the Institution of Automobile Engineers, then called upon Dr. Gutteridge, the President of the Institution of Engineering Inspection, to open the discussion.

One would here interpolate that the Automobile Engineers have an excellent custom of calling speakers in a discussion to the dais, which makes it much easier for them to be heard by the audience, who are often quite unaware of what members and others are saying in discussions at meetings of the Royal Aeronautical Society.

DR. GUTTERIDGE stressed the point that, as the cost of a part grows with each successive step in the work done upon it, frequent inspection becomes more valuable. It is most important to reject faulty parts in the early stages. There were three potential sources of trouble—design errors, faulty material and incorrect machining.

WING CDR. G. B. HYNES, D.S.O., who is Chief Inspector (Engines) in the A.I.D., explained that he felt somewhat of an impostor as he had not had time to read the paper beforehand. He said the lecturer had taken a somewhat different line to what he had expected. Mr. Johnson had dealt more with the methods employed than the whole process. He (Wing Cdr. Hynes) referred to the fact that the British Inspection System as developed by the Air Ministry had been and still was being widely copied throughout the world. He said that from the aircraft viewpoint a rigid control of material *ab initio* was absolutely necessary. He agreed that the inspection of raw material needed a well-trained staff.

MR. SUTTON agreed. He found in magnetic analysis that longitudinal cracks were very difficult to find unless the field was applied transversely. Mr. Sutton also referred to the use of ferric chloride and cupric chloride as a useful etching reagent for use in the inspection of wire.

MR. WILLSMITH (or Woodsmith) said that applying colour bands transversely to bars for identification purposes in stores was no good as such bands became mutilated when the bars were sawn. [One has always seen bars painted longitudinally for this very reason.—ED.] He asked for information about the etching of welds. He also said that chromium plating (used to prevent corrosion) had proved very useful to indicate defects.

MR. DAVY referred to the inspection methods used at the Welsh steel works and said it was impossible to inspect every billet as cast. The only possible method was to select a certain percentage. Referring to the impossibility of rolling to specification, he said that those who drew the specifications did not have to pay for the material produced to meet them.

ADMIRAL HEPPEL said that tests could be divided into several groups. There were tests for the guidance of manufacturers such as etching tests made on crankshafts and gears which once made need not be repeated. There were tests during production on standard parts and there were tests to destruction which he considered essential. He asked whether every valve was etched at Bristol.

Another speaker wondered whether it was not possible by certain general tests to find out whether a material was suitable for any particular design.

MR. DEVEREUX emphasised the importance of early testing and explained how the etching of a particular drop forging immediately after production had saved a large amount of scrap. The firm to whom these forgings were being supplied had stipulated that the "flash" should be at a certain place. Etching showed that as a result the grain flow was incorrect and the forging would fracture at the most highly stressed part. Arranging for the "flash" to come elsewhere completely obviated this difficulty.

MR. HATFORTH quoted figures to show that there was no reason for discrepancy between Yield Point figures. He pointed out that careless grinding of air-hardening steel could cause local hardening. He inquired as to a suitable method for determining the hardness of high-speed cutters.

Another speaker referred to the errors brought about by the inclusion of gas in chill-cast test-bars. [B.E.S.A. have been conducting tests for a long time in the best method of employing sand-cast test-bars.—ED.]

MR. HAWKINS, of the Institute of Testing, referred to a method, employed at Woolwich, of putting specimens under specified yield-point stress for 10 secs. and then releasing, after which the specimen was tested for elongation.

MR. JOHNSON, in reply, said he appreciated the point raised by Wing Cdr. Hynes, but he felt that the A.I.D. system was sufficiently well known and so he devoted himself to actual methods of testing.

He thought that the time for employing X-rays was not yet ripe and that etching was more satisfactory than magnetic methods of analysis. He agreed that longitudinal cracks were difficult to observe by magnetic analysis. The etching of welds was difficult and could be applied to suspected spots only.

All valves, gudgeon-pins, and connecting rods were etched at Bristol. Pratt and Whitney were using these Bristol methods of inspection in spite of the fact that Pratt and Whitney were producing 250 engines a month.

There was an increasing tendency to dispense with the determination of Yield Point and define it as a certain proportion of the maximum stress.

THE BEST BOOK YET ON AERO-ENGINES.

[*Modern Aviation Engines.* In Two volumes. By Major Victor Pagé, Air Corps, U.S.R. 1908 pages. Fully illustrated with photographs and line drawings. Chapman and Hall Ltd. Supplied by THE AEROPLANE Book Department, Cannon House, Pilgrim Street, E.C.4. 45s. complete,—or volumes sold separately at 25s. per volume.

Information on aero-engines, the theory of their design, the materials of which they are made, their constructional details, installation, running repairs, overhaul, and reconditioning, has been available, for some years, spread over many books, some of which are Government publications or, otherwise not available to the general reader. This has now been collected into one book, by Major Victor Pagé, of the U.S. Army Air Corps Reserve.

An introduction briefly reviews the history of the internal combustion engine, and describes the leading European aero-engines of the pre-1910 types together with two early American engines.

The fixed radial of Charles M. Manley which was made for the Langley "Aerodrome" had many up-to-date features and was the first American aero-engine. The second was the well-known four-cylinder Wright engine of 1903.

A long extract from THE AEROPLANE on the horse-power required for flight, together with an outline of the leading types of aircraft shows that the author considers the engine in relation to the work that it has to do, and avoids the fault which is unfortunately only too frequent, of the engine enthusiast forgetting that the engine has to be considered as an integral part of the aircraft and not as a thing by itself —The number of engine firms who now design cowling to suit their own engines show that this faulty outlook is being corrected.

Elementary heat theories and thermodynamics are explained very simply. The application of theory to the leading types of four-cycle, two-cycle, compression-ignition and Diesel engines is as full as possible without mathematical difficulties. The mathematics used in the book is confined to simple algebra and arithmetic. In spite of this it covers all the essential points of the theory of heat engines for those who are users and not designers of engines.

The problems arising from the use of various fuels and anti-knock dopes are considered, and the history and manufacture of Blau gas will be new to many.

The leading types of carburetters in use on both sides of the Atlantic are dealt with historically, and, in their present form, with instructions for adjusting and tuning. Magnetos, starters and other auxiliaries have their sections.

The installation of engines is dealt with for each engine individually. In all, over 50 modern aero-engines have a place in the book, with such extracts from the makers' handbook and additional information as may be necessary for installation, maintenance, overhaul, or reconditioning. In many cases the tools required, methods of doing the work and specification of materials required are also given.

The general interest of the book is greatly increased by the arrangement of each section. In almost every section the history and development of the component is given with illustrations of early forms, followed by the general theory and the development of the forms in general use. For this reason the book is of use to would-be inventors, who, by reading the development of the component parts, can avoid protecting inventions which have already been tried out and found unsatisfactory.

Critically one wonders why so much space has been given to the Fairchild-Caminez engine which has now been withdrawn from production. Several unusual types of engines are described including twin-crankshaft and barrel types.

The fact—which is not generally realised—that high-speed Diesel engines are not true Diesel engines—is explained. The indicator diagram of such dual-cycle engines are more like the diagrams of the constant-volume cycle than that of the constant pressure. This dual-cycle is the result of attempts to raise the low b.m.e.p. and slow speed of the Diesel to a value comparable with the standard type of electric-ignition engine. Several of these dual-cycle engines are described.

This book will be of great use to private owners of aircraft, ground-engineers, draughtsmen, and even motor-car owners who want to know why.—L. H. F.

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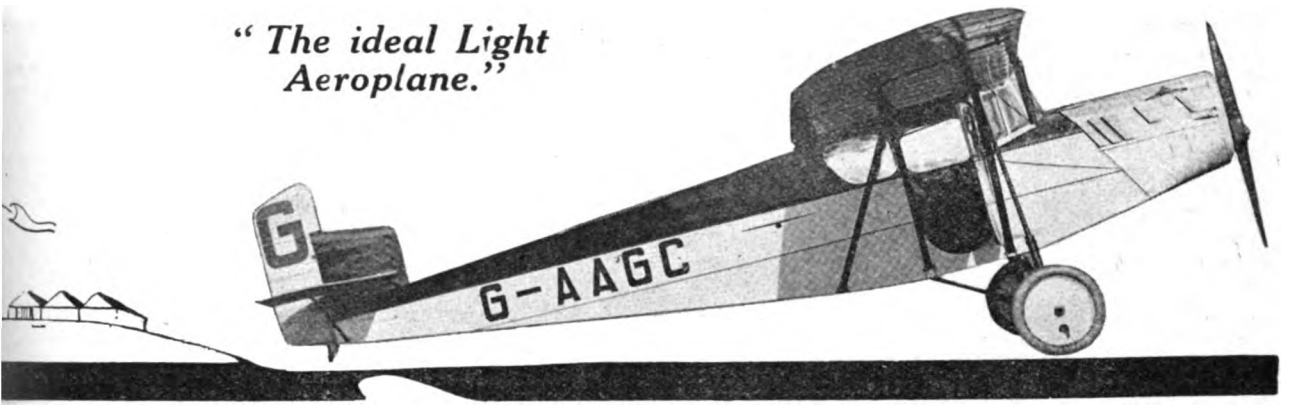
The DESOUTTER

"The ideal Light Aeroplane."



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The Aeronautical Correspondent of "The Times," 23rd November, 1929.

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A REVOLUTION IN METALLIC DESIGN.

When The Aeroplane of March 20, 1929, announced the formation of the Compagnie Lepère-Weymann a comment was added to the effect that something interesting was to be expected from such a combination.

The first product of this new firm is extraordinarily interesting both as to general layout and various structural novelties. This new machine is a two-seat reconnaissance monoplane known as the W.E.L.10.

The designer, Capt. G. Lepère, was a member of the French Mission which went to the U.S.A. in 1917 when America entered the War.

One of the results of his activities at McCook Field, Dayton, Ohio, was a two-seat reconnaissance biplane with a Liberty engine. Large quantities of this type were ordered just before the Armistice only to be cancelled on the cessation of hostilities. In May, 1924, a machine of this type flown by Lieut. J. A. Macready put up a World's Height Record of 32,239 ft.

On his return to France Capt. Lepère joined the aviation branch of the great French armament concern known as the Etablissements Schneider. In 1926 this branch was formed into a separate company with the name Avimeta. This company was forced to close down in 1928 owing to lack of official encouragement.

In the two years of its existence the company produced two very interesting all-metal commercial aircraft, one a single-engined cabin monoplane on the lines of the Ryan monoplane, and the other a three-engined commercial monoplane reminiscent of the three-engined Fokker.

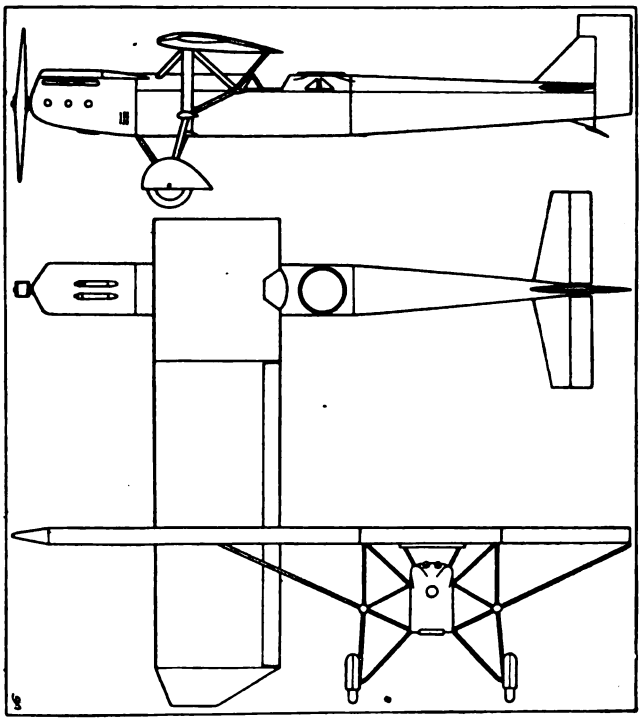
The other member of the firm is Mr. Charles Weymann, who is a French-Haitian by birth and was one of the earliest and finest pilots in France. In 1911 he won for America the Gordon-Bennett Race at Eastchurch while flying a Nieuport monoplane.

During the War 1914-18 he built aero-engines near Paris. Since then the name Weymann has become famous all over the World as a result of his characteristic design of motor-car body, which resembles aircraft practice in that it uses a light wood framework covered with fabric.

The W.E.L.-10 has been designed firstly to obtain a really sound machine from the aerodynamic standpoint, and secondly, to obtain a machine which can be manufactured quickly and easily in quantity.

The first object has been gained by using a high-wing monoplane with only a single bracing strut, by fitting an engine of extremely small frontal area like the 630 h.p. Hispano-Suiza, which further allows a fuselage with a small cross-sectional area, and by using a cantilever tail.

The second object has been gained by the development of new methods of construction employing a stressed skin as wing, control surface, and fuselage covering and by standardising a number of similar components. This will be explained in further detail in the description of each component.



The Lepère-Weymann W.E.L.-10 reconnaissance monoplane.

For ease of transport and repair the W.E.L.-10 can be taken apart into a number of pieces. The wing is in five parts, and the fuselage in three.

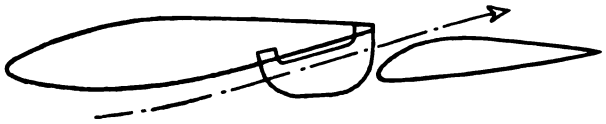
The following details are taken from *L'Aéronautique*:

A special aerofoil section, known as the Lepère No. 8, is used for the wing in which the centre of pressure is situated at about 35 per cent. of the chord from the leading edge. This aerofoil section has an L/D ratio comparable to those of the best-known sections. The wing has an aspect ratio of 6.7 and is of constant chord and thickness save at the ends, which taper quickly both in thickness and chord.

Owing to the stationary C.P. and the stressed wing covering a single spar only is used—this spar is divided, like the wing, into five sections. Essentially, this spar has extruded duralumin flanges of "T" section. The leg or trunk of the "T" is sandwiched between two duralumin plates forming the webs. In places these webs are corrugated vertically. Additional stiffness is given to the spar by extra laminations placed along the flanges.

The bracing strut fittings on the spar are very simple, and consist solely of turned bosses through which a pin is placed when the forks of the bracing struts are in position. These bosses are bolted to the webs of the spar.

The centre-section of the wing is specially designed to take the radiator which is carried in a slot 1.40 m. (4 ft. 7½ in.) long behind the main spar. Extensive wind-tunnel tests have shown that this



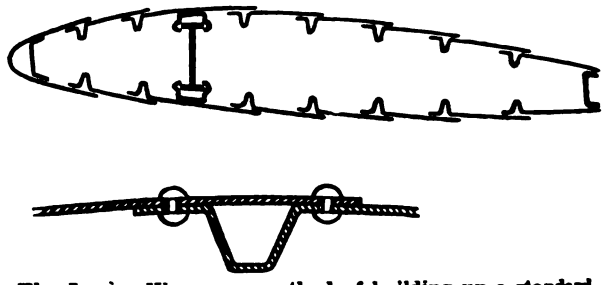
The location of the radiator in a slot in the centre-section.

slot in no way detracts from the lift of the wing, nor does it increase the drag. In fact, the makers claim that the position of this slot in the centre-section over the fuselage helps to decrease the interference effect between the wing and the fuselage.

The wing is supported above the fuselage by outwardly-splayed "N" struts to the extremities of the centre-section. The outer portions of the wings are braced by single struts, one on each side. These principal struts are made of streamline duralumin tube with an adjustable fork at the wing attachment end.

With the exception of the wing-tips, each portion of the wing is made by sliding half a dozen previously assembled standard sections on to the spar and joining them up.

The standard section is made by joining up a number of narrow duralumin strips which run parallel to the spar. Each strip has a



The Lepère-Weymann method of building up a standard wing section.

trough folded along one edge. This trough is placed projecting inside the section and is lap-jointed to the next band and rivetted on both sides of the trough. As can be seen from the drawing, this method gives a number of stiffeners running parallel to the spar.

A specially drawn channel is rivetted inside the section at top and bottom to accommodate the spar, the flanges of which slide in the channels.

An inverted Vee channel is placed right round the centre of the section, in the direction of motion, to give further stiffness.

Each section is closed with a diaphragm at each end which has openings for the spar. These diaphragms take the place of the normal ribs and are attached to the sections by being rivetted to external angles rivetted to the edges of the sections. The rear edge of the standard section is closed with a channel which forms a secondary spar and gives a fulcrum for the aileron hinges.

The sections slide onto the spar and are fixed thereto with angle-plates rivetted to the diaphragms or ribs. Then the previously mentioned angles and diaphragms are punched and eyeletted together. [This is reminiscent of the Wibault system.—T. J.] The leading edge and trailing edge of lighter construction are then added to the wing.

The ailerons of high aspect ratio (5.40 m. x .30 m. equals 17 ft. 8½ in. x by 1 ft. 0 in.), have 16 deg. of travel, and extend along the whole of the trailing-edge of the main portions of the wing, that is along the whole of the wing excluding the wing tips and the centre-section. To the writer the method employed in the construction of ailerons seems heavy. This method employs duralumin sheet rivetted to a tubular spar which forms the front edge of the aileron, and is also rivetted along the trailing edge with a closing strip. There is also an intermediate internal longitudinal spar and outside fore and aft angle stiffeners.

The fuselage is made in three portions, each of which are sub-assemblies put together on jigs.

The front portion forms the detachable engine-mounting and is attached at four points to the centre portion of the fuselage.

The central portion forms the attachment for the wing bracing

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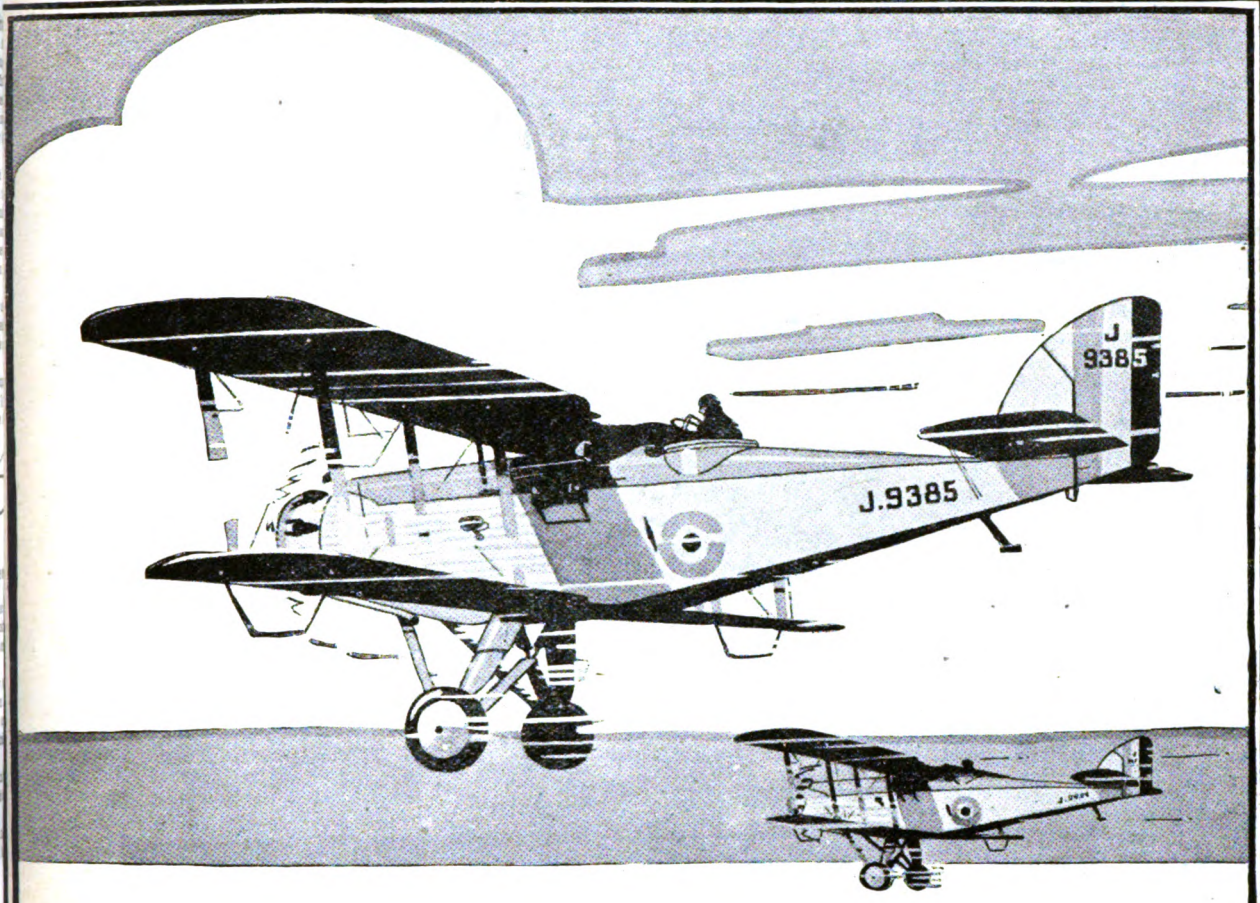

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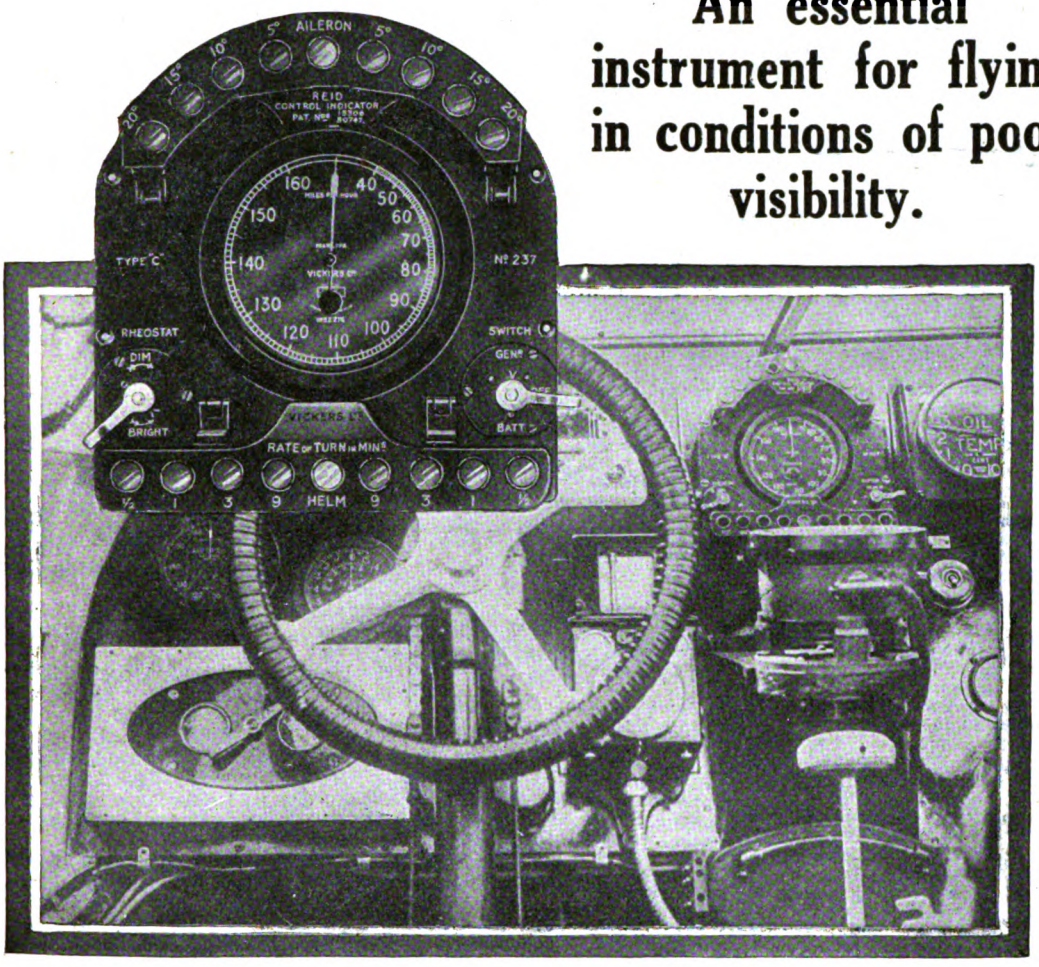

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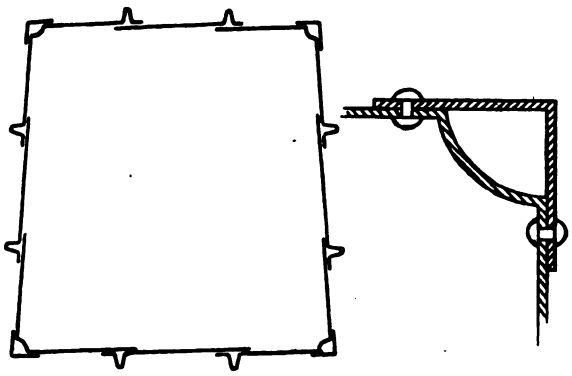

The Lepère-Weymann method of fuselage construction.

struts, the undercarriage, and, in addition to accommodating the crew, it also contains the fuel tanks. A method similar to the wing construction is used for this and the rear section of the fuselage. Longerons are formed by making semi-circular grooves in the four corners of the fuselage covering and closing them with angle sections. Unlike the wings, the grooves in the bands forming the covering are placed externally and run parallel to the longerons. Internal bulkheads built up of duralumin channels increase the rigidity of the fuselage.

The tail portion is similar in structure to the central part, and finishes in a vertical rudder-post.

The tail-unit is of the normal monoplane type, but is cantilever throughout. The tail-plane has a swept-back leading-edge and is built in a similar way to the wing.

Its leading edge is hinged to the top of the fuselage for adjustment in the air. The incidence is varied by links and a bell-crank. The elevators are made in two identical and interchangeable pieces. The fin can be adjusted on the ground. The rudder is balanced.

The undercarriage is of the divided type and has a wide track (2.40 m. equals 7 ft. 10½ in.). Wheel brakes are fitted. The axles are hinged to the fuselage at the wing-bracing strut-fittings. The radius rods slope forward to the fuselage and the vertical shock-absorbers of the oleo-pneumatic type are attached to the wing bracing struts. Three further struts on each side brace this point, one vertically to the wing spar and two to the upper fuselage-longeron. The tail-skid is of the leaf-spring type.

The engine is a 630 h.p. Hispano-Suiza 12-cylinder water-cooled Vee, completely encowled. The radiator is mounted in a slot in the centre-section, and the fuel is carried in the fuselage.

The crew are accommodated in two tandem cockpits, the pilot underneath a cut-out in the trailing edge and the observer further aft. The armament consists of two fixed Vickers guns in the engine cowling firing through the airscrew, twin Lewis guns on a Scarff mounting over the rear cockpit, and one further Lewis gun mounted in the floor of the rear cockpit and firing aft under the tail.

Dual control is fitted. The control unit is made as a complete sub-assembly and can be removed by unfastening a few bolts.

Dimensions.—Span 15 m. (49 ft. 2½ in.), Length 11.50 m. (37 ft. 9 in.); Height 3.10 m. (10 ft. 2 in.); Wing area 33.75 sq. m (364 sq. ft.).

Weights and Performance.—No data available.

PROGRESS IN NIGHT FLYING.

A really good scheme for assisting night landings and at the same time doing away with the necessity of keeping the aerodrome brilliantly lit, has been developed by the famous Spanish firm of S. Sánchez Quiñones. By this scheme any pilot anxious to land at night, can turn on the flood-lights, boundary lights, and obstruction lights of his landing ground, by the simple expedient of first dropping a flare.

The flare is dropped from a height of between 600 and 1,000 feet over a triangle of coloured lights on the ground. Inside this triangle is a concrete pillar about three feet high on the top of which is a photo-electric cell encased by a cover made of a special non-absorbent glass. This electric cell is so sensitive that the dropping of a flare within 200 feet will cause the cell to work.

The illumination of the photo-electric cell allows a .0000001 ampère current to pass, and this minute increase operates a luminous micro-relay which in turn works a mechanical relay. This works a power relay, which allows a current of 400 ampères to pass through the aerodrome lighting circuit, thus illuminating the whole place.

The whole apparatus is so arranged that, once lit, it so remains, until extinguished by the pressing of a push-button—which turns off the lighting current and resets the relay.

The necessary current required to operate the relay is obtained from a dry battery of 200 volts 1 ampère capacity. The power-relay and the current for lighting the aerodrome are taken from the local supply.

Mr. R. North, who lives at 42, Abinger Road, Bedford Park, London, W.4, and is the London Manager of S. Sánchez Quiñones, would be very glad to discuss this system with anybody who is interested. The patent for this country is open for negotiation.

THE GLIDING MOVEMENT.

THE GLIDING LUNCH.

About thirty people have already written to THE AEROPLANE and avowed their intention of attending the Gliding Lunch, which will therefore be held at The Comedy Restaurant, 38, Panton Street, Haymarket.

The date is Wednesday, Dec. 4, and the time 1 p.m. The cost of the lunch will be 4s. per head, exclusive of drinks. Those intending to be present should make a point of arriving well on time, as lots of us have offices to which we must return.

All others who have not already written will be welcome.

There will be nothing formal about the lunch and no attempt will be made to form an association or anything of that sort. The idea simply is to get people together for a start.

SOMETHING TANGIBLE.

The well-known German firm the Kegel-Flugzeugbau of Kassel, have sent this office a catalogue of their gliders together with prices. The firm must be congratulated on following modern trends so closely. As a result of their enterprise, gliding enthusiasts can now be told something about the cost of various glider types.

One must point out that the Kegel-Flugzeugbau is a firm of repute, as is shown by the fact that all the World's gliding records are held by machines built by them.

This firm makes a range of machines from the single-seater Zogling, costing 950 marks (£43), to sail-planes, like the Kegel III, costing 4,200 marks (£210). This machine can be supplied with a wheel undercarriage, so that it may be towed off the ground behind aeroplanes.

The Zogling is a glider of the type illustrated on the front cover of the Gliding Issue of THE AEROPLANE. This machine has a span of 10 m. (34 ft. 8½ ins.) and a wing area of 15.88 sq. m. (171 sq. ft.). As it weighs 85 kgs. (187 lbs.) empty, if one assumes a pilot weighing 77 kgs. (170 lbs.) the loaded weight would be 162 kgs. (357 lbs.).

The wing loading is 10.2 kg./sq. m. (2.16 lbs./sq. ft.). The flying speed is given as 12.5 m./sec. (41 ft./sec.), and the gliding angle 11 to 1.

The KFK.3, which is a two-seater, costs 3,300 marks (£165). This machine is a braced high-wing monoplane with fuselage. The span is 15.500 m. (50 ft. 10 ins.). The wing area is 27 sq. m. (291 sq. ft.). Weight empty, 182 kgs. (400 lbs.). Flying speed 14.1 m./sec. (46.3 ft./sec.). Gliding angle 17.5 to 1. Sinking speed .86 m./sec. (2.82 ft./sec.).

Some details of the real sailplanes will be found under separate headings, but this will suffice to show what can be bought in Germany.

Those who are interested should write to the Kegel-Flugzeugbau Kassel, at Ihringshausen bei Kassel, Germany, and mention THE AEROPLANE.

THE RECORD BREAKER.

A number of remarkable gliding flights have been made this year by Robert Kronfeld on his glider, the *Wien*. In fact, this pilot and machine hold the various records. These are a storm-soaring flight over 143 km. (89 miles), with an altitude of 2,050 metres (6,720 ft.) over the starting point and another flight over 150 km. (93 miles), with 2,160 m. (7,080 ft.) altitude over the starting point.

The *Wien* was designed by Alexander Lippish, of the Rhön-Rossitten Gesellschaft, H. Jakobs and Emil Polsonile. It was built by the Kegel-Flugzeugbau Kassel.

The ailerons are unbalanced. There is a fin and no fixed tailplane but balanced elevators are used instead.

The wing span is 19.15 m. (62 ft. 10 ins.). Length, 7.83 m. (25 ft. 10 ins.). Wing area, 20.2 sq. m. (217.5 sq. ft.). Weight, empty, 165 kg. (364 lbs.). Weight, loaded, 240 kgs. (529 lbs.). Gliding angle, 1 in 24. Minimum sinking speed .50 m./sec. (1.64 ft./sec.).

THE AMERICAN RECORD HOLDER.

The American National Gliding Association have produced a glider on which Dr. Wolfgang Klemperer, a director of the association, covered 15¾ miles in the Allegheny Mountains on Oct. 7 of this year. The time was about 1 hr. 40 min.

This glider is known as the Akron-Condor and was designed by Frank Gross, late of Darmstadt University. The constructors were the Baker-McMillen Co., of Akron, Ohio.

The Condor has a span of 53 ft. (16.1 m.), length 18 ft. 4 in. (5.59 m.), a maximum chord of 4 ft. (1.22 m.), aspect ratio of 20:1. Weight empty, 304 lbs. (138 kgs.). Gliding angle 1:24. Sinking velocity of 2 ft. per sec.

GLIDING NOTES.

Mr. Masami Ono, a Japanese aeronautical engineer who is at present studying aeronautical construction at the Rochester Works of Short Bros., is anxious to get in touch with gliding enthusiasts.

Mr. C. H. Lowe Wylde, whose address is Fernleigh, Rochester Street, Chatham, has a monoplane glider which is nearly new. He is willing to sell it for £20.

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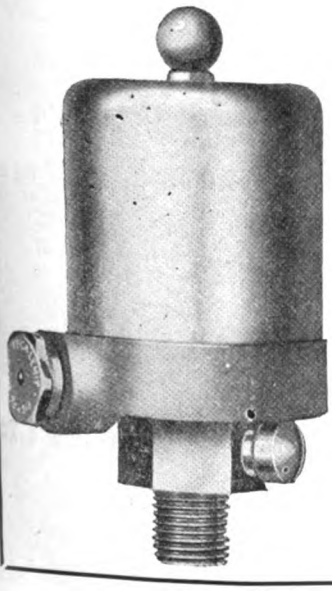

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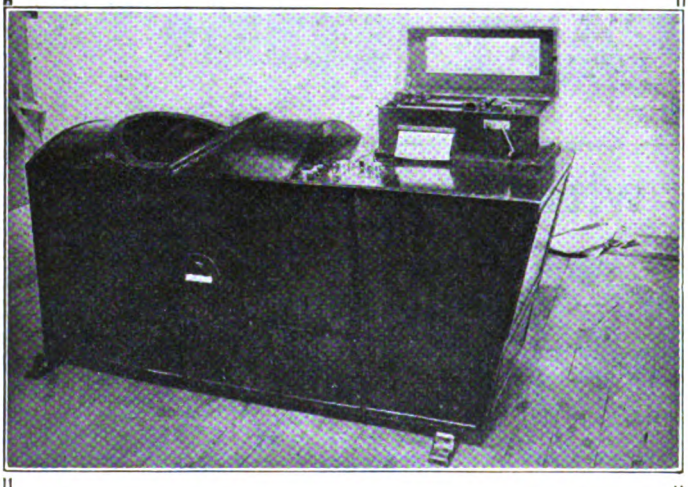

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THE LIGHT AEROPLANE
AND THE FLYING CLUBS.

A REVOLUTION IN GUARANTEES.

On and after Dec. 1, 1929, every aircraft with a Gipsy engine, which is delivered new and unused to its owner, will, subject to certain reasonable conditions, be repaired free of charge at the cost of the De Havilland Company if damaged in a forced landing caused by the failure of its engine.

This is one of the most interesting policies yet instituted in the Aircraft Industry. We are accustomed to the De Havilland Co. setting a lead to the World, but even that enterprising firm has never done anything so revolutionary.

If such a guarantee, backed by the De Havilland Co., whose good name is unsurpassed in any branch of commerce, does not instil confidence in the minds of actual and prospective owners of light aircraft, as well as in the minds of the public generally, there must be something wrong with the psychology of this country.

Needless to say, there is no catch in the offer. What it means is that the De Havilland Co. have so much faith in their own engines that they undertake to shoulder the very slight risk of having to pay up.

Briefly the stipulations are as follows: Firstly, and naturally, the indemnity is not retrospective and does not apply to machines delivered before the specified date. Also it applies only to approved types of light aircraft which hold British Certificates of Registration and Airworthiness. And it applies only when such aircraft are being used in Europe for private flying, training, taxi work, or ordinary commercial purposes. Such things as racing, record-breaking and experimental flying cancel the protection.

Yet another condition, which is fairly obvious, is that the engine shall have been properly maintained in accordance with the instructions laid down in the De Havilland Handbook.

Another necessary precaution is that the indemnity only applies when the original owner of the machine is flying it, unless the approval of the De Havilland Co. has been got to its transfer to a new owner or an approved pilot.

Lastly, and equally naturally, the De Havilland Co. will not hold itself responsible for the failure of those components of the Gipsy engine whose manufacture is not under their control. Under this heading come such things as magnetos, petrol and oil pipes, carburettors, sparking plugs, etc.

What the guarantee does in fact mean is that the De Havilland Co. guarantee their engine against breakage of any part made by them. The parts made by other manufacturers, which are specifically mentioned as nullifying the indemnity, are such that even if they go wrong they cannot possibly cause the engine to break up. At worst they can only cause a forced landing. And then if the pilot breaks his machine it is more or less his own fault.

But, under this policy, he is guaranteed against serious internal damage, which costs much money to repair, being caused by internal breakages. Such breakages are about the only thing which are likely to force a pilot to land without even flying on a mile or so to look for a decent landing ground, so the protection is greater than it looks.

About the only stipulation the firm make is, very naturally, that repairs must be done on the firm's own instruction, and that disputes of any kind shall be settled in accordance with the terms of the Arbitration Act of 1889.

The De Havilland Co. deserve to be congratulated on their enterprise, and all owners will certainly be grateful.

THE FLYING CLUBS.

In the House of Commons, on Nov. 15, in reply to a question by Sir R. Gower, the Under-Secretary of State for Air gave the names and flying membership of the following subsidised light aeroplane clubs:—

London, 285; Midland, 150; Lancashire, 180; Yorkshire, 159; Newcastle-upon-Tyne, 181; Hampshire, 275; Bristol and Wessex, 119; Norfolk and Norwich, 102; Nottingham, 61; Scottish, 228; Suffolk and Eastern Counties, 94; Cinque Ports, 94; Liverpool and District, 119.

With the exception of the Northamptonshire Aero Club, which he understood had 72 members, no information was available in regard to the membership of unsubsidised and Service Clubs, but the names of the Clubs were as follows:—Southern; Leicestershire; Berks, Bucks and Oxon; The Household Brigade Flying Club; Derby and District; Southport; The Flying Club of Ulster. (Service Clubs.—Halton; Royal Aircraft Establishment (Farnborough); Marine Aircraft Experimental Establishment (Felixstowe).)

In addition National Flying Services Ltd. had established Clubs at Hanworth, Reading, and Hull, which, up to date, had a flying membership of 464, 69, and 39 respectively.

[The figures would have been more informative if the number of members actually taught to fly and under instruction had been given.—C. G. G.]

SPREADING THE GOSPEL.

On Nov. 19 a meeting was held at 38, Bryanston Square, by the Women's Committee of the Air League of the British Empire, thanks to the generous hospitality of the Hon. Lady Bailey.

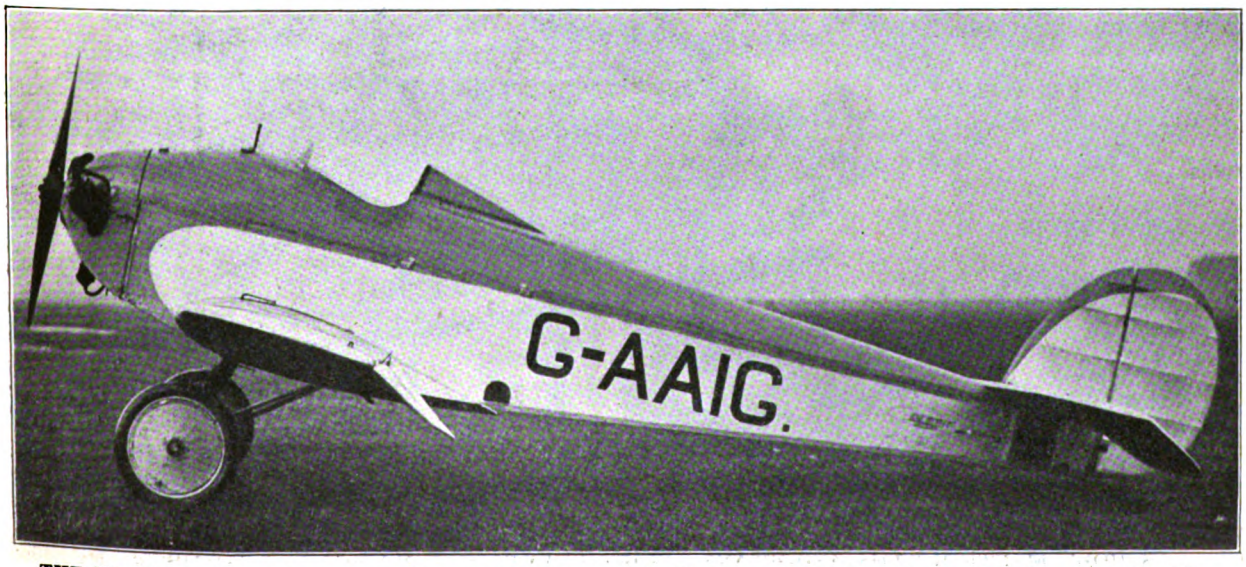
The meeting was called to discuss plans for future activities and for the enrolment of a corps of voluntary workers who would be willing to give time and talent to the League.

Lady Bailey took the chair. After welcoming her guests she introduced Lt.-Col. N. G. Thwaites, C.B.E., M.V.O., M.C., Acting Secretary-General of the Air League, who gave a brief and voluable talk on the Air League and its work,—with convincing arguments for the absolute need for stirring up the British Public and for facing Politicians with hard facts—Certainly the statistics, which with other literature were distributed to the meeting, were disturbing enough.

Dr. Gerald Merton, M.C., M.A., F.R.Ae.S. (late R.A.F.), Chairman of the Committee of the Air League, also spoke, persuading to further enthusiasm. He told us of some of the work waiting for volunteers and drew attention to the questionnaire which volunteers were asked to fill in. In this way workers can be organised to some extent. This is of great importance if good work is to be done with the enthusiastic voluntary support now offered to the League.

A general discussion was then opened which brought to light some valuable suggestions and showed the keen interest taken by the newly initiated.

Hearty thanks were given to Lady Bailey on behalf of the members of the Air League, the ladies of the Aviation Section of the Forum Club, and their friends for a pleasant and profitable party.—M. S. G.



THE HENDY HOBO.—A new low-wing monoplane (A.B.C. Scorpion) built by Messrs. Henderson and Miles at Shoreham.—(*"Aeroplane" photograph.*)

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THE HENDY "HOBO."

In this year of grace—1929—which is so active in matters aeronautical, in meetings, shows, races, displays, and whatnot, there has been lastly (but by no means least) a very good display of machines produced by private enterprise, either by small new-fledged firms or private individuals. Which is very much to the good, inasmuch as it is direct proof that civil aviation is not dead, dying, or even dormant, but in a good state of healthy activity, healthier still for being private endeavour. And the machine described in the following is an example of such effort.

This aeroplane, bearing the breezy title of the "Hobo," is a very interesting machine in many respects, although superficially it is typical of a class of light aircraft of which the year is producing so large a crop. Its designers, financiers, and largely constructors are Messrs. B. B. Henderson and A. A. Miles, who by strange coincidence bear no connection to Lt.-Col. Henderson nor Mr. F. G. Miles of the Southern Aircraft Co. Ltd. Collectively they are known as the Hendy Aircraft Co. of Shoreham Aerodrome, Sussex.

Fundamentally, the "Hobo" is a single-seat light aeroplane of the low-wing full-tapered cantilever variety, with an A.B.C. Scorpion engine. It is now flying, and, not only does it look well in the air, but it has proved itself to be a very good little flying-machine.

Wings.—The wings are full cantilever and built in three sections, comprising the two outer parts, which taper in thickness and width of chord from root to tip, and the centre section, which is built integral with the fuselage. The wing section is of the bi-convex variety modified from the R.A.F. 34 to meet with existing requirements, and has a practically stationary centre of pressure.

The wing structure is a feature of outstanding interest and is the most striking feature of the whole machine, as it embodies an entirely new form of construction. There are two built-up "I" section spars with spruce flanges glued and bradded to the 3-ply webs, and as they are situated rather forward in the wing and close together they are identical in dimensions.

The spar assembly is then formed into a box-girder by the attachment to the upper and lower sides of a system of diagonal cross-braces formed by amply dimensioned spruce strut members, attached to equally generous 3-ply capping plates on the spars.

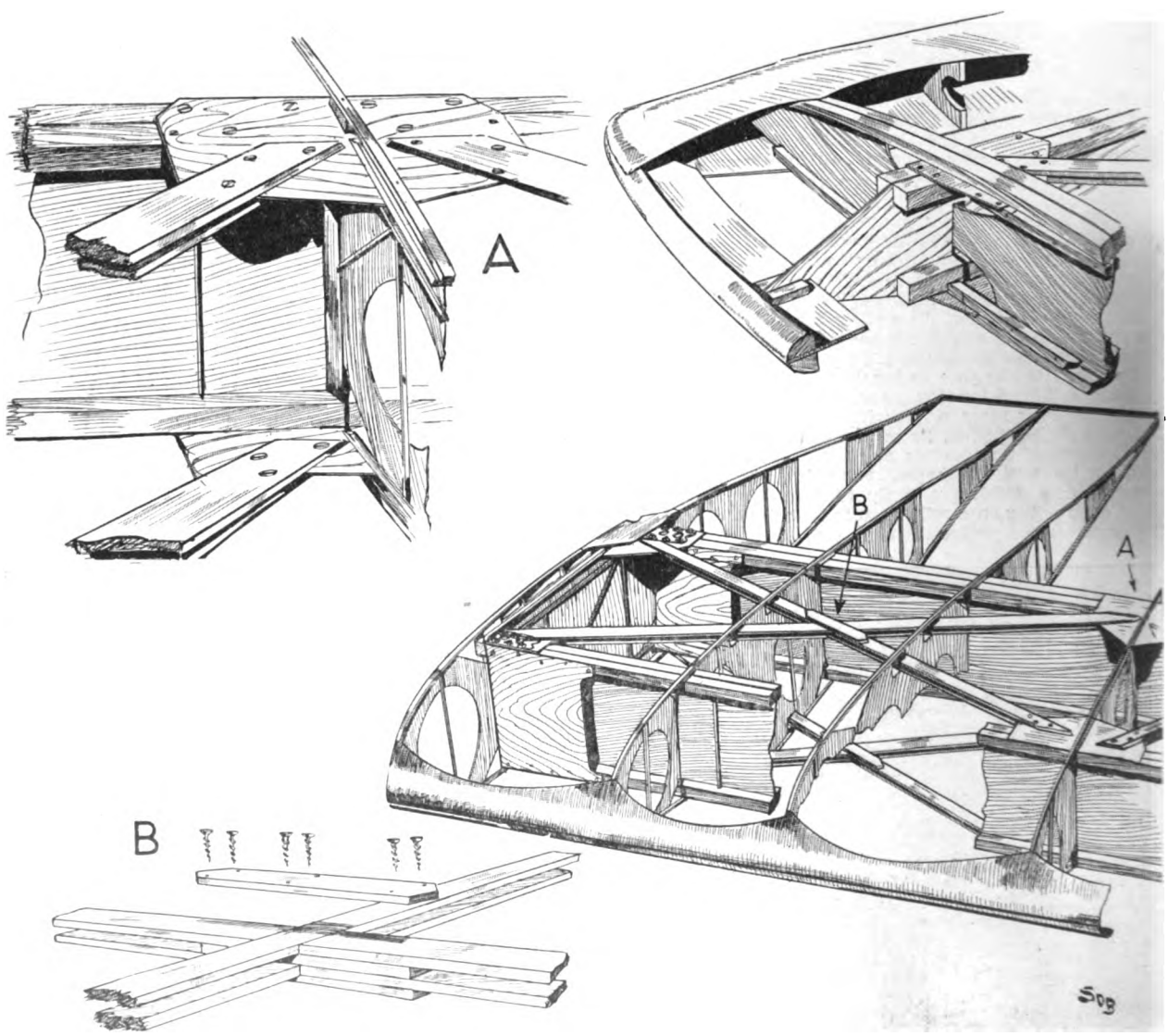
The system will be understood from the adjoining sketches. It eliminates all metal fittings and any redundancy, as the diagonals take their shares of the torsional, bending and drag loadings at the and the same time, so that no individual member is ever quite in a fact which reflects favourably in design as it is possible to proportion all members so that they deal with their own jobs only, or are partly relieved by others in taking loads, a feature in weight reduction, indeed. The system is ideal both for timber or metal construction, in either case, it taboos composite methods.

The ribs are straight-forward members, with ply webs and spruce flanges and stiffeners, with some lightening holes in suitable places. The middle portion of each rib at the junctions of the diagonals is provided with extra stiffeners and members to take the drag compressions. The loading tests made by the Farnborough people reflected very favourably upon the reliability of the construction and showed it to have a factor of safety far beyond anything that may conceivably be required in any flying. A rib-loading test, the designers asserted, showed a strength figure of over 300%.

The system is fully patented all over the World, and in point of interest it may be noted that Sq. Ldr. "Bert" Hinkler is having a machine constructed employing this wing construction method for his own use.

The wings are arranged to fold round the rear spar joints to the centre-section. To facilitate this the trailing edges of the centre section hinge forward to provide space for the trailing edges of the outer wing sections when they are folded. At present the wings are and are attached to the tail-plane, but the hinges are being modified to have universal motion so that the wings can fold with the upper surfaces towards the fuselage or to enable them to be quickly detached when necessary.

Fuselage.—The fuselage is of the ordinary ply-covered box construction which is so popular nowadays. It has four spruce rails and strut members, and carries a tubular engine mounting and fireproof bulkhead at the forward end. The petrol tank forms the fairing in front of



THE HENDY HOBO.—Various wing details. In the right bottom corner is shown a section of the wing, the details at A and B being enlarged on the left. In the top right corner are shown the details of the wing-tip.

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HANDLEY PAGE
AUTOMATIC SLOT CONTROL

"The pilot escaped unhurt. The plane was equipped with Handley Page slots and officials of the flying club voiced the opinion that these saved the plane from destruction and the pilot from death."

"MANITOBA FREE PRESS,"
30th SEPTEMBER, 1929.

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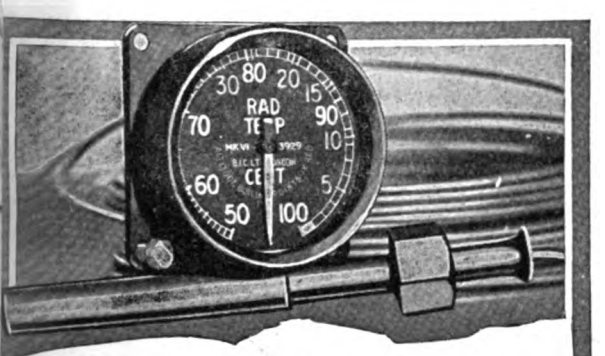

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the cockpit. A luggage locker, capable of accommodating a large suit case, is situated behind the cockpit in the fairing. The cockpit is very roomy and should prove very comfortable and free from draught. A standard "Smith" dashboard is being fitted.

LANDING GEAR.—The undercarriage is of the divided-axle type. Each unit consists of a Vee under the extremity of the centre-section with a bent axle hinged to the bottom fuselage longeron. Large size Palmer wheels (600 by 75 m/m.) are fitted. As the wheels are beneath the extremities of the centre-section, very great stability should be obtained for landing and taxying.

In this connection it may be mentioned that joints of all moving parts, both in the undercarriage and elsewhere, are lubricated by means of Tecalemit greasers, which is an engineering feature unusual in a low-powered aeroplane as yet.

The tail-skid consists of two laminations of steel and is supported beneath the stern-post by means of a steel packing block, so that in the unlikely event of a skid breaking no damage can occur to the stem of the fuselage or to the rudder. Replacement and removal depend upon the operation of two bolts only.

CONTROLS.—The flying controls are of the usual type and operation. The control column is mounted in the box formed by the spars as they pass through the floor of the cockpit. The rocking shaft is mounted on the webs of the spars by fittings at its end. A greaser at the front keeps it filled with grease to serve the moving portions.

The aileron cranks are at the rear and are so placed that the aileron cables run along behind the rear spars in a straight line to the differential cranks. The elevators are operated by cables—again in a straight line—in the fuselage by the final crank method. As the pitot head is mounted on the centre-section, no disconnections have to be made for folding the wings.—S. O. B.

DIMENSIONS.—Span 32 ft. (9.75 m.), Span (folded) 14 ft. (4.27 m.), Chord (maximum) 5 ft. (1.52 m.), Chord (minimum) 2 ft. 11 in. (.89 m.), Length 19 ft. 6 in. (5.94 m.), Height 7 ft. 1 in. (2.20 m.).

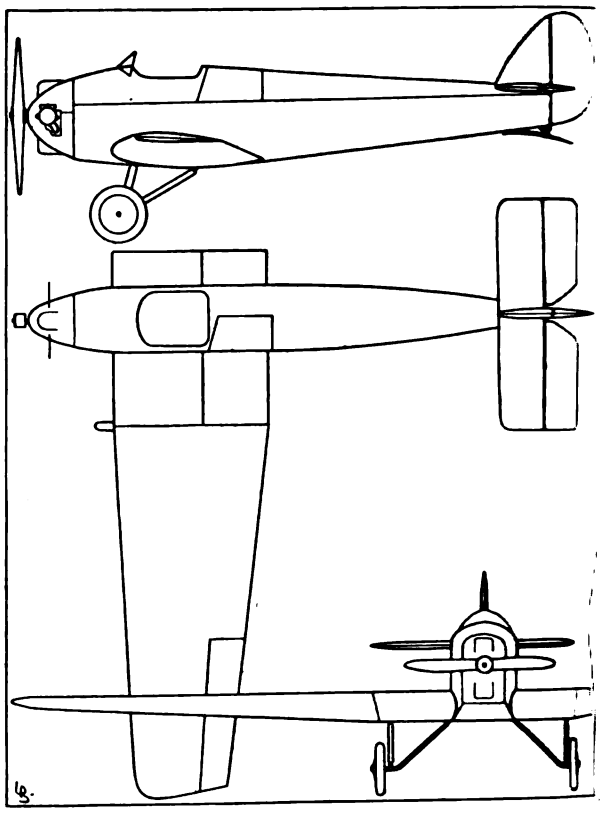
WEIGHTS.—Weight empty 435 lbs. (197 kgs.), Weight loaded (aerobatic C. of A.) 650 lbs. (295 kgs.).

PERFORMANCE.—Speed, maximum, 100 m.p.h. (161 km.hr.), Speed stalling 38 m.p.h. (61 km.hr.), Endurance 6 hrs.

HENLYS' LATEST.

Since the appearance in this paper of a paragraph recording the fact that the great motor-selling firm of Henlys (1928) Ltd. have bought a site for an aerodrome at Addington and are going in for the aircraft business on a big scale, information has been received that the firm have been appointed sole distributors in England for the Avro Avian.

The Avro Co. are to be congratulated on the deal. Many years ago one bought a car from Henlys Ltd. and one can safely say that no firm could treat its customers more civilly or in a more businesslike way than did Henlys of that period. And the way in which the firm has grown in the succeeding ten or eleven years shows that their business methods have maintained the same high level.

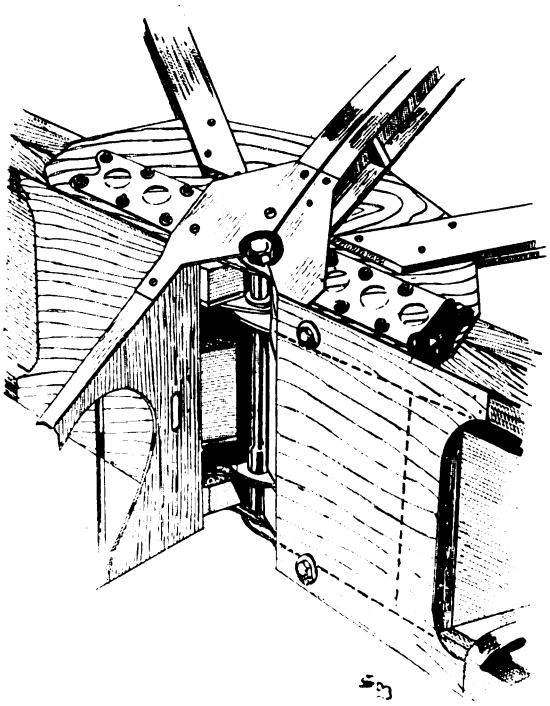


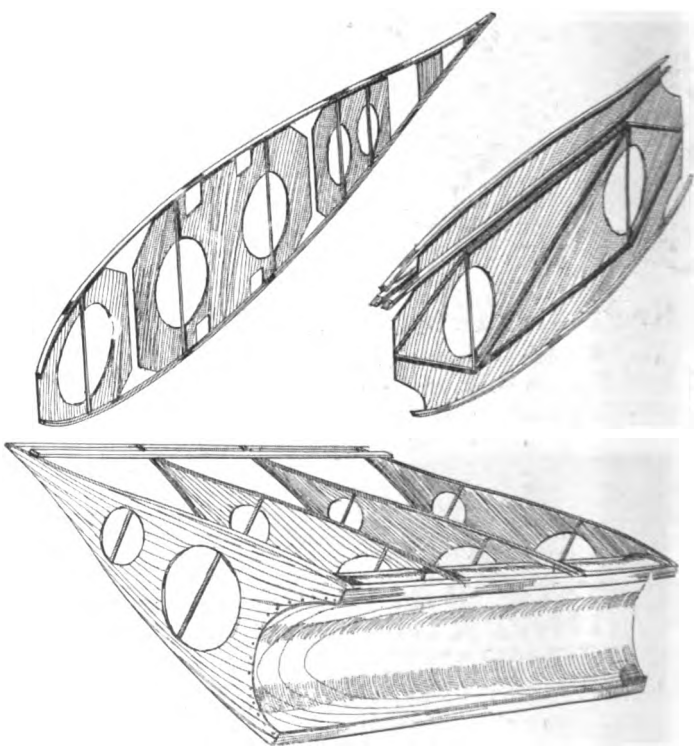
THE HENDY HOBO.—General arrangement drawings of the Henderson and Miles monoplane.

Besides this sole agency for Avians, Henlys have secured a district agency for Moths. In this way they ought to be able to supply anybody's needs

THE MOTH IN FRANCE.

The well-known French aircraft-constructing firm of Morane-Saulnier, of Puteaux (Seine), has made arrangements to build the D.H. Moth and the D.H. Gipsy engine under licence from the De Havilland Aircraft Co. Ltd. The machines and engines will be built in works of the Compagnie Français d'Aviation at Billancourt.





THE HENDY HOBO.—More wing details. On the left is a wing-hinge. The dotted lines show where the spar web is cut away for the insertion of one of the hinge plates. Above on the right is an ordinary former rib and the centre portion of a compression rib, and below is the trailing edge section of the wing root which folds forward to allow for the folding of the wing.

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COMMERCIAL AERONAUTICS.

MUNICIPALITIES AND POWERS AT HESTON.

)uring the week the Public Works and Roads Congress s been sitting at the Agricultural Hall, Islington, and as a ult Borough and City Engineers from all over England ve been in London. On Friday, Nov. 22, a number of these ıtlemen representing some of the most air-minded dis- cts of the country, went down to Heston to have a look Heston and to witness a demonstration of the School reless set installed by Alfred Graham and Co. Ltd.

There was Mr. Elford of Wandsworth, Mr. Rivers of Har- gate, Mr. Ackfield of Leeds, with Major J. Milner, M.C., D., LL.D., M.P. for the same district (till recently Major lner has been Chairman of the Leeds Corporation Im- ovements Committee, and has been pushing Civil Aviation rd in the North), there was Mr. Heath of Swansea with . Davis, who is Mayor of that City, Mr. Dyer of Southend Sea, Mr. Donald from Belfast, Mr. Kelly of Liverpool and . McKenzie of Bristol.

One was fortunate enough to be met by Mr. Sinclair of ahams and drove up to Heston with the City Engineer of eds, Mr. Ackfield and Major Milner, M.P., whose first re- ırks about Heston were, "Neat and not too expensive," ım which one may suppose that in Heston people see the ıd of layout suited to municipal aviation.

The visitors were taken to the Social Focus and shown e wireless installation. They were then taken up to the ɔmost pinnacle of the Control Tower and shown the king- ıms of the earth, or rather Heston.

Mr. Sinclair then proceeded to give Mr. Winsor who was loting a Moth various orders, first asking him to wave the transmission was satisfactory and then telling him start up. One may say that in spite of this being a monstration the engine *did* start at the very first pull. After being told to make a number of evolutions and be- g brought along in front of the control tower the Moth as ordered to land and shut off.

When everybody had come downstairs and vaguely col- cted in the hall round the weather-chart board which the .A. have erected at Heston, Mr. Norman, and Mr. Ivor cClure, who is responsible for the Aviation Department of ıe A.A., delivered a little lecture and replied to questions hich must have done much to make things clearer to the ıunicipal visitors.

The point of the discourse was that there is no essential ıagic in forming a municipal aerodrome and that there is o need to be scared by technicalities. If municipalities ac- uire approved sites and content themselves with the civil ıgineering side, that is making the aerodrome and putting p the minimum accommodation, the repair and service side ın almost be left to the enterprise of a local garage.

A great point was made of the fact that even if the be- inning is slow it is much better to have all parts of the oncern run by local people who will have local interest and eling behind them than to have big outside interests do- ıg the development work. Outside interests will be very opular as long as things are only developing and outside ıoney is being spent but so soon as profits are made, local eling grows hostile towards the foreigner.

The visitors then sorted themselves into groups and were aken round Heston.

Mr. Dyer, who is the Borough Engineer of Southend, ook the opportunity of a flight with Mr. Winsor so that he night try out the wireless equipment. Some of the muni- ipal visitors went up to the control tower and broadcast nstructions to Mr. Winsor and his passenger. On his return he latter was very enthused about his venture.

After tea Mr. Donald of Belfast made a speech of thanks o Airwork and to Grahams, thanking them for the very nteresting visit. One thinks it was Mr. Dyer of Southend vho seconded the speech and pointed out that the time ıad now come for seaside resorts to prepare for their air- orne visitors. Mr. Norman replied and congratulated his guests on being in the forefront of municipal aviation.

Later on Lady Bailey went up and tested the wireless ap- paratus with Mr. Winsor. And thereafter one was allowed to do likewise. The School set worked quite satisfactorily and was in no way interfered with by the engine or ignition. It works in conjunction with the usual telephone set, so at one moment one was getting instructions from the Con- trol Tower and the next discussing the reception with Mr. Winsor.—T. J.

A WIRELESS OCCASION AT HESTON.

On Nov. 25 the Director of Civil Aviation, Sir Sefton Brancker, formally opened the new wireless installation at Heston Air Park.

The D.C.A. ordered the two Airwork Moths by wireless to start their engines, and then to take off one after the other. He sent instructions to them in the air as on Friday.

A FLIGHT IN THE DESOUTTER.

In spite of a very strong prejudice in favour of flying in an open cockpit, I accepted an invitation from National Flying Services Ltd. to a demonstration flight in one of the new Desoutter-Hermes cabin monoplanes which have been standardised for taxi service by National Flying Services.

This machine, which is a version of the Koolhoven F.K.41, technically modified by Mr. G. H. Handasyde, to the general ideas of Mr. Marcel Desoutter, will undoubtedly go a long way towards dissolving prejudice against enclosed cabins in aeroplanes. There is a feeling of space about the cabin and a fine view practically all round. The sliding celluloid panel in the roof gives extra light and takes away that shut-in feeling which one gets in some closed machines.

The seat for the two passengers is comfortable and at a good angle but in its present form might prove rather hard for a very long journey. There is room for two suit-cases under this seat.

Obviously various alterations in the fittings can be made to suit the individual private owner, but for the air-taxi and other work for which these machines will be used by National Flying Services, I would suggest that some form of strap, handle, or arm rest should be fitted at the sides of the passengers' seat. Anybody unused to flying likes to hold onto something on a steep bank. And, in any case, if a pilot over-banks one passenger does not always want the other slipping down on him or her.

The pilot's seat being in the middle in front of the passengers' seat gives the passengers a clear view forward and makes it possible for them to talk to the pilot. The cabin is quiet enough for the pilot and passengers to talk to each other without difficulty.

The demonstration flight was made in the afternoon of Nov. 23, a day on which the airship R.101 was unable to leave the mast because of the high wind blowing, and one of the air liners leaving Croydon had to turn back when half-way across the Channel. Although the wind was not at gale force over the London Air Park at Hanworth, the conditions were far from ideal and most of the flying for the day had been cancelled. But the flight was a most enjoyable one. The Desoutter-Hermes machine behaved beautifully under conditions which would have made flying in some light aeroplanes distinctly uncomfortable. She climbed fast and easily and cruised between 96 and 98 m.p.h. at 1,500 ft. At this height the pilot (Flt. Lt. A. J. G. Styran, M.C., A.F.C., R.A.F.O., N.F.S.) demonstrated her stability uncontrolled by flying for a few minutes with his hands and feet off the controls

After about half-an-hour's flying, during which we enjoyed a new view of Hampton Court Palace and the surrounding country, including Staines reservoirs—which I last saw from the rear-gunner's cockpit of a Service Hyderabad at about one o'clock in the morning—we made a perfect landing on the Hanworth aerodrome.

Although the surface of the aerodrome is rapidly getting into first-class condition for landing all types of aeroplanes, the Desoutter-Hermes with its 10 foot undercarriage track could land comfortably on uneven ground and looks particularly useful for moor or scrub surfaces.

Latest performance figures for this machine with the 105-115 h.p. Hermes engine give the top speed as 110-114 m.p.h., cruising speed 96-98 m.p.h., landing speed 45-50 m.p.h. The ceiling is 15,000 ft. to 18,000 ft. and the climb to 3,000 ft. in 4 minutes and to 5,000 ft. in 7 minutes. The fuel capacity is 25 gallons and the normal range 400 miles or four hours. The normal fuel consumption at cruising speed is 6 gallons per hour. She has a British certificate for airworthiness for normal flying for a weight of 1,800 lbs.—C. M. MCA.

THE G.A.P.A.N.

Following on the Inaugural Dinner of The Guild of Air Pilots and Air Navigators of the British Empire, reported in a recent issue, the Clerk to the Guild announces that he is in a position to receive applications for membership. Inquiries should be made of L. A. Wingfield, Esq., The Guild of Air Pilots and Air Navigators of the British Empire, 61, Cheapside, London, E.C.2.

Membership of the Guild is open to certificated Air Pilots and Air Navigators who are British Subjects, whether resident at home or abroad, and who are master pilots or have been for not less than five years the holders of a "B" Pilot's licence, or First Class Airship Pilot's licence, or a Certificate of Competency as a First Class Navigator of Commercial Aircraft.

During the first year of the Guild's existence, however, the five years' qualification will be waived and the Court have discretion as to whom they elect.

Early application is therefore desirable.

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THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 10; Monday, 7; Tuesday, 17; Wednesday, 20; Thursday, 19; Friday, 17; Saturday, 13.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 33, passengers 155, freight 15¾ tons. India Route: Inward, passengers 0, mail 797 lbs.; outward, passengers 0, mail 778 lbs.

AIR UNION:

Paris—London: Machines 31, passengers 81, freight 12¾ tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 13, passengers 22, freight 6 tons.

SABENA:

Brussels—London: Machines 11, passengers 17, freight 2¼ tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London: Machines 12, passengers 13, freight 2¾ tons.

MISCELLANEOUS:

British machines 3, passengers 1.

Foreign machines 0, passengers 0.

Total number of trips by British machines, 36, carrying 156 passengers. Foreign machines, 67, carrying 289 passengers.

COMPARATIVE FIGURES.

Week ending Nov. 23:

Machines, 103; Passengers, 445; Crews, 262; Total personnel, 707.

Corresponding week, 1928:

Machines, 82; Passengers, 376; Crews, 164; Total personnel, 540.

Corresponding week, 1927:

Machines, 60; Passengers, 162; Crews, 109; Total personnel, 271.

Corresponding week, 1926:

Machines, 55; Passengers, 114; Crews, 68; Total personnel, 182.

Corresponding week, 1925:

Machines, 36; Passengers, 79; Crews, 41; Total personnel, 120.

Corresponding week, 1924:

Machines, 75; Passengers, 213; Crews, 98; Total personnel, 311.

Corresponding week, 1923:

Machines, 15; Passengers, 24; Crews, 23; Total personnel, 47.

Corresponding week, 1922:

Machines, 49; Passengers, 120; Crews, 94; Total personnel, 214.

Corresponding week, 1921:

Machines, 19; Passengers, 13; Crews, 30; Total personnel, 43.

Corresponding week, 1920:

Machines, 39; Passengers, 58; Crews, 45; Total personnel, 103.

CROYDON NOTES

Aerodrome pyrotechnics have been causing a lot of quiet fun recently one way and another. Owing to damp or the ravages of the death watch beetle, some of our "turnips" warranted to explode at a thousand feet and consume themselves utterly before reaching the ground, have been functioning somewhat erratically of late.

One day an Argosy was reported coming in when the weather warranted a firework display. The gun was duly loaded and the fuse lit. Nothing happened for two solid minutes during which the Gent in charge of the sulky firework urged a subordinate to go and look down the tube and see what it was up to in its lair. The subordinate, though not unduly handsome, had an inexplicable affection for his face, although it was pointed out to him that a direct hit by the turnip might even improve his features.

Anyhow, they were still arguing when the Argosy loomed overhead, flying at about 200 feet. At that identical moment the lurking turnip awoke and hurled itself from the tube. Instead of mounting grandly to a thousand feet, it took and burst just in front of the Argosy's nose to the confusion of all concerned.

Another time, during thick fog, a Control Tower Officer suddenly thought he heard an aeroplane circling round the Tower. He rushed forth and fired a green Verey light and then found that the acoustical properties of the Control Tower, or of the fog, or both, had deceived him and it was an engine being run up on the ground that he had heard.

The green light eventually came to earth again on the tarmac, where an ancient labourer of the "old Bill" type dressed largely in sacks, was slowly plodding towards a job of work, spade on shoulder. The green light, flaring viciously, narrowly missed the old man's nose and fell plop at his feet. He paid absolutely no attention to it, his expression did not change and his measured plodding did not falter. It is not known whether the elderly person believes the war is still on, and that the Verey light was an everyday occurrence, or whether he is a victim of that *morgue Brittanique* which did so much to involve this country in the endless troubles consequent upon winning Wars.

Mr. Rogers, ably seconded by Mr. Bill Lawford as passenger, had one of the World's worst bumps when he took a W.10 to Athens and back recently.

A slow downward bump of about three thousand feet made them think some bell-hop in Hades had rung for the lift and then without warning, they seemed to be as urgently required in Heaven, for they suddenly went up vertically about a thousand feet.

A photograph is now in existence of Messrs. Rogers and Lawford reclining negligently against the Acropolis. So much is their presence thought to improve that venerable pile, that a movement is on foot to have life size images of them placed there permanently.

These two gentlemen have evolved a very sound theory as to how and why the Great War started, having of course visited the place where that unpleasant bicker originated.

It appears that they were sipping a modest mug of the local ale in those parts, when they observed certain ferocious-looking brigands consuming a colourless liquid, apparently so strong that it had to be tempered by large spoonfulls of plain cold rice. By means of some arm waving, they managed to obtain specimens of both the liquor and the rice.

Cautiously, and with a spoonful of the clammy antidote held ready, they sipped the deadly liquor—and it was pure water unadorned.

The theory, by the way, is that a folk who habitually drink water for choice in a public place, and who deliberately eat cold rice with it, are capable of starting a war or any other low class entertainment at any moment.

About this Eastern flying by the way, both English and Dutch pilots are inclined to think that it is a very difficult proposition to run regular services out from Europe to India and beyond. They say that it is all very well to do a stunt flight out there and back once, and then give lectures about it with lantern slides of oneself in a tropical kit and shorts disclosing hairy knees, but that it is a very different thing to attempt to fly a regular scheduled mail service, and that possibly the time is not yet ripe for such.—SPRY.

FOR OUR BETTERMENT.

On Nov. 20 Mr. W. B. Mitford, the instigator, organiser and promoter of the British Indestructo Glass Co. Ltd., of Chase Estate, Park Royal Road, London, N.W.10, gave a dinner at the Grosvenor House Hotel to a number of friends in the City and in commerce, to meet Mr. Louis Bartlestone the founder, and still the chief proprietor, of the American Indestructo Glass Co.

Introducing Mr. Bartlestone, Mr. Mitford, who is more than a little of a rhetorician, explained more or less how he proposes to capture the British Trade in safety glass. Somewhat recklessly, in view of the fact that representatives of certain very big manufacturers and users of motor vehicles were present,—not to mention the Press—he told us what a handsome profit per square foot the firm would make out of their glass, and what a huge dividend that would mean for the lucky shareholders. But as, apparently, Indestructo glass works out cheaper than most other safety glasses, even after making such profits, there seems no reason why the firm should not do the business.

Mr. Louis Bartlestone, who said that he had *discovered* this particular method of making Indestructo glass but had not invented it, impressed one as being a man of outstanding ability. In voice and manner and appearance he reminded one of Lord Reading.

Mr. Bartlestone refused to make a speech, he merely asked to be asked questions. His answers to the questions which were hurled at him showed him to be a man who understands his business from the bottom to the top.

He explained why some safety glasses go to pieces because the cement used in fixing the celluloid to the glass dissolves the celluloid and makes it like a sponge. He also explained why certain solvents used on other forms of cement cause the celluloid to go dark and ruin the visibility. —Personally one regards this as being most dangerous, because it is liable to lead to complete misjudgment of speed and distance by the driver, apart from which this discolouration gives one the impression of driving under a foggy sky and definitely produces a feeling of depression which in itself makes driving dangerous.

Describing Indestructo Glass Mr. Bartlestone told us that there is no actual cement used at all. Adhesion is caused by coating the celluloid with castor oil and squeezing the glass onto it under heavy pressure. Such of the castor oil as is not squeezed out amalgamates with the celluloid and itself hardens onto the glass and so makes it stick. So

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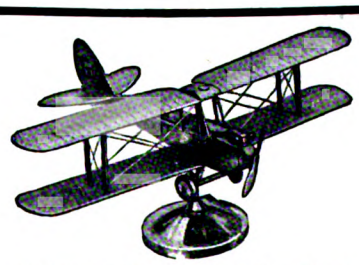

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complete is this adhesion that there is no need to seal the edges of the glass to prevent cement from leaking out or air from leaking in.

The whole process only takes a matter of 27 minutes as against many hours,—amounting in certain types to 13 or 14 hours—in the processes used in making some other forms of safety glass. One important result of this process is that Indestructo glass can be cut to any desired shape by any ordinary glass-worker.

Mr. Bartlestone assured us that the English factory, which will be temporarily in charge of one of his most trusted assistants, is every bit as well-equipped as his own factory in the States, and in other respects is a better factory because it has been built for this particular job and has not grown up to it.

Mr. Mitford, having been reminded by somebody that Mr. Bartlestone had said nothing about bullet-proof glass, brightly remarked that this commodity had been left out of the discussion because we live in such a peaceful and free country that any need for it seemed unlikely, but he assured us that the English Factory could produce bullet-proof glass if needed.

Altogether the speeches of Mr. Mitford and the sound and convincing common-sense talked by Mr. Bartlestone left us all with the impression that the firm's prospects in this country are of the most promising.—C. G. G.

A BROOKLANDS PARTY.

On Saturday night last the Brooklands School of Flying gave a very cheery party at the Thames Riviera Hotel, lately Karno's Island, and further back still Tagg's Island.

The occasion deserves particularly to be noted because there were no speeches. Capt. H. D. Davis, A.F.C., the chief of the School, proposed "The King," and Mr. Harris of the Northampton Club told us what good fellows the Brooklands School are, which we all knew before, so we were able to applaud with knowledge of the subject. And after everybody had well eaten and drunken we proceeded to dance till well after the prescribed hour of midnight.

The whole affair was thoroughly cheery and the proprietors of the School fully deserve the hearty thanks which they received from their guests. The Brooklands School has had a highly successful season and undoubtedly there is no school in this country or any other where tuition is given more thoroughly or more intelligently, so its success is fully deserved. One can only hope that its success may continue.

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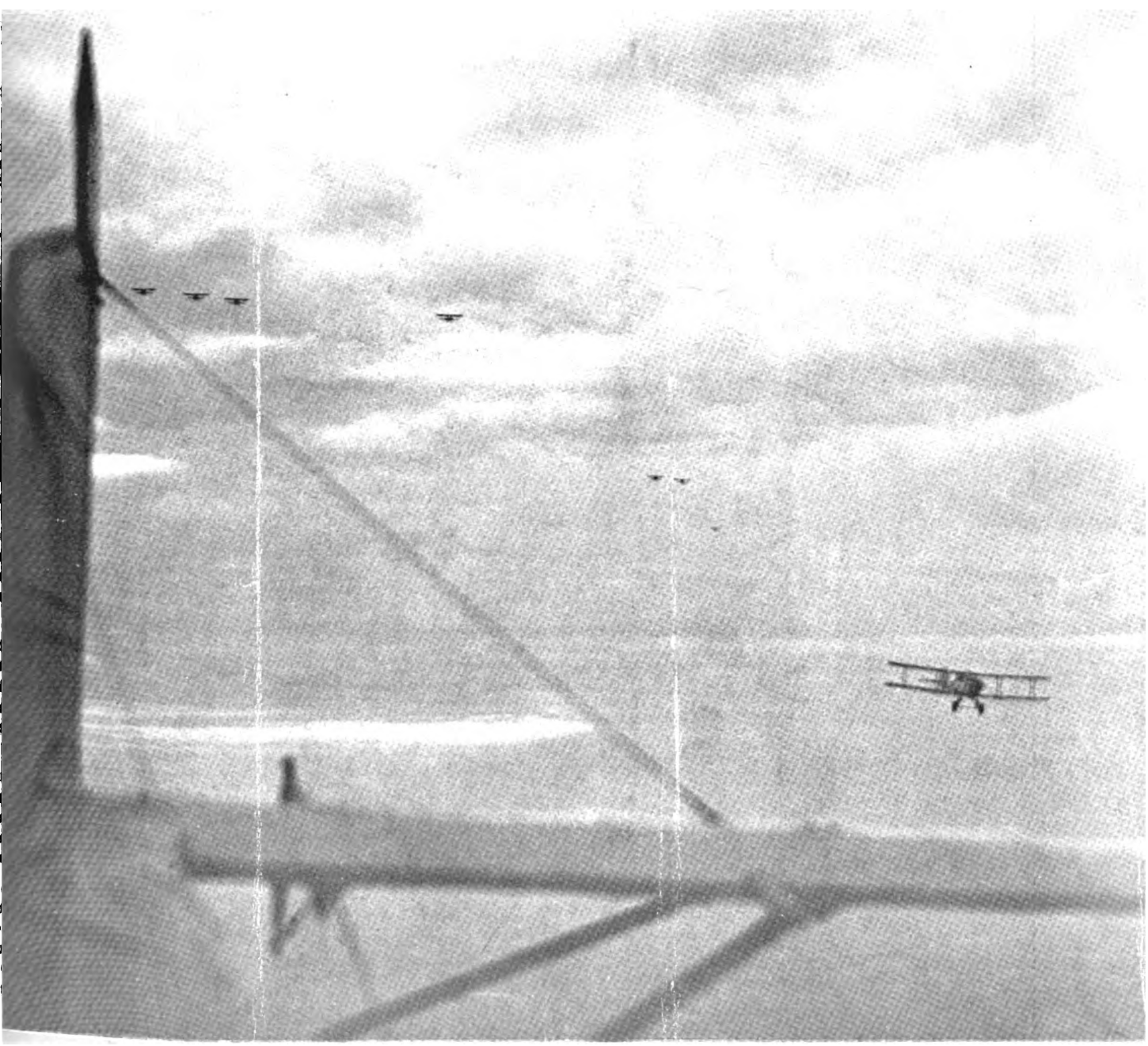
INCORPORATING AERONAUTICAL ENGINEERING

Edited by C.G.Grey



THE DAWN PATROL

[At 20,000 feet].

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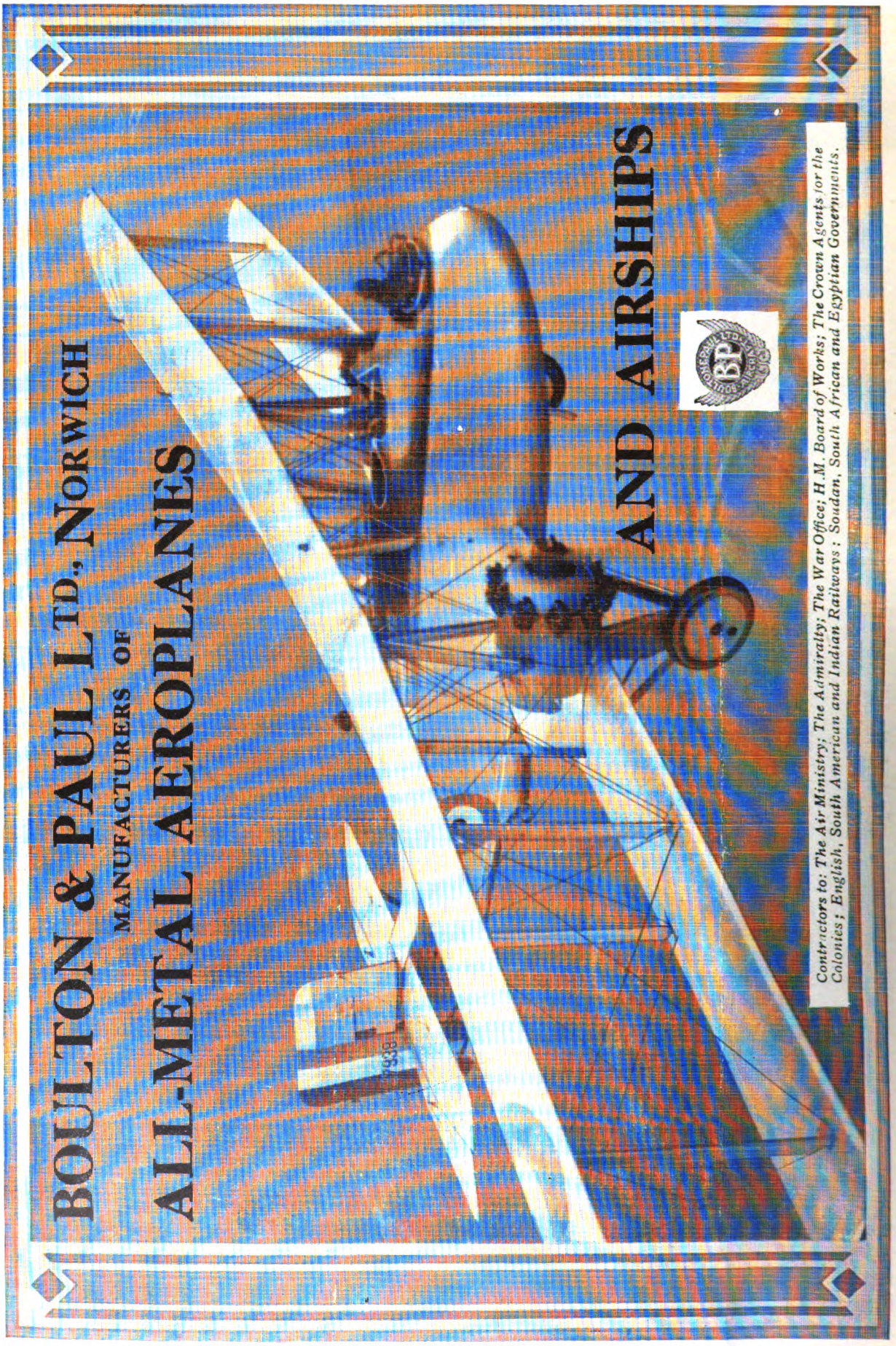

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DEC. 4, 1929.

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VOL. XXXVII No. 23.

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ON VARIOUS THINGS.—II.

ON LOST OPPORTUNITIES.

On Nov. 28, Sq. Ldr. Probyn delivered to the Royal Aeronautical Society a lecture on "Flying and Maintenance from the Owner's Point of View." Considered purely as a lecture, it was among the three best lectures one has ever heard. Considered for its value to the Aircraft Industry, as a mine of information on what the market wants, it was one of the most valuable lectures ever given before the Society. And there were fifty people in the audience.

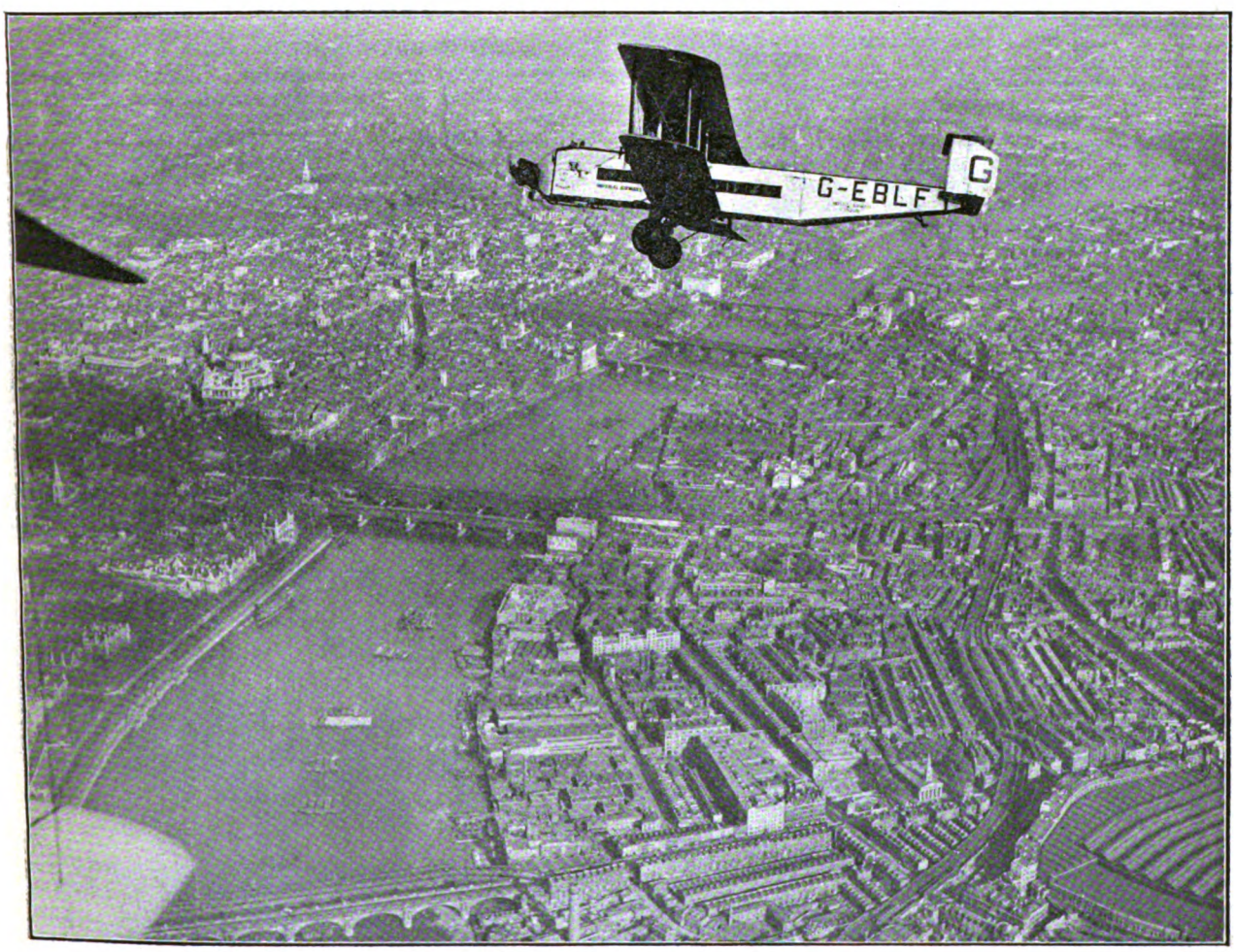
Among these fifty were Mr. Alan Butler, Chairman of the De Havilland Aircraft Co. Ltd., Capt. Geoffrey de Havilland, Managing Director, Mr. F. T. Hearle, Works Manager, and Mrs. Alan Butler, presumably in an advisory capacity from the woman pilot's point of view. There was also Sq. Ldr. Tom England, of the Handley Page Company. There was Mr. O. E. Simmonds of the British Spartan Aircraft Co. Ltd., and there was Mr. Ratcliffe of the Westland Company and Mr. M. L. Bramson of the Monospar Wing Co.

That was the extent to which the British Aircraft Industry was represented. And the question arises whether that represents a measure of the intelligence of the British Aircraft Industry when the demands of the market are being considered. Comparisons may be odious, but was it only a coincidence that the firm which does the most business, and therefore presumably knows most about the demands of the market, should be so strongly represented at a lecture given by a pilot who flies another maker's aeroplane? Some people like to learn. Others refuse to learn.

Of course, if we of THE AEROPLANE were at all conceited, we should draw the inference that all the other people in the Aircraft Industry who were not present are so intelligent that they know that any lecture of any real value is always fully reported in THE AEROPLANE and that by merely waiting for the next week's copy of THE AEROPLANE they would get all the information without putting themselves to the trouble and inconvenience of getting to John Street, Adelphi, at the unholy time of 18.30 hours, at which the Royal Aeronautical Society chooses to start its lectures.

The inconvenience of this hour has been mentioned many times in THE AEROPLANE. People in business, especially people employed in aircraft factories some miles out of London, cannot get to these lectures at that hour unless

"IT IS WORTH WHILE LIVING IN LONDON, SURELY, TO ENJOY THE COUNTRY WHEN YOU GET TO IT."—*(Thackeray.)*



UP FROM THE COUNTRY.—An Imperial Airways Tea-plane (Armstrong Whitworth Argosy—three Jaguar engines) over the City. Waterloo Bridge is in the foreground, with the Blackfriars Bridges above, and Southwark, Cannon Street and London Bridges beyond. The Tower Bridge is hidden by the tail of the machine. St. Paul's Cathedral is seen on the left just by the wing-tip of the photographer's machine.

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they leave their offices early. Consequently, if there is a big audience at one of the Society's lectures, one of two things explains it. Either the heads of firms have given special leave to their drawing-office and design staffs to go early so as to be in time for the lecture, or else that the high-brow scientists at the Air Ministry and South Kensington and so forth think the occasion is important enough for them to leave their offices early to get to the lecture.

Now there seems to be a kind of idea in the Aircraft Industry that unless a lecture is concerned with a whole lot of *x, y, z,* and *Kx, Ky,* and *cosines,* and *tangents,* and things like that, it cannot be of value to any design staff. And so far as the high-brows are concerned, they hardly ever turn up at these lectures unless they see an opportunity of getting up and telling one another what fine fellows they are. In fact, the real high-brows in aviation, as in other pseudo-sciences, constitute about the finest close corporation of back-scratchers and log-rollers one has ever met. Doubtless it was this characteristic of the scientific side of the Aircraft Industry which led to that historic phrase from a thoroughly sound official of the Air Ministry when, daring to criticise something in one of their high-brow lectures, he excused himself with the remark that "a chorus of praise has a monotony which is only tolerable in Heaven."

Sq. Ldr. Probyn's lecture contained nothing to interest the slide-rule merchants and *x*-chasers. And there was nothing in it to give the scientists an opportunity of saying what fine fellows they are—despite the fact that nobody has ever yet designed a successful aeroplane by their theories. But there was enough cold common-sense in that lecture to make the fortune of any aircraft firm which had the sense to work it all out on paper and produce an aeroplane to fulfil Sq. Ldr. Probyn's demands.

One of the most amazing things about the meeting was that after Sq. Ldr. Probyn had laid down the requirements of a private owner—which requirements are equally those of any aircraft operating firm which hopes to run charter-planes (commonly called taxi-planes) at a profit, the real best brains in the Aircraft Industry who were present got up and agreed with him whole-heartedly, even to the extent of agreeing that a pusher monoplane is the ideal type of aeroplane for the conditions of the immediate future. And this, curiously enough, is what The Aeroplane has been preaching for quite a long time

On top of this, those who are really interested in aeronautical progress, and not merely in arguing about scientific theories which never get anywhere, may like to know that Sq. Ldr. Probyn's requirements were heartily endorsed by Mr. H. A. Wimperis, our essentially practical Director of Scientific Research at the Air Ministry, who was in the Chair, and by Sir Sefton Brancker, our Director of Civil Aviation, who probably knows more about air transport from the passenger's point of view than any other living man, and by Dr. Gerald Merton. the new Chairman of the Committee of the Air League, who, besides having been a war pilot, is the owner of a Moth, in which he puts in something over 100 hours' flying a year. What Dr. Merton does not know about running an aeroplane as a private owner has yet to be discovered.

There must be in the design departments of our various war-plane factories quite a number of intelligent young men who could design very much improved civil aircraft if they were allowed to do so. Also there are, among the readers of this paper, including people in the Services, some thousands of men and women who will ultimately become owners of aircraft, or at any rate will influence their rich relations in buying aircraft, just as the youngsters of twenty-five and thirty years ago influenced their people to buy expensive cars of their own.

For the benefit of these readers rather than for the benefit of the scientists and all those proprietors, directors and managers of aircraft firms who are so satisfied with their present position as to be able to ignore the possibilities of civil aircraft, the substance of Sq. Ldr. Probyn's lecture and the subsequent discussion is given a considerable amount of space further on in this paper.

Also in this paper will be found a description of a certain new type of aircraft which is being produced abroad and is not being produced in this country. It represents what the market wants. And it could be built in this country just as well as anywhere else.

In a curiously circuitous way one learned the other day that the Right Honourable James Thomas, Lord Privy Seal, more commonly known as Jim Thomas the Unemployment Minister, is to meet representatives of the British Aircraft Industry to discuss with them the possibilities of the Aircraft Industry as a means of increasing our export trade and decreasing our unemployment.

There is a possibility that the Aircraft Industry may ask Mr. Thomas for a grant out of the Unemployment Vote as a kind of parallel to the subsidies paid to the Flying Clubs and to Imperial Airways Ltd. and National Flying Services Ltd.

Anything of this kind would be most deplorable. After all, we cannot all live on the dole. Somebody must do a job of work and make some money before we can raise the money out of which to pay doles.

There may be some excuse for paying unemployed unskilled labour out of the Unemployed Vote for digging up and laying down aerodromes, because that is putting money into permanent improvements for the benefit of the Nation. But the idea of paying the taxpayer's money to industrialists to help them in businesses which with the exercise of a little intelligence and initiative could be made immense profit-making propositions is sheer imbecility.

There is more money to be made out of following the plain simple advice, and supplying the plain simple demands, set forth in Sq. Ldr. Probyn's lecture than can ever be got out of asking Mr. Thomas for doles for the support of the weaker brethren of what ought to be a great and growing industry,—and will be when some of the younger men and younger firms get going.—C. G. G.

ON SPORTSMANSHIP AND POLICY.

Quite a lot of excitement seems to have been caused in the Daily Press by the announcement from New York on November 26 that Mr. F. Handley Page, before sailing for England, had lodged a protest with the Contest Committee of the Guggenheim Safety Aircraft Competition against the admission to the Competition of the Curtiss Tanager aeroplane. Mr. Handley Page apparently based his protest on the rule which says that "The employment of design features which in the opinion of the Committee are copied from the design of another Competitor may render the aircraft ineligible for entry."

This mere quotation does not make clear whether Mr. Handley Page's objection is simply to the use of the Handley Page slots in the Curtiss Tanager without license, or to a colourable imitation of the H.P. slots, or whether he claims that the Curtiss machine is definitely copied from the Handley Page machine which is humorously known at the Handley Page Works as the Gugnunc. Judging by the descriptions of both which were published in The Aeroplane last week this last does seem to be so.

If the Tanager were definitely copied from the Gugnunc, then undoubtedly Mr. Handley Page would be within his rights, as a sportsman as well as a business man, in lodging

THE "CLASS B" AIRCRAFT.—The Westland Four (three Hermes engines) for four passengers and pilot,—included by Squadron Leader Probyn in the second category of aircraft needed by private owners.

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The KABUL RESCUES. 600 men, women and children were conveyed to safety by Vickers-Napier aircraft. Machines had to fly over mountainous country where landing was practically impossible and everything depended on reliability of engines

"THE AIR MINISTRY has decided to assist in the re-establishment of the airway to India to its original route by arranging for Supermarine-Napier Southampton flying boats to carry the mails on the Mediterranean section"

Daily Chronicle
5th Nov. 1929.

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a protest of this kind. Such, however, can hardly be possible. The Handley Page Gugnunc did not even start for America until after the Curtiss Tanager must have been well on the way towards being finished. Consequently Mr. Handley Page's protest must be based on the employment of the famous Handley Page slotted wings in the Tanager. If such be the case, then we may reasonably ask whether he has not made a mistake in policy in lodging a protest.

The question of the validity of the Handley Page patent does not arise here. It has been acknowledged by the British Government and by the United States Government. The U.S. Navy has paid the Handley Page Company a large sum for the use of the Handley Page Patent Slots in American Naval Aircraft. The British Government is also said to have paid handsomely for the use of the slots, although undoubtedly whatever sum has been paid it cannot be commensurate with the value of the lives which have already been saved through the use of the slot.

There are claimants to prior patents. For example, only the other day an American paper published an article claiming that Señor Alfredo Leigh, who is Professor of Aeronautics at the Chilean Military Academy, does in fact hold a patent which antedates that of Mr. Handley Page. There are also English patents of an obviously similar nature which are said to antedate the Handley Page Patent. That question does not concern us at the moment.

The point that really is of interest to all who are concerned with British Aeronautics is the question of whether lodging a protest against the Curtiss Competitor in the Guggenheim Competition was wise from the point of view of British aviation as a whole.

There are obviously two ways of looking at a competition of this kind, irrespective of the value of the prize to be won. One may regard it purely as a sporting competition in which, regardless of subsequent financial results, one is all out to win in a thoroughly sporting spirit. In such case one would let everything go, except the mere fact of winning the competition on the sheer merit of the apparatus which one had entered for it.

Another way of looking at such a competition is to consider, first and foremost, the business results which are likely to be achieved by winning such a competition with one of the products of one's own particular manufacture. Here one might be a stickler for the strict interpretation of the rules as such. But, even so probably there would be a certain advantage to be gained by interpreting everything else in the most sporting spirit possible.

The winning of the Guggenheim Competition, considering the international interest which it has caused, not only among people who are directly concerned with flying, but among all those millions of people who are mildly interested in flying and are particularly interested in anything which is supposed to make flying safer, is in fact worth a great deal more than any possible money prize which can be offered. And if the competition can be won with something like a gesture of generosity attached to it, the consequent advertisement all over the World must be all the greater.

Now supposing the Curtiss machine does infringe the Handley Page slot patents, and a Handley Page machine won the competition without any protest having been made against the Curtiss machine, then the Handley Page Company would have the kudos not only of winning the competition by virtue of being a better all-round aeroplane, but its owners would also have the added advertisement of having behaved generously in admitting, without protest, a competitor who on the face of it was infringing patents which enabled the Handley Page machine to win the competition. The victory would then be not only mechanical but moral.

Supposing, on the other hand, that the Curtiss machine won the competition with the Handley Page machine a good second. Then the Handley Page firm would at any rate have the consolation of being able to say that the only thing in the competition which was able to beat them was a machine fitted with their own patent apparatus. Thus in consequence they would have a moral victory if not a mechanical victory. And they would always have the course open to them of proceedings against the Curtiss Company in the American Court for infringement of their patent, with a substantial claim for damages.

But now, unfortunately, the raising of this protest is apt to give our friends and competitors in the United States the impression that the Handley Page Company are afraid of being beaten before the competition starts, and so have rushed in a protest in the hope of preventing the Curtiss machine from competing at all,—thus presumably leaving the way open for their machine to win, on the assumption that there is nothing else in the competition which looks like winning or even of putting up a decent performance, with the exception of either the Curtiss or the Handley Page.

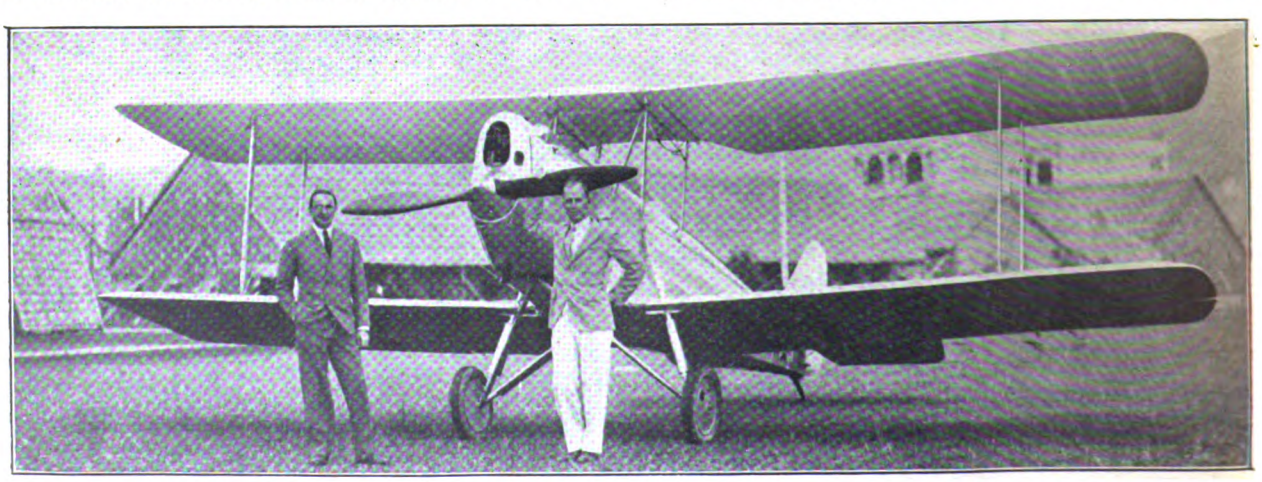
Nobody will deny that a £20,000 prize is very well worth having and that any competitor, more especially the only competitor representing the British Aircraft Industry in such a competition, is justified in doing his level best to win such a handsome sum of money. But leaving out altogether the question of sportsmanship, and looking at the affair purely as a matter of the prestige of British Industry, there is the possibility that the better policy would have been to have fought the competition out to a finish without raising any protest and to have seen which machine of all the competitors was the best purely on its merits, and regardless of whose particular patents might be used in its design.

Obviously if a British aircraft could have won Mr. Guggenheim's handsome prize without any protest at all, and purely on its merits as a flying machine, the result would have been of immense benefit to the prestige of British Aircraft all over the World. It would have been a worthy sequel to the winning of the Schneider Trophy and the beating of the Speed Record by the Supermarine Rolls-Royce S.6. We should have shown the World that we could make the world's safest aeroplane as well as the world's fastest aeroplane.

Now if we win we shall win more or less on the strength of a protest, or at any rate we shall have left in the United States the reputation of having tried to win on a protest even if we actually win on our merits. And, if the Curtiss Tanager wins in spite of the protest, people in the United States will think that the protest was made because the Handley Page machine was known to be inferior.

In the bad old days before we came to know our American cousins as well as we do to-day, certain American prize-fighters and athletes came to Europe and won for themselves, and quite undeservedly for the United States as a whole, the reputation of being bad sportsmen. There used to be a saying that American sport was conducted on the "win, tie, or wrangle" principle.

In more recent years we have had American athletes



FAR EAST AVIATION.—An Avro Avian (Cirrus Hermes), the property of the Far East Aviation Co. Ltd., taken at Kai Tak Aerodrome, Hong Kong. On the left is Mr. R. Vaughan Fowler, Managing Director of the firm, and on the right in white is Mr. F. R. Smith, another Director. This machine has been bought to demonstrate the Avian and the Hermes to the Chinese Governments and to prove to them the excellence of the workmanship which is put into British aircraft and engines. This machine is in "Class C,"—as reckoned by Squadron Leader Probyn.

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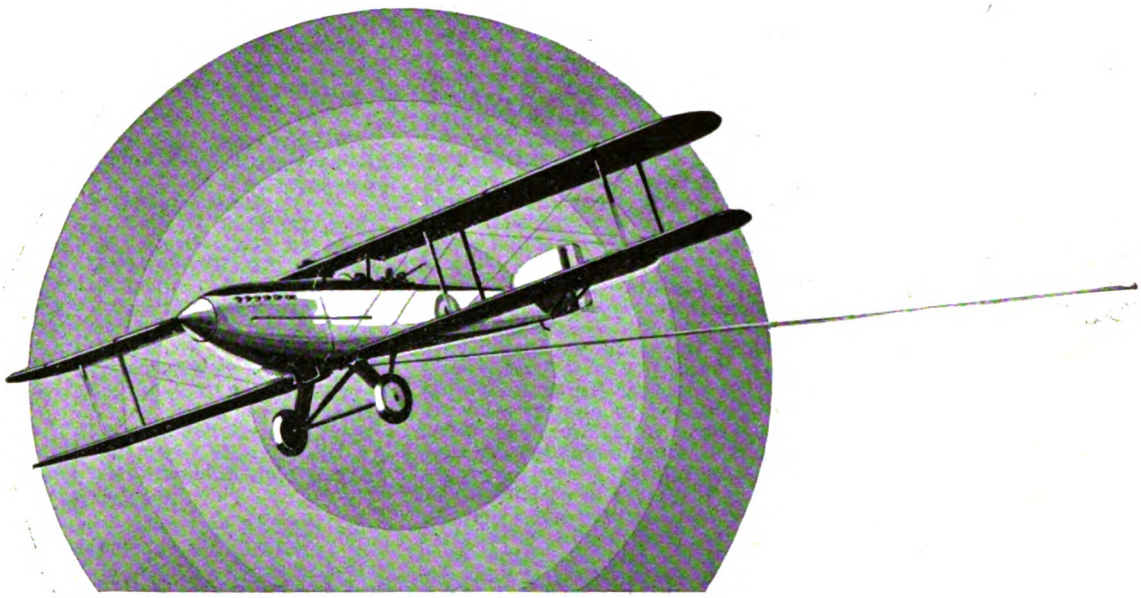

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and American sportsmen of all kinds over on this side of the Atlantic. Quite a number of English sportsmen have gone to America for all sorts of competitions. And in almost all these competitions Americans have shown themselves to be sportsmen up to the highest standard.

Over and over again they have beaten us on sheer excellence of training. They have never claimed that their men have been physically better than ours, and they have seldom beaten us by sticking out for the strict letter of the rules. They have beaten us on sheer thoroughness and efficiency, just as they have beaten us in commerce all over the World by thoroughness.

Occasionally when we have turned out a really first-class man who has taken the job seriously, we have beaten them. And whenever we have beaten them they have taken their beating in the finest possible sporting spirit.

There has never been a finer exhibition of sportsmanship than that which was shown by the United States Naval Air Service when, in 1924, owing to the crashing of a British competitor, there were no foreign aircraft to compete against the U.S.A. in the Schneider Trophy contest. The Americans called the race off and declined to claim a win on the Schneider Trophy by simply flying over the course as they could have done. Instead of doing that they flew over a different course and beat the speed records from the short distance up to a matter of a few hundred kilometres. This was just by way of showing that they could have beaten our speed machine if we had sent any over.

Therefore, the pity is all the greater that in a great international contest like that promoted by the Guggenheim Fund, with the idea of discovering a safe aeroplane for the good of aviation all over the world, we should have lodged a protest against any competitor on a purely legal point of patent law instead of adopting the attitude that we also wish, at any cost to ourselves, to discover who can make the best and safest aeroplane under the rules which have been worked out with great forethought by the Contest Committee of the Guggenheim Fund.

When the time comes for the machines to go through all the tests of the competition, we all sincerely hope that the Handley Page machine will win. Such a win would be a fine advertisement for the British Aircraft Trade as a whole,—and, heaven knows, British aircraft need *some* advertising apart from the high standard of workmanship in our war-machines. Also personally, one would be glad to see it win because perhaps one can claim better than anybody else who writes on the subject of aviation to have shown through thick and thin a firm faith in the efficacy of the Handley Page slots, first of all as a means of getting off the ground and onto it slowly and safely, and secondly, when it was produced in its automatic form, as a means of saving life.

In fact, so great is one's faith in the slot form of aerofoil that one is grievously disappointed at the practically negligible results which have been achieved by slots since they were introduced to the World by The Aeroplane, some ten years or so ago. When one considers what the slots can do in the way of getting a machine off the ground in a short distance and in getting it down practically vertically, the way in which the slots are used to-day is merely childish.

Barring one or two experimental aircraft there is no aeroplane in the World to-day fitted with slots at all as they ought to be fitted. All we have done in practice is to fit our machines with a species of slightly inefficient skyhook at the tip of each wing, and to impart to the aeroplane itself in consequence a little of that type of stability which pertains to a pendulum.

Being hooked up by the wing-tips, the aeroplane tends to remain right side up. But we neglect altogether the immense amount of extra lift that could be got by fitting slots the whole way along the leading edge of each wing. And we have not even attempted to get the still further advantage which can be got by fitting slots somewhere near the front part of the trailing edges of the wings.

Whether this slow progress is due to lack of intelligence in the Technical Department of the Air Ministry, or whether it is due to conservatism on the part of other aircraft firms who do not believe in slots, or whether it is simply jealousy of one firm for another which prevents the people who did not invent the slot from agreeing to pay a royalty on slotted wings, or whether it is that Mr. Handley Page demands too much money in the form of royalty for the use of the slots, one does not attempt to judge. The unfortunate fact remains that we are only using slots as safety gadgets instead of as lifting factors for the whole aeroplane.

From what little we know of the Handley Page Gugnunc which was built for the Guggenheim Competition, it seems to be fitted with slots the whole way along both wings. The machine was kept such a deadly secret till it left for the States that the Americans were the first people to know anything about it. At any rate, it is something of a step in the right direction, even though it gets off the ground, and alights, with its tail hanging down in a way which would never be accepted commercially in any private or public transport vehicle, and would probably bring into being new sorts of dangers of its own.

Whether the Curtiss machine is similarly fitted one does not know. But, whether it is or not, nothing could be more regrettable than stopping any machine fitted with slots used in any way from competing in such a contest whatever may be the way in which the slots are used.

What the World wants to know is what are the best results that can be got with slots. If some firm other than the Patentee gets better results with the patent, then surely it is in the interests of the progress of aviation that such a machine should be allowed to show its capabilities. If it uses the slots better than the machine designed by the Patentee, then the World at any rate is the better for that knowledge. And if the original Patentees are wise they will either copy the winning firm's design, or else if it involves new patents, then they will make an amicable working arrangement on a cross-licence. What we want in aviation is progress.—C. G. G.

WORLD'S RECORDS.

The Royal Aero Club has been informed by the Fédération Aéronautique Internationale that the following World's Records have been granted:—

Greatest Speed over 100 Kilometres.

Flg. Off. H. R. D. Waghorn, A.F.C., on Supermarine-Rolls-Royce S.6 (Rolls-Royce "R") on Sept. 7, 1929:—330.1 *miles per hour* (531.200 *kilometres per hour*).

Flg. Off. R. L. R. Atcherley, on Supermarine-Rolls-Royce S.6 (Rolls-Royce "R"), on Sept. 7, 1929:—331.6 *miles per hour* (533.800 *kilometres per hour*).

World's Greatest Speed.

Flt. Lt. G. H. Stainforth, on Gloster-Napier VI (Napier Lion VII D), on Sept. 10, 1929:—336.3 *miles per hour* (541.100 *kilometres per hour*).

Sq. Ldr. A. H. Orlebar, A.F.C., on Supermarine-Rolls-Royce S.6 (Rolls-Royce "R"), on Sept. 12, 1929:—357.7 *miles per hour* (575.700 *kilometres per hour*).

SPEED IN FRANCE.

On Nov. 15 M. Paillard made a speed of 280 m.p.h. over the Lac d'Hourtin, near Bordeaux, in a Bernard seaplane (Hispano-Suiza engine). It was incorrectly reported in The Aeroplane recently that the machine he used was a Nieuport-Delage seaplane.

The particular machine he used is not one that has been specially developed for the Schneider Trophy Contest, but is a development of the Bernard 20-C1 single-seat fighter monoplane converted into a seaplane and fitted with special wings for high-speed training purposes.

It has a Hispano-Suiza Vee type engine which gives 1,000 h.p. at 2,400 r.p.m. During this test the engine was run at 1,700 r.p.m., which gave 700 h.p. only.

Further tests will be made with this machine in accordance with the requirements of the French Air Ministry, after which a land undercarriage will be substituted for the floats, and wings of 9 sq. m. area will be substituted for those of 12 sq. m. now fitted, after which M. Paillard will make an attempt to beat the World's Speed Record for landplanes, which is at present credited to the late Lieut. Bonnet.

The Bernard company is, in the meantime, completing a new racing seaplane to take the new 1,500 h.p. Hispano-Suiza "inverted T" type engine.

HAWKER HORSLEYS IN GREECE.

Last April, as reported in The Aeroplane of April 17, 1929, six Hawker Horsleys, with Rolls-Royce Condors, were ordered by the Greek Naval Air Service. These were delivered at Tatoi Aerodrome on Dec. 2. The British Minister, the staff of the Greek Ministry of Marine and members of the Greek Government, saw the trial flights and afterwards witnessed demonstration flights made by the Greek Naval Air Service.

A DATE TO BE NOTED.

Anybody who is likely to be in Town on Saturday, Dec. 14, ought to make a point of going to the Wigmore Hall, in Wigmore Street, to hear Sir Philip Sassoon lecture, with lantern slides, on his journey to India and back by flying-boat and aeroplane. The lecture begins at 3 p.m.

The substance of the lecture is naturally that of his excellent book, *The Third Route*. But there are always things which a lecturer can say and cannot put into print, and, anyhow, even those who have read the book will find that going to the lecture is well worth while, for Sir Philip has a charming way of speaking which will make the reading of the book a second time all the more interesting.

Apart from that, the lecture is being given in aid of that excellent institution, the Royal Northern Hospital, so the money will be well spent. Tickets are 8s. 6d. and 5s. 9d. for reserved seats, and 2s. 4d. for unreserved seats, and may be obtained from The Secretary, 25 Park Lane, W.1.

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"CIRRUS" ECONOMY!

A Cinque Ports Flying Club Cirrus - Moth G-EBPM during the month of October flew 39 hours 15 mins. plus 7 hours 20 mins. ground time, making a total of 46 hours 35 mins., equal to nearly 3,000 miles with an average petrol consumption equal to 22 miles per gallon or

3.647 GALLONS of PETROL PER HOUR!

G-EBRI also a CIRRUS-Moth used for dual instruction averaged 4.306 gallons of petrol per hour throughout the month of October and achieved the very low oil consumption of Wakefield's Castrol XXL Oil, namely:

·499 QUARTS of OIL PER HOUR!

Telephone: Holborn 4076. CIRRUS AERO ENGINES LTD., Regent House, 89, KINGSWAY, LONDON, W.C.2. Cables: Ocirruso, London.

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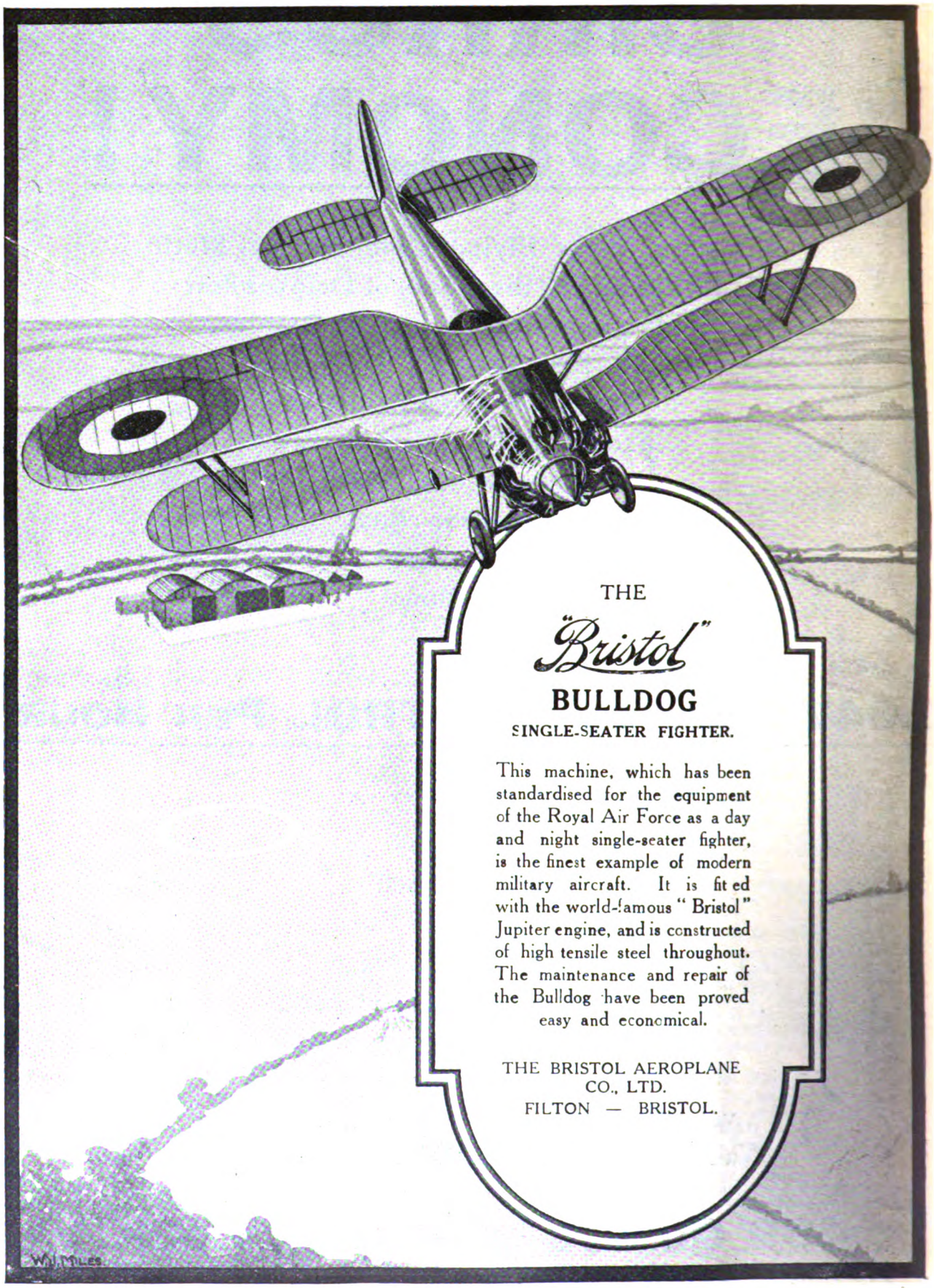

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THE ROYAL AIR FORCE.

The London Gazette.

Air Ministry, November 26.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—The following Plt. Offs. on probation are ıfirmed in rank:—R. J. T. Barrett (Nov. 1); J. D. H. Slade (Nov. 1); E. W. M. Cavendish Pelly (Nov. 2); J. O. H. Lobley (Nov. 5); H. E. Tew (Nov. 25). The following Plt. Offs. are promoted to e rank of Flg. Off.:—A. Le R. S. Upton (Oct. 8); G. F. Macpherson ct. 13).

The following cease to be seconded for duty with the Royal ıstralian Air Force:—Group Capt. M. Spicer (Nov. 12); Sq. Ldr. M. Drummond, D.S.O., O.B.E., M.C. (Nov. 15).

The following are placed on the retired list:—Flt. Lt. L. Wanless-Gowan (Nov. 6); Flg. Off. T. Marchant (Nov. 25); Flg. Off. B. S. rice, A.F.C. (Nov. 25). Flt. Lt. L. S. Potter is transferred to the eserve, Class C. (Nov. 25).

MEDICAL BRANCH.—J. W. H. Steil, M.B., is granted a temp. comn. as Flt. Lt. (Hon. Sq. Ldr.) with effect from and with seniority of ct. 30; Flg. Off. J. C. Neely, B.A., is promoted to the rank of Flt. t. (Nov. 11); Flt. Lt. R. A. W. Kerr, M.B., is transferred to the eserve, Class Dii (Nov. 22).

CHAPLAINS BRANCH.—The Rev. J. Lavin is granted a S.S. comn. as a haplain (Roman Catholic) with the relative rank of Sq. Ldr. (Nov. 1).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—F. W. Hartridge is granted a comn. in ne Special Reserve as a Flg. Off. on probation (June 29) (substituted or the notification in the *Gazette* of Aug. 27). The following are ransferred from Class A to Class C:—Flt. Lt. R. W. F. Dunning (Oct. 1); Flg. Off. B. J. Finn (Sept. 29); Flg. Off. I. J. Sankey (Sept. 22). 'lg. Off. R. K. Coupland is transferred from Class C to Class A Nov. 6). The following Flg. Offs. relinquish their comns. on completion of service:—J. J. Comerford, C. McL. Reid (Nov. 1); H. W. Beck (Nov. 8). Flg. Off. O. M. Sheil-Small resigns his comn. (Nov. 4).

STORES BRANCH.—Flt. Lt. R. V. Robinson, O.B.E., is transferred from Class B to Class C (July 27).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 602 CITY OF GLASGOW (BOMBER) SQUADRON.—Plt. Off. A. H. C. Gibson resigns his comn. (Sept. 25).

Squadron Movements.

No. 101 (Bomber) Squadron moved from Bircham Newton to Andover on Oct. 12, 1929.

No. 207 (Bomber) Squadron moved from Eastchurch to Bircham Newton on Nov. 9, 1929.

Officers' Pay.

In the House of Commons on Nov. 27 Capt. Balfour asked the Secretary of State for Air if, in view of the fact that certain ranks of R.A.F. Officers engaged on active flying duties were paid less than their corresponding ranks of Army officers, and in view of the risks of flying and increased standards of technical knowledge and skill required for the R.A.F., the Air Ministry would consider recommending a revision of the basic rates of pay in respect of these ranks.

Mr. Montague said that in considering this question it was necessary to have regard to the whole career which the Service offered, including pay in all ranks and the opportunities for promotion. While the prospects and emoluments of Air Force Officers were constantly under review a revision of existing basic rates of pay was not called for at the present time.

Capt. Balfour asked Mr. Montague if he was aware that a Squadron Leader after five years in the R.A.F. got £1 16s. a day and that a Major in the Army, after five years drew £1 17s. Did he think that flying risk was equal to a shilling minus.

Special Assessments.

The following officers and airmen have been awarded special assessments, as shown, on completion of a course of *ab initio* flying training at No. 4 Flying Training School.

Distinguished Pass:—Plt. Off. F. S. Barron, Plt. Off. G. F. P. O'Farrell.

No. 363829 Sjt. Cook, F. W.; No. 362338 Sjt. Gordon, J. R.; No. 362571 Sjt. Kidd, E. C.; No. 363671 Sjt. Newton, J. A.

Notations have been made in the official records of the officers and airmen.

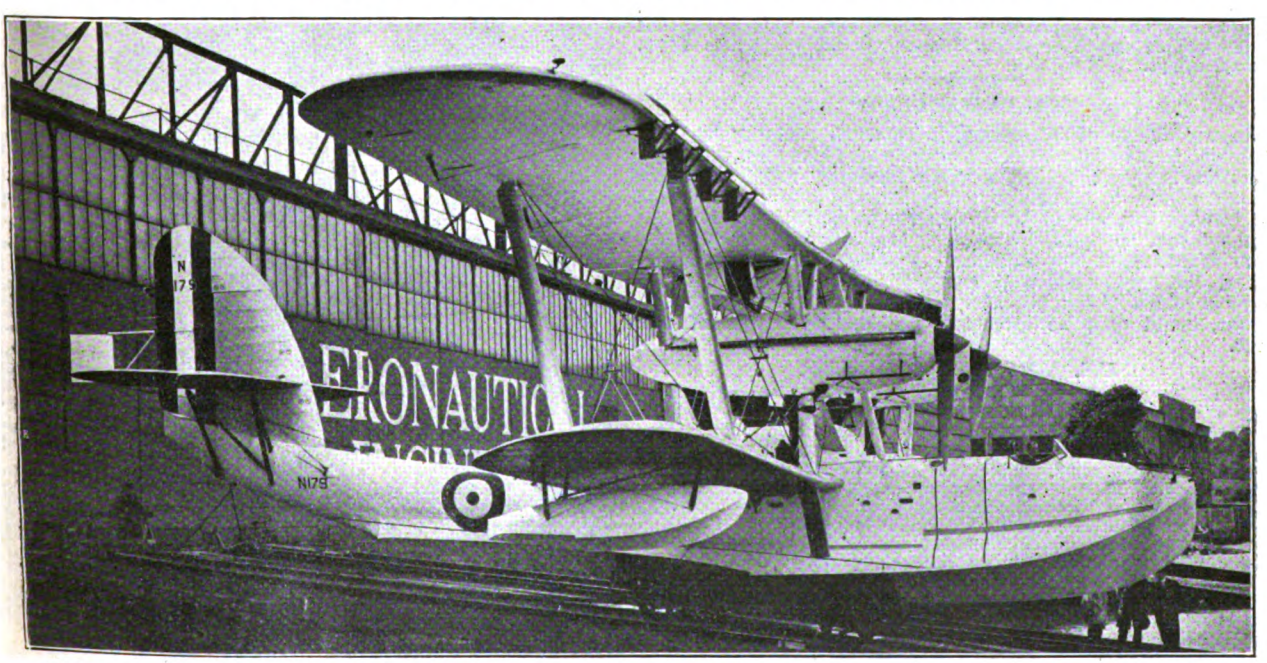
Manston Station.

In the House of Commons on Nov. 27, in reply to Capt. Balfour, the Under-Secretary of State for Air said that it was proposed to retain the R.A.F. Station at Manston as a permanent peace-time station. It was not proposed to construct any additional married quarters for officers and other ranks in the near future. It was true that at the present moment there were not quite enough quarters available, but, as soon as the bombing Squadron which was there at the moment had left, the position would be normal.

The R.A.F. Staff College Emblem.

Replicas of the Silver Hawk are being made under the supervision of Mr. Frank Bowcher, the sculptor of the emblem. The replicas, which are five inches in height, can be supplied in two styles at the following prices: In silver, £2 12s. 6d.; in bronze, £2 7s. 6d. These prices include packing and postage to any address in the United Kingdom. To purchasers from abroad, the difference only in cost of packing and postage will be chargeable.

All graduates of the R.A.F. Staff College are entitled to purchase replicas. Orders will only be accepted by Mr. Bowcher on instruction from the Adjutant, R.A.F. Staff College, Andover, to whom intending purchasers should send their requirements, giving full address. These orders will be forwarded to Mr. Bowcher, who will supply the replicas and to whom payment should be made direct.



THE LATEST SINGAPORE.—The Short Singapore long range reconnaissance flying-boat (two 825 h.p. Rolls-Royce "H" engines). It is a modification of the original Singapore in which Sir Alan Cobham flew round Africa. The new machine has modified hull lines, the latest Rolls-Royce engines and Handley Page automatic slots.

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The Chanucah Service.

A special Naval, Military, and Air Force Chanucah parade and service will be held on Dec. 29, at the Great Synagogue, Duke Street, Aldgate, E.C.3, and, so far as Air Force exigencies permit, opportunities will be afforded for officers and airmen of the Jewish faith at home stations to attend the service.

Officers and airmen who wish to attend should communicate as soon as possible with the Rabbi, M. Gollop, B.A., Senior Jewish Chaplain to H.M. Forces, 7, Westbourne Terrace Road, London, W.2.

Miss Douglas Pennant.

In the House of Commons on Nov. 27 Mr. W. J. Brown asked the Prime Minister whether he would agree to the setting up of an independent tribunal to investigate the charges against Miss Douglas Pennant which led to her dismissal from the Royal Air Force. The Prime Minister said that the answer was in the nagative. He had given this case further attention and had submitted the papers to the Government's legal advisers. After full and sympathetic consideration the difficulties of having the matter reopened after so long a lapse of time had been seen to be insuperable. In view of what was said to be the reason why this case should be re-opened, he ought to add that there was no question of Miss Douglas Pennant's super-session having been due to any sort of neglect of duty on her part or to any cause which would in any way justify aspersions on her character.

Boxing.

A team of Danish Amateurs beat the R.A.F. at Cranwell on Nov. 29 by seven events to one. The results in detail were:—

Fly-weight.—Aage Petersen (Denmark) beat AC. Dossett (Gosport, R.A.F.) on points.

Bantam-weight.—Henry Museth (Denmark) knocked out AC. Johnson (Manston, R.A.F.) in the fifth round.

Feather-weight.—Anker Poulsen (Denmark) beat AC. Borland (Digby, R.A.F.) on points.

Light-weight.—Carl F. Jensen (Denmark) knocked out AC. Garrett (North Weald, R.A.F.) in the fourth round.

Welter-weight.—Arne Sande (Denmark) beat L-AC. Buchanan (Digby, R.A.F.) on points.

Middle-weight.—Reinhold Sylvander (Denmark) beat AC. Clapp (Old Sarum, R.A.F.) on points.

Light-heavy-weight.—AC. Munkley (Henlow, R.A.F.) beat Eberhand Hansen (Denmark) on points.

Heavy-weight.—Poul Moen (Denmark) knocked out Plt. Off. G. E. S. Williams (Digby, R.A.F.) in the sixth round.

The R.A.F. Skating and Ski-ing Championships.

Initial championships for skating and ski-ing open to all serving and reserve officers of the R.A.F., will be held at Maloja, Switzerland, on Jan. 29 (skating) and Jan. 30 (ski-ing). A cup will be competed for in each event. The skating cup will not be competed for unless at least ten entries are received.

Full particulars may be obtained from E. Weatherall, Esq., 1, Gower Mews, Bedford Square, London, W.C.1, to whom intending competitors should make early application.

If sufficient support is forthcoming, it is intended to form a R.A.F. Skating and Ski-ing Association at a later date. This will depend largely on the degree of interest aroused by the prospective initial championships.

MALTA HARBOUR.

In the House of Commons on Nov. 27, replying to Rear Admiral Sueter, the Under-Secretary of State for Air said that the suggestion that the Air Ministry and Admiralty should confer to ascertain if any form of breakwater could be provided in one of the harbours to afford protection in bad weather to flying-boats using Malta, would be carefully considered. But the information available strongly indicated that any substantial improvement of the facilities for the operation of flying-boats at Malta by means of a breakwater, could only be effected at a practically prohibitive cost.

U.S. AIRCRAFT CARRIERS.

The Times of Dec. 2 states:—

In a recent broadcast address from Pittsburgh, on the occasion of the birthday of Commander R. E. Byrd, U.S.N., Rear-Admiral W. A. Moffett, Chief of the Bureau of Naval Aeronautics in the United States Navy Department, expressed the view that aircraft carriers were the most valuable vessels in the Navy to-day. The *Lexington* and the *Saratoga* had been in commision for a year, and valuable experience had been gained with them in the use of large numbers of aircraft with the Fleet, especially in strategical and tactical manœuvres.

Last year 84 aircraft took off from the *Saratoga* at 3.40 in the morning, 140 nautical miles from the Canal, and succeeded in attacking it and returning to the ship without a casualty. The Department has asked for five carriers of 13,800 tons; one has been authorised, and Rear-Admiral Moffett hopes the others will be granted soon.

THE "GRAF ZEPPELIN."

Since its first flight in September, 1928, the *Graf Zeppelin* has flown 73,000 miles. The ship has now been taken temporarily out of service for overhaul and adjustment.

IN THEIR HABIT AS THEY LIVE.—A group of R.A.F. Officers from the Engineering Course, Home Aircraft Depot, R.A.F. Henlow, taken with a Westland Four (three Cirrus-Hermes engines) during a professional visit to the Westland Works at Yeovil.

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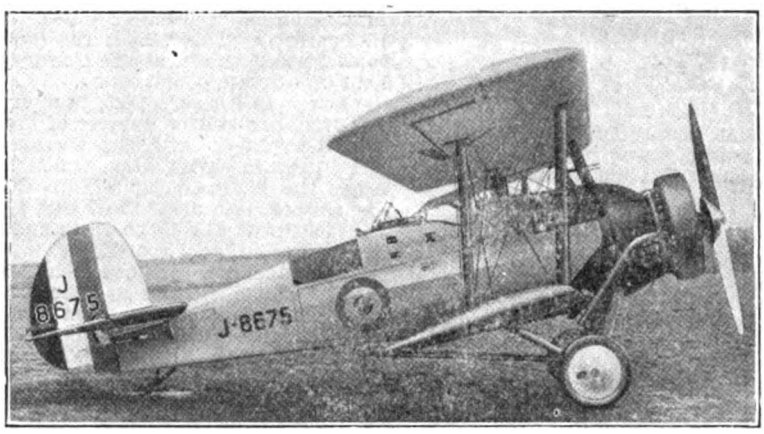
ARMSTRONG WHITWORTH
AIRCRAFT



THE ALL STEEL ATLAS

(ON WHEELS, FLOATS OR SKIS)

THE all-steel Atlas is the best aircraft for land or sea reconnaissance.

It is the standard Army Co-operation two-seater of the Royal Air Force.

Its steel construction accounts for its unrivalled durability and ease of maintenance. Fitted with the world-famous Armstrong Siddeley Jaguar engine (plain or geared type), its speed, climb and ceiling fulfil the severest Service requirements. It is produced on the grand scale by the best equipped aircraft works in Europe.

PERFORMANCE FIGURES

ATLAS WITH JAGUAR ENGINE AND TOWNEND RING

Fuel, 75 gallons (337 litres). Oil, 7 gallons (32 litres). Military Load, 880 lbs. (400 kgs.)

	Plain Engine.	Geared Engine		Plain Engine.	Geared Engine.
Approx. total weight	4000 lbs.	4115 lbs.	Time to 5000 ft.	5.25 minutes	4.25 minutes
	1820 kgs.	1870 kgs.	" " 10000 ft.	12 5 "	10.5 "
Speed at ground level	143.5 m.p.h.	149 m.p.h.	" " 15000 ft.	26 "	21.75 "
	231 km.p.h.	240 km.p.h.	" " 1000 mtrs.	3.5 "	2.5 "
" " 5000 ft.	139.5 m.p.h	145 m.p.h.	" " 3000 "	12.5 "	10.25 "
" " 10000 ft	134 m.p.h	140 m.p.h.	" " 5000 "	34 "	27.5 "
" " 15000 ft.	125 m.p.h.	131 m.p.h.	Absolute Ceiling	19000 ft.	19100 ft.
" " 1000 metres	226 km.p.h.	236 km.p.h.		5800 metres	5830 metres
" " 3000 metres	216 km.p.h.	225 km.p.h.	Service Ceiling	17300 ft.	17700 ft.
" " 5000 metres	193 km.p.h.	204 km.p.h.		5280 metres	5400 metres

Maximum allowable R.P.M. 2200. Normal R.P.M. 2000

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POLAR FLYING.

On Nov. 29, at 3.29 a.m. (G.M.T.), Commander Byrd, Mr. Bernt Balchen (pilot), Mr. Harold June (wireless operator), and Capt. Ashley C. McKinly (cinematographer), started on a flight to the South Pole. The expedition reached the Pole and returned to their base the same day. The distance covered was about 1,600 miles.

One account says that the machine on the return trip had to refuel from a dump 400 miles away from Little America on the Ross Sea where the expedition is based. The aircraft used was a Ford Trimotor, the *Floyd Bennett*.

The President of the United States, Mr. Hoover, has sent a telegram of congratulation to Cmdr. Byrd and his companions.

In 1926, on May 9, Cmdr. Byrd and Mr. Floyd Bennett flew over the North Pole, starting from and returning to Spitzbergen. The aircraft was a Fokker, with three Wright Whirlwinds.

On June 29-July 1 Cmdr. Byrd, with Mr. Bernt Balchen and two others, flew the Atlantic from Long Island to the French coast.

Sir Hubert Wilkins is also in Antarctica. His base is on Deception Island, 90 deg. of longitude west of Little America and south of Tierra del Fuego. This expedition also has aircraft.

In 1926 Sir Hubert Wilkins and Lt. Eielson flew across the North Pole from Pt. Barrow, Alaska, to Spitzbergen. Their machine was a Lockheed Vega.

Lt. Eielson, who is no longer with Sir Hubert Wilkins, has been missing since Nov. 9, when he started to fly to the help of the s.s. *Nanuk*, which is frozen in the ice off North Cape, Siberia.

Lord Thomson, Secretary of State for Air, has sent the following message to Commander Byrd:—

On behalf of Air Council tender hearty congratulations to yourself and companions on splendid flight over South Pole.

In the words of the famous Mandarin, when he first saw an aeroplane and was asked to wonder at it,—"But why? It was meant to do that, wasn't it?"

An aeroplane flies just as well in Arctic or Antarctic air as any other, and rather better because the engine keeps cooler. So why congratulate a Polar flier and not every French pilot who crosses the Rio del Oro area on the Latercoère line. His risks are just about as great, and his work is rather more useful.—C. G. G.

Major Tryggve Gran comments in the Copenhagen newspaper *Ekstrabladet* as follows on Cmdr. Byrd's latest achievement:—

I am not justified in saying that Commander Byrd did not pass over the South Pole, but the whole expedition appears to be a speculation in sensations.

After the way in which Americans are acting, the name "Polar explorer" is no longer an honourable name. Scientific qualities are no longer required, nor are year-long preparations. To become a Polar explorer money only is required.

Commander Byrd's report on the flight across the South Pole does not seem to inspire confidence. He says he saw plainly Scott's and Amundsen's cairns, erected in December 1911 and January 1912. In my opinion it would be nothing short of a miracle if these cairns were still so well-preserved that they were visible from the air against the white snow plain.

The terrible mountains which Commander Byrd describes are fantasy. I discussed thoroughly with Amundsen the character of the landscape, and on the whole of the long last stretch to the South Pole of Scott's and Amundsen's routes there were no mountains.

When we returned from Scott's expedition we agreed that the trip might be made by motor-cycle. Naturally there are clefts and ravines, which must be crossed or got round, but the land is, on the whole, a plain.

A NEW POWER IN THE LAND.

By the acquisition of a controlling interest in Simmonds Aircraft Limited, another large financial Group, the Whitehall Securities Corporation Ltd., which is associated with S. Pearson and Son Ltd., the great engineering firm, and is commonly known as the Cowdray Group, has entered the field of aircraft construction.

Simmonds Aircraft Ltd., though only formed in September 1928, has built a number of the Spartan 2- and 3-seater light aeroplanes, with the Cirrus or Hermes engines, and the interchangeable wing, which is already World-famous. Since the incorporation of the Company development has been rapid, and aircraft of this type have been in use on the Continent of Europe, in Canada, America, South Africa, Australia and New Zealand.

The machine, designed by Mr. O. E. Simmonds, A.F.R.Ae.S., M.I.Ae.E., has features of great interest. Its chief characteristics are great strength in construction and the principles of the interchangeable wings and interchangeable parts of the tail unit. This interchangeability is produced under the patents owned by the Simmonds Interchangeable Wing Co. Ltd., which rights have also been acquired by the above-mentioned financial group.

At the present time the Spartan Biplane is being produced in two types—a 2-seater sports and training machine, and a 3-seater light aeroplane, both with the Hermes engine. They have an aerobatic certificate of 1,680 lbs.

The intention is to register a new company in the near future to carry on and develop the business of Simmonds Aircraft Ltd. and the Simmonds Interchangeable Wing Co. Ltd. Among its Directors will be Capt. H. H. Balfour, M.C., M.P., and Lt. Col. L. A. Strange, D.S.O., M.C., D.F.C., both of whom are well known in aviation circles. Mr. O. E. Simmonds, who will be remembered as having had a considerable share in designing the Supermarine-Napier S.5 which won the Schneider Trophy Contest of 1927 at Venice, will also be on the Board.

THE RETURN TO ITHACA.

MM. Costes and Bellonte returned to Paris after their Odyssean wanderings on Nov. 21. Quite apart from the enormous distance covered non-stop by the *Super-Bidon*, the pilots have covered quite a large portion of the World's surface. They flew to Tsitihar by Siberia and came back to Paris in six stages by Tokio, Indo-China, India, Asia Minor and the Mediterranean.

Their distance record has not yet been homologated by the F.A.I.

HOME AGAIN.—The return of MM. Costes and Bellonte at Le Bourgêt, after their 6,000 mile non-stop flight to Siberia, which, when homologated, will be the World's Distance Record.

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Cruising speed 100 m.p.h. **Range from 400 miles upwards.**
Payload up to 2000 lbs.

Specifications and full particulars both of the above plane and of the Avro 5 (seating pilot and four passengers) will be supplied on application. Those interested should write also for special catalogue of the famous "Avian" light aeroplane.

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THE PRIVATE OWNER'S POINT OF VIEW.

A lecture of great potential value to manufacturers and esigners of civil aeroplanes, as well as to private owners of lanes, was given by Sq. Ldr. H. M. Probyn, D.S.O., to the oyal Aeronautical Society on Nov. 28, on "Flying and Mainenance from the Owner's Point of View." In spite of its value here was only a small gathering and the Trade with a few otable exceptions was remarkable for its absence.

The lecturer opened by apologising for the simple way he had tackled his subject and explained that he had tried to nclude things of interest both to those who knew more bout private flying than he did and to those with little or o experience. He made the sound remark that it is the mall and simple things which go to make for safety, comort and efficiency.

There is only one safe place for speed and that is in he air where other people are not thereby inconvenienced. Aircraft are remarkably useful as transport where rivernouths and similar inlets have to be traversed. Motors or rains have to circumnavigate such obstructions, the aeroplane just flies over the top. A case in point is that the ecturer's home is at Colchester and he can reach it from his Squadron at Manston in ¾ hour by air.

Once in the air, flying is much less fatiguing than driving a car. The rudder is the only control that needs attention and this could be made unnecessary by the employment of some spring-loading device. The other day the lecturer, who owns a Westland Widgeon with an Armstrong Siddeley Genet engine, flew from Manston to Hamble, some eighty miles, without touching the control column until coming in to land.

Sq. Ldr. Probyn's definition of a good pilot is one who never breaks anything. The age limit varies with the individual but any man or woman who has lived a good outdoor life should have no difficulty in learning to fly up to the age of sixty. [A case in point is Mr. Richardson of the Norfolk and Norwich Club, who recently flew across the North Sea and back in his Klemm (40 h.p. Salmson) and afterwards to Paris.—T. J.]

A young man has quicker reactions and possibly more skill than a middle-aged man but the latter is less likely to break anything. The middle-aged man is more likely to know something about the weather. In any case to fly one must have good eyesight, with or without glasses.

Although a pilot may learn to go solo in three hours, instruction must continue for some time after this stage before the pilot is fit to go across country and meet average British weather conditions. 100 hours' experience is a dangerous time. At 500 hours a pilot begins to know how little he knew at 100. And at 3,000 he is still learning.

The stall, or lack of air speed, is responsible for the majority of accidents to private owners and this type of accident with the exception of collisions always has the most serious results. The Handley Page slot is a safeguard against spinning, but that is not enough,—prevention is required.

Sq. Ldr. Probyn wishes to emphasise the fact that some warning device is essential, and particularly quotes the Bramson-Savage anti-stall gear. He tried out this device some years ago and found it excellent, although not then mechanically perfect. Old pilots say that if a man needs a device of this kind he ought not to fly, but we want to make flying easier. [Just so, old drivers say that four-wheel brakes and self-starters, and oil-indicators, and other safety gadgets are not wanted. But without them there would be fewer motorists.—C. G. G.]

An anti-stall device must not rely on sight but must include some positive way of attracting the pilot's attention. Nobody stalls when he is looking at the instruments but when his attention is on something else. An audible device would be quite valuable.

The contention is always brought forward that pilots will get into the habit of relying on any such device and that it may break down. The same may be said of the engine.

Many people look upon slow landing as the panacea of all troubles in flying but there will always remain the pilot who lands down wind and whom nothing but a reverse-gear could save.

A knowledge of weather signs, wind, sea and country is necessary as well as flying technique. Herein lies the difference between driving and flying, the road sign gives way to the compass and map.

The various types of commercial aircraft of interest to the private owner may be divided up into four classes:—A, B, C, and D.

"A" includes Argosies, Herculeses, Singapores, Supermarines and similar craft, carrying twenty people or so. At least one pilot and two mechanics are necessary for this type of machine. At the moment this type of aircraft has not much appeal to the private owner. The quarters are too cramped for living on board. Prices range from £10,000 to £20,000.

"B" includes all four- to six-seater aircraft with one, two or three engines, which vary between 200 and 400 h.p. This type consists mostly of cabin monoplanes. A pilot-mechanic could look after any one of them. Prices from £2,700 to £5,000. [See page 1287.—C. G. G.]

This class, which generally has air-cooled engines, is very popular in America. It is likely to become popular here and in the Colonies as well. [Which is what THE AEROPLANE has been saying for years.—C. G. G.] The cabins are as comfortable as a car, though noisier. A trip to the Cape or Egypt in one of these machines would be more comfortable than any boat or train journey.

"C" includes all the machines of the two- or three-seat variety, with engines between 80 and 110 h.p. Prices between £630 and £800. This country undoubtedly gives the best value for money in this type, which is made as a biplane or monoplane, high or low wing, metal or wood, side by side or tandem-seating. This type can be maintained for a long time by the private owner him or her self.

The lecturer thinks that this is the lightest class which can be consistently and safely used in Great Britain. 1,000 lbs. loaded weight should be the minimum.

"D" covers the ultra-light aircraft of the single- or two-seat type ranging from 20 to 45 h.p. These are very economical to maintain. A machine of this type has flown to India and back. [A young German, Baron von Koenig-Warthausen, is flying round the World on a Klemm with a 20 h.p. Mercédés engine. He started from Berlin and has reached Detroit. The sea crossing from Singapore to San Francisco was made by boat.—T. J.]

Amphibians are not so popular as landplanes. One reason [and probably the only reason, as they enhance the usefulness of the machine.—T. J.] is their greater first cost. [The only amphibian gear on the British market for the "C" class costs as much as a "D" class machine.—T. J.]

Sq. Ldr. Probyn says that a light two-seat seaplane is of little use for alighting in the open sea on an average day, so one may as well use a landplane and save the weight. Where no landing grounds are available, such seaplanes are ideal

CLASS A.—A Short Calcutta (three geared Bristol Jupiters),—a pleasing air-yacht for any gentleman.

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for alighting on sheltered lakes, rivers and harbours, for which a knowledge of sailing, currents, tides and charts is necessary.

Anyone contemplating buying an aeroplane generally knows what he wants it for, how much he is going to spend, where he is going to keep and house it. He knows the type of journey for which he wants the machine, whether he will use it for racing, whether he will do his own maintenance work and in what kind of weather he intends to fly.

All these questions affect the buying. For long journeys of 2,000 miles and upwards one needs a cruising speed of not less than 100 m.p.h. because of adverse winds,—which are the kind one generally meets.

The monoplane is probably the best proposition for the private owner owing to its simplicity and fewer moving parts. The lecturer says that there is not much in performance between the two, though the biplane is the stronger for aerobatics. The monoplane requires less maintenance and should be cheaper, but is not.

Side-by-side seating is a debatable advantage except in a cabin machine, when it is a convenience. The trouble with a high-wing monoplane is the chance of its being blown over in high wind when on the ground. The aircraft is fairly safe in such circumstances however if kept moving till in the lee of shelter.

There is room for both open and closed aircraft, but women passengers would prefer closed cabins with side-by-side seating. Sq. Ldr. Probyn is quite sure that within five years' time a two or three-seat side-by-side enclosed aircraft will be on the market selling for £650. There is already a machine of this type on the market selling for £750. [To wit, the Desoutter.—ED.]

Sq. Ldr. Probyn said that on the whole he would plump for a low-wing cantilever monoplane, air-cooled engine, enclosed cabin, side-by-side seating. Such a type is simple, easy to fly, has good visibility, and is less likely to overturn in a high wind. One objection is that owing to the low wing the ground must be clear of all obstacles more than 18 in. high.

Four and a half hours' fuel is necessary for travelling abroad, as landing grounds are sometimes 300 miles apart and in any case a journey out and back may easily be that distance. Never risk a forced landing owing to lack of petrol. Gravity feed and flexible piping make the ideal fuel system.

Refuelling is an important point, and though many aerodromes are now equipped with pumps, there are places where machines have to be fuelled from tins and then a small pump on the machine would be ideal.

Cubic capacity and not weight is the limiting factor in luggage accommodation on aircraft. Two people require not less than two suitcases each. These cases to weigh 22 lbs. each and to be 24 in. by 14 in. by 6 in. There must also be room for golf clubs or tennis rackets, as well as engine-covers, pegging-down gear, tools and spares. The majority of light aircraft are badly off in this respect.

Folding wings are an advantage to light aircraft. Damage to wing-tips owing to rough handling is a serious matter. The lecturer has had his smashed against hangar doors seven times. His attempts to make spring wing-tips have been only partially successful.

A small two-seat machine needs less maintenance than a car. The engine is more accessible and does not get so dirty nor does the air-frame (i.e., the aeroplane considered without the engine) require as much cleaning as the body work of a car. Most of the attention that is necessary for the air-frame is inspection.

Fabric parts other than fuselage covers should last about three years. The undercarriage requires inspection after a bad landing, and in any case every ten hours. Frayed wires, bent struts or axles, and loose nuts must be looked for.

Greasing should be done as laid down in the manufacturer's handbook. The bolts fastening the locking-cap or washer which holds the wheel in place should be examined frequently. The undercarriage fittings to the fuselage should be inspected with the undercarriage. The tail-skid should be examined for weak spring, frayed shock-absorber, damaged shoe, and loose nuts.

Inspection of the controls should start with the control-column. The universal joint at the bottom of this should be examined for slackness and wear. This must be greased.

The controls must then be followed out to their various surfaces. Hinges of these parts should be inspected and oiled every twenty hours.

Another important thing is to inspect all piping, for a broken pipe may easily entail a forced landing. All pipes and wires must be protected against rubbing.

Cleaning is done by washing down fabric parts with hot water and soap. The cockpit is brushed out.

The lecturer uses two belts, one for use in rough weather to fasten him to the seat and the other to prevent him being thrown forward in the event of a crash.

All metal-work should be examined for rust and corrosion. Duralumin fittings are particularly apt to corrode if near the sea.

Annually during the first two years, wings, if fabric-covered, must be cut to inspect the bracing wires. After three years they may require re-covering. Ply-wood should be examined to see the effect of damp and whether struts and longerons are coming away from it. Look for elongated holes in fittings where there is movement.

Metal fuselages can be inspected easily, but the covers are an extra maintenance compared with a ply-wood fuselage. On the other hand, this type of fuselage is probably better in extreme climates, though the lecturer is still a little dubious of rust in steel. Ply-wood fuselages and covered wings have given good service in all countries.

Engines on private aircraft are mostly air-cooled and usually run 150 hours without trouble or decarbonising. Anyone with a knowledge of a motor-cycle can top-overhaul the average light aero-engine.

All oil-filters should be examined every twenty hours, and more often if oil is not filtered before being put in. The

CLASS B.—An Australian-built D.H.50 (450 h.p. geared Jupiter). Produced by Qantas Ltd. and named "Hippomenes,"— a useful cabin machine.

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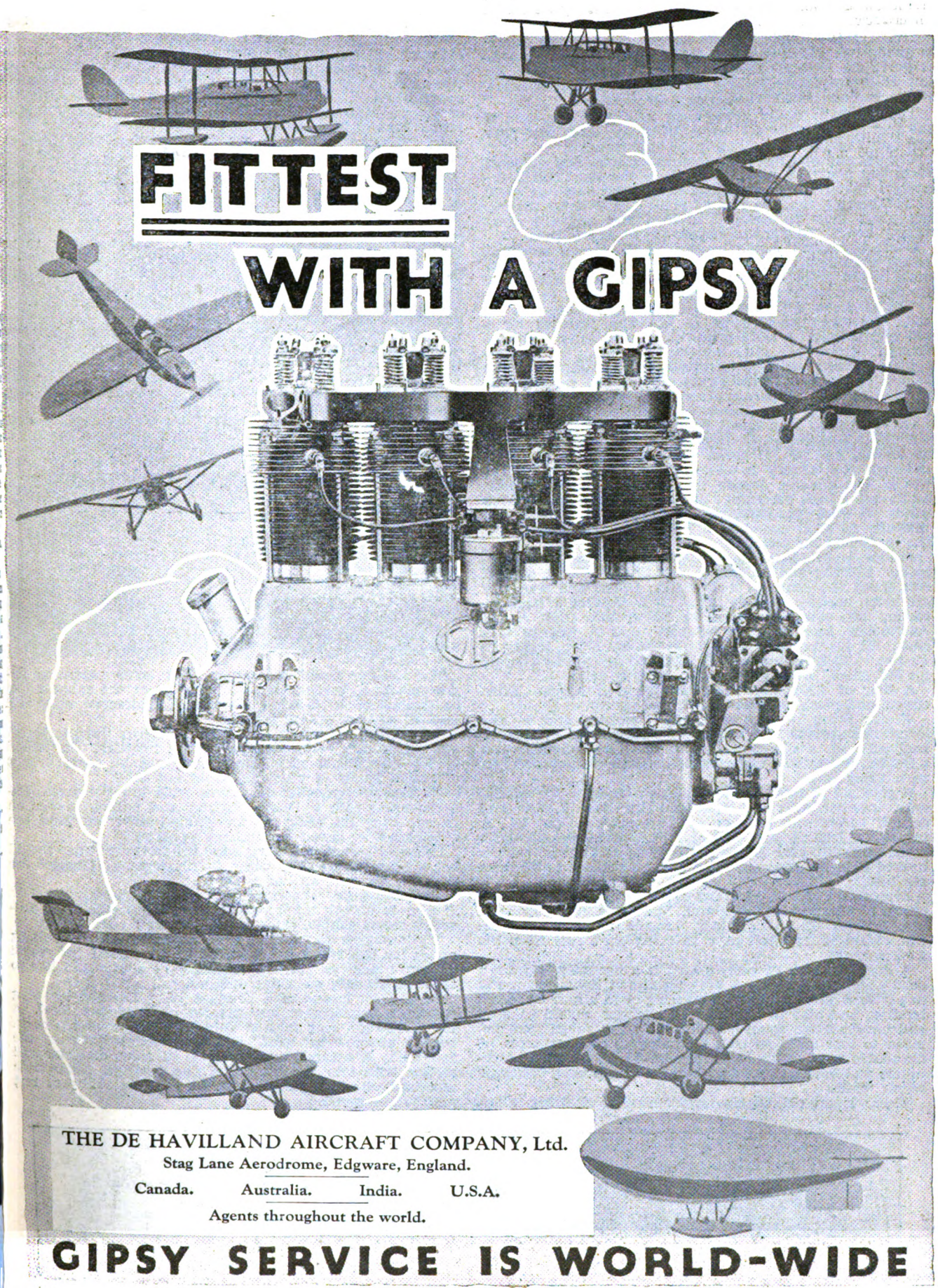

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scavenger or sump filter should give one a good idea of the internal condition of the engine. Incidentally a mineral oil is easier to clean off than a castor oil.

The revolution indicator can tell you whether the engine is giving full power on each magneto. An oil thermometer is worth the expense of fitting on an air-cooled engine. An important inspection is that of earth and switch wires, which become hardened through vibration.

The standard R.A.E. petrol filter is a good one, and if the fuel is filtered before being put in the tank, this filter will only require dismantling every twenty hours.

Tappets and rods must be examined, greased and adjusted every ten hours. A greasing device in the rod itself is desirable. Rocker-arms, depending on whether they are plain or ball-bearing, must be greased every 6 to 20 hours. Sparking plugs must be stripped, cleaned and adjusted every twenty hours. This is the longest job on the engine.

Contact-breakers should be cleaned of oil and moisture, points examined and adjusted. The contact-breaker cover must be put properly home. Carburettors do not give much trouble. The lecturer has the main jet out every 50 hours.

The air-screw boss should be tight on its shaft and the bolts fastening the airscrew to the boss watched for a red rust powder. A solid metal airscrew is safer to swing, though expensive and heavy. On tour he carries a spare wooden one. The lecturer swings the airscrew from behind and has an extra switch outside the fuselage. In a cabin aircraft the airscrew should be started either from inside the cabin or by means of an inertia starter.

Great Britain is a small country and poorly equipped with civil aerodromes. Numbers of interesting towns have no landing grounds. It is not the best of flying countries, although the scenery is certainly among the best in the world. The climate, despite the recent Summer, is poor, as we get a high percentage of mists, low clouds and high winds. A pilot who flies well in England will have no difficulty in other countries. Five hours' flying a day is the maximum for pleasure.

France is the ideal touring ground for the light aeroplane. Housing and landing is very cheap. Petrol and oil cost much the same as in England. Hotels and transport are much cheaper than at home. One requires a triptique costing 25s., obtainable from the Royal Aero Club, or the Automobile Association, a passbook and a journey log-book. £3 10s. per day for two people will cover a tour in France. This includes petrol, oil, and aerodrome charges for 300 miles' flying every fourth or fifth day.

A tour of 4,000 miles requires planning ahead. Extra engine and machine-spares may be necessary.

Winter flying requires good warm clothes, and in the lecturer's machine the passenger's cockpit is completely enclosed with a sliding celluloid roof. Lined trousers like a Sidcot, and a lined trench-coat, would be an improvement on a flying suit.

A good set of tools is essential, as well as a few special ones, together with odd nuts and the like. Engine and cockpit covers with press-on eyes are quick to put on. A means of lashing the control stick should be standard. Good picketing gear is essential. Two sacks that can be hooked onto the wings and a shovel with which to fill them are best.

Aerodromes should give one a choice of fuel, not everyone can afford aviation petrol, and it is not necessary. The lecturer uses No. 1 M.T. benzole mixture when he can obtain it. It often pays to bring one's fuel from the local garage.

A good compass properly swung is a necessity. So are a good watch and maps. A Véry pistol and lights are useful to get wind-direction in a sea-crossing or in a hurried forced landing, and also to get help. The maps should be good and have not too small a scale, which can range from ten miles to four miles an inch according to circumstances. A time-table when flying is a necessity. Flying round an aerodrome and having a good look-see before landing is always worth while.

There is an old tag invaluable for cloud flying which says: "When in clouds press your compass and follow the bubble." Thus if the right side of the compass card or needle comes towards you it is pressed away with right rudder and *vice-versa*. This prevents the machine from swinging. If the inclinometer bubble moves left the stick should follow proportionately in the same direction, and *vice-versa*. If the air speed is kept constant at touring speed the machine will be level fore and aft. When making out a compass course, magnetic variation must be taken into consideration.

Sq. Ldr. Probyn uses a simple drift-sight consisting of painted lines on the starboard strut of his monoplane worked out to 25 deg. Port and Starboard. Cloud shadows on the ground give one an idea of wind velocity and direction. At times they are a guide to the best height at which to fly. For a long trip, water, and rations such as biscuits, cheese and alcohol, are useful.

There is not much necessity for the private owner to use his aeroplane at night. On a moonlight night flying can be very pleasant. Landing by searchlight is no more difficult than landing by day. Landing by paraffin flares, one invariably undershoots and flies into the ground, therefore one should land with a little engine on.

Photography from the air is very interesting, and Williamsons make a special camera for this sort of work for operation by the pilot. The lecturer has obtained good results with a Baby Pathé Cinema. A colour filter should be used on all cameras for this work, and it should have a large aperture and narrow angle.

Sqd. Ldr. Probyn gives some interesting running costs based on a year's flying of 150 hours. These costs are as follow:—

	"B" class costing £3,700.	"C" class costing £650.	"D" class costing £400
Depreciation	£740 0 0	£130 0 0	£80 0 0
Insurance (flight risks) ..	296 0 0	50 0 0	40 0 0
,, (third party) ..	15 0 0	10 0 0	10 0 0
Housing	100 0 0	50 0 0	40 0 0
Fuel	151 17 6	50 12 6	25 6 3
Oil	27 6 0	9 2 0	4 11 9
Maintenance (engines) ..	30 0 0	10 0 0	5 10 0
,, (aircraft) ..	15 0 0	5 0 0	3 0 0
Wages (pilot-mechanic) ..	375 0 0	Nil	Nil
	£1,775 8 6	£319 19 6	£213 17 3
Estimated mileage	14,150	12,000	9,750
Per aircraft mile	2/5.7d.	6.4d.	5.26d

The lecturer closed his paper with some suggested improvements on present design. Noise from the exhaust can be diminished by fitting a silencer, but airscrew noise will last till we have geared engines.

Brakes are necessary. Sq. Ldr. Probyn intends to try out a parachute brake attached to the fuselage. This would be for emergencies only. He found that he could fly out of lots of places in which he could not land.

He favours large-diameter tyres with low pressures. Experimenting with a Bristol Fighter and pulling it over on to one wing tip while on the ground he found that the shock-absorber gave 1 in. and the tyres 2½ in.

Celluloid is not good enough for windscreens. They should be of glass. A reliable wiper is a necessity. Goggles are useless after half an hour's rain.

Parachutes are expensive and uncomfortable. Sq. Ldr. Probyn says that the broad belt pack type (like the Salvator) seems simple, quick to put on, and comfortable.

The autogyro should go far to make landing and flying easier for the beginner. The old De Havilland Six would be very nearly suitable for those people who would like to take the air only on a fine evening.

Finally, by means of a drawing of a Delanne low-wing cantilever monoplane, the lecturer outlined his ideal. A low cantilever wing with a cabin for three on top of it. Pusher airscrew at back. Outrigger booms to carry the tail unit. A central landing wheel of large diameter and section built into the bottom of the fuselage. Retractable auxiliary wheels might be used to obtain stability at rest and at low speeds

CLASS C.—A range of De Havilland Moths (Cirrus III engines) for National Flying Services Ltd.

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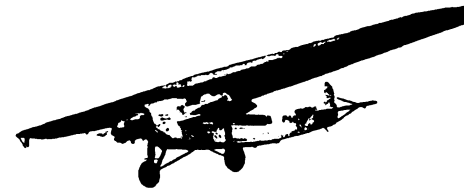

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THE DISCUSSION.

MR. WIMPERIS, Director of Scientific Research at the Air Ministry, was in the chair and said that this paper was full of facts and useful experiences. He thought that everybody at the lecture would like to see the first attempt with the parachute brake. He called on Mr. Butler to start,—

MR. ALAN BUTLER, Chairman of the De Havilland Co., said it was a little difficult to criticise a paper which had obviously received so much consideration from its author. He disagreed about the necessity for side-by-side seating, as people could be put so close together in tandem cockpits that it did not matter. Taking the Moth or "C" class, he thought that the most important points in order of merit were: Forward and downward view, speed, range, lack of noise, self-starter, and brakes.

He thought that some form of starting gear was essential and that the airscrew should not be touched by hand. The earthing switch was archaic and should be replaced by some other device. He thought that spring fasteners were better for covers than spring clips.

A compass was essential. He also found cloud shadows useful for estimating drift. His own experience was that it was easier to get into fields than to get out. He disagreed from Sq. Ldr. Probyn about shock absorbers, which he thought were essential.

SIR SEFTON BRANCKER, Director of Civil Aviation, agreed with everything the lecturer had said, and added that he was all for side-by-side seating. No one wished to scream down a speaking-tube to a charming companion. He thought that for school work the undercarriage travel on a Moth was not enough. Shock-absorbers were essential.

The side-by-side pusher should have a removable top. Aircraft should be sold with integrally built suitcases. Long-range tanks were essential. He disliked a flight in which one doubted whether darkness, the petrol, or the aerodrome was going to win. He advocated the pusher type. Noise was being investigated by the Advisory Committee. He thought that most of it came from the airscrew.

He thought it was up to Dr. Merton (Chairman of the Committee of the Air League) to find a larger audience for Sq. Ldr. Probyn.

CAPT. GEOFFREY DE HAVILLAND thought that people should fly by instruments, because "flying by instinct" really meant flying by vision, and when that was removed, as in fog, "instinct" had gone. He referred to the difficulty of choosing between wood and metal structures. The trouble with side-by-side seating was that it reduced performance, and sociability could be got in tandem. The use of a low wing meant the employment of petrol pumps. He referred to the fact that light aeroplanes could land, in case of need, without a rudder or even with one elevator gone. The most important things therefore to inspect were the ailerons. A starter could not be included without the addition of 30 or 40 lbs. Brakes were useless on wet grass, when one could slide further with locked wheels than the length of the normal run. [But grass is not always wet.—ED.] He did not think that the development of the De H. 6 was really worth while, as so few people would require it.

DR. MERTON, Chairman of the Committee of the Air League, said he thought that as the three-engined aircraft had proved their worth on air-lines, the type could be developed with advantage for the light aeroplane and private owner. He used a method of drift lines similar to that of the lecturer, only his were painted on the plane. A time-table was very valuable. He found that a light filter was not necessary on a camera if used below 1,500 ft. He had cut down exhaust noise by a half when he fitted a silencer. He had kept a careful record of costs since he purchased his Moth in 1927, and found that running costs were about 16s. per hour. He found that a year's flying cost £420 on the lecturer's scale, and not £320. His own 100 hours cost him about £250.

He thought there was need for a special machine for the Colonies, which would be cheap to maintain and repair. No part of it should be too big to be flown out in sections in a machine of its own type.

SQ. LDR. ENGLAND of Handley Page Ltd. referred to warning devices and said he thought that the number of instruments should not grow. He said the time was coming when it would be possible to regain control after dropping 60 ft. Insurance was necessary, but costs would have to come down. He referred to a friend who purchased a machine after 15 hours' flying, and had to pay £25 for Third Party Insurance and £105 for the machine. The most important view was the upward one when turning and this you could not get in a high-wing cabin machine. He referred to the use of elastic cords to make flexible wing-tips. Slots and brakes were essential. He thought night flying was important, as he did not see why private owners had to home before dark.

MR. BRAMSON gave his view of the most important features for light aeroplanes, which were safety first (this meant good visibility) and freedom from forced landings (which might make two engines necessary). He was glad to hear such nice remarks about the Bramson-Savage anti-stall gear, although he had kept quiet about it for two or three years.

MR. RATCLIFFE, who is chief draughtsman on the commercial side at Westlands, said that a monoplane had to be built to meet Air Ministry requirements, and therefore was as strong as a biplane for aerobatics. Pilots had told him that "B" class machines were easier to fly than two-seat machines.

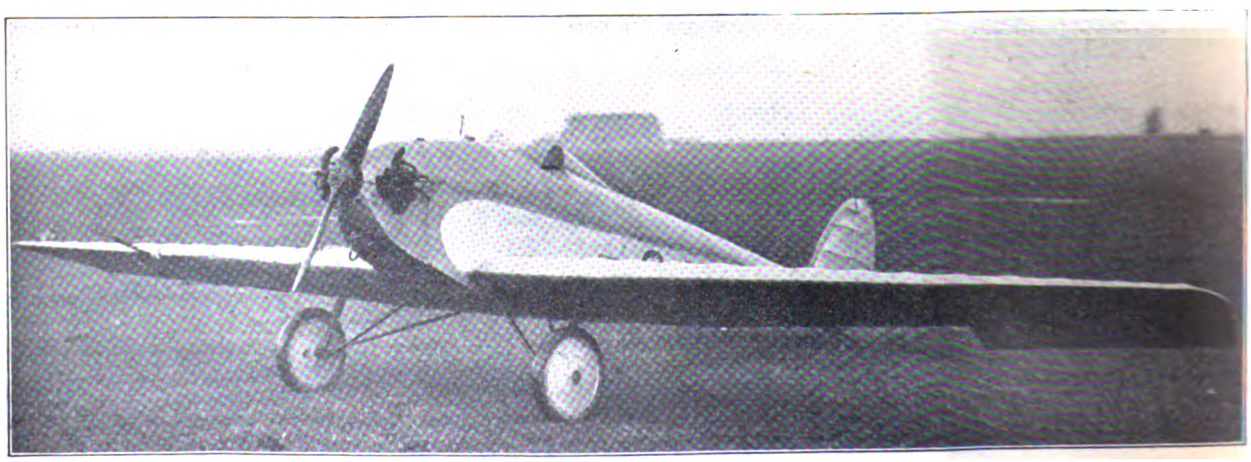
MR. WIMPERIS gave some interesting details about the work of the Panel which is investigating noise. They had succeeded in finding some sort of unit with which to measure noise. Aircraft noise came from the two sources,—airscrew and engine. To illustrate the difficulty of the subject he said that if one had two dogs equal distances away from the instrument and both making the same amount of noise, if one dog stopped that only reduced the noise from 80 units to 77. He said that a three-seat pusher machine of Captain Hill's Pterodactyl type was being built by Westlands. He referred to his recent trip in Canada, when he had been struck by the large number of flying boats in use—nearly all American-built—for holidaying on the Lakes.

SQ. LDR. PROBYN said in his reply that the visibility in the Delanne was good in all directions. Safety first was the most important feature. He thought that a 3-in. travel could be obtained with a Goodyear Airwheel, and this was ample for an experienced pilot. The Salvator parachute was much more comfortable than the Irving. His own machine carried its own weight in useful load. He referred guardedly to his experiences with the automatic pilot (George), and said it was uncanny. He thought Capt. de Havilland's remarks about wheel-brakes emphasised the need of a parachute brake as he had suggested. Insurance naturally varied with the pilot. It was much cheaper to house an aeroplane in France than to garage a car. He thought it was easier to taxi without slots. Two engines might be safer, but they would be too much trouble. Sparking plugs for one engine were too much trouble to keep clean as it was.

THE DEVELOPMENT OF AIRCRAFT MATERIALS.

A lecture which will be of special interest to aircraft and aero-engine designers and manufacturers will be given by Dr. Rosenhain, before the Royal Aeronautical Society, at 18, John Street, Adelphi, on Dec. 12, at 6.30 p.m.

The lecture will include a survey of all the materials used in the construction of aircraft. An account will be given of some alloys which have exceptional strength at higher temperatures. Something will be said about the ultra-light metals like magnesium and beryllium.



CLASS D.—The Hendy Hobo (A.B.C. Scorpion), which comes into Squadron Leader Probyn's last category.

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The Cinque Ports Flying Club uses Wakefield CASTROL XXL exclusively—

Here is their letter to us:

LYMPNE AERODROME
KENT
18th Nov., 1929

Messrs. C. C. Wakefield & Co., Ltd.

Dear Sirs,

This Club keeps a very careful check upon the figures for oil consumption of the Club aircraft. As you know, we use your Castrol XXL exclusively, and we feel that you would like to know that this has proved to be extremely economical and also very efficient.

During the three months ending 31st October, neither of our Club aircraft exceeded a consumption of one quart per hour. Our aircraft G: EBRI (which is used practically exclusively for dual instruction) has always proved the more economical of the two. The consumption figures for both aircraft are as follows:—

		G: EBRI	G: EBPM	
August	—	.406	.753	quart per hour
Sept.	—	.629	.859	" " "
Oct.	—	.499	.772	" " "

The average flying time put in by each aircraft during each month was over 50 hours. Our Ground Engineer considers these figures very satisfactory for the Mark II Cirrus engines, and we feel that is especially so when it is considered that the aircraft are used exclusively for instructional purposes involving continual landings and take-offs.

Yours faithfully, p.p. CINQUE PORTS FLYING CLUB, LTD.
(Signed) R. Dallas Brett, Hon. Sec.

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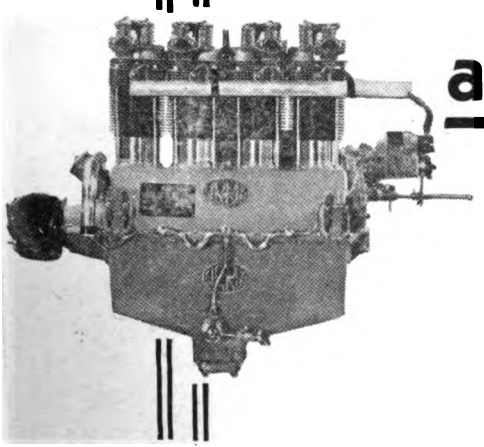

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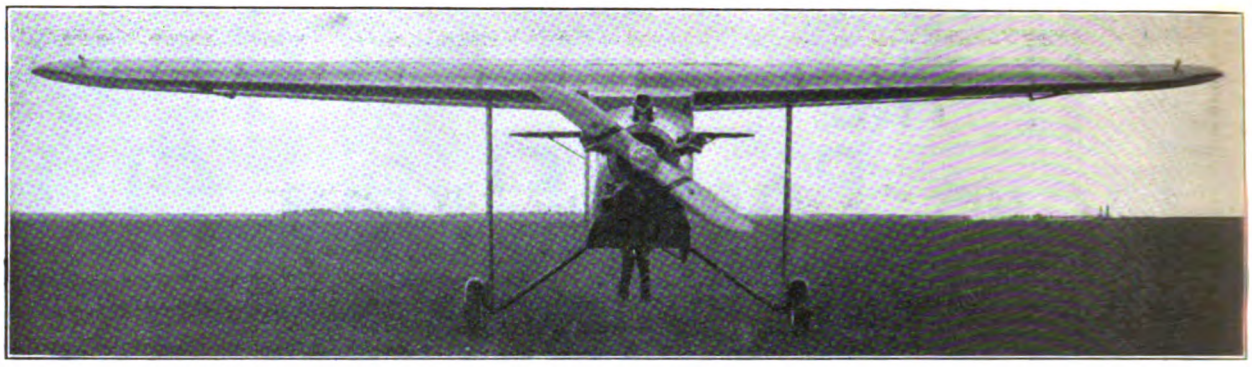
THE KOOLHOVEN F.K.40.



CLEANLINESS.—A front view of the new Koolhoven, Class B, transport machine.

Mr. Frederick Koolhoven, who is well-known in this country as the designer of several war and post-war aircraft of high character, built by British firms, has lately produced a six-seat commercial monoplane with a 230 h.p. Gnôme-Rhône Titan engine.

The first of the type, which is known as the F.K.40, has been delivered to the Koninklijke Luchtvaart Maatschappij (K.L.M. or Royal Dutch Air Lines) and the machine illustrated has been furnished to suit the requirements of this company.

The F.K.40 has been designed as a General Purposes Commercial monoplane, and may be supplied with various internal arrangements.

It can be used as an ordinary four-passenger monoplane with a crew of two in a separate pilot's compartment forward of the wing. It is in this form that it has been supplied to K.L.M.

It can be used as a mail or freight carrier, and then the cabin can be boarded up. With the cabin thus arranged the machine has, together with the baggage compartment aft of the cabin, a cubic capacity of 190 cub. feet. When so used a crew of either one or two may be carried, with either single central, or side-by-side dual control.

It can also be supplied as a six-seater, with the pilot seated centrally in the forepart of the cabin.

Finally it can be arranged as a luxurious private touring monoplane with three lounge seats, luggage nets, a passage forward to the pilot's compartment, and a passage aft to a lavatory at the back of the cabin.

The F.K.40 conforms to the very high load factors demanded by the extremely stringent rules of the Dutch authorities, and, arranged as a single-pilot machine, it is claimed that it is lighter, and for its horse-power transports more load at a greater speed, than any other existing aeroplane with accommodation of equal cubic capacity and equal horse-power.

SPECIFICATION.

TYPE.—Four/six-passenger cabin monoplane.

WING.—Cantilever monoplane of tapering chord and thickness bolted direct to the top of the fuselage. Structure consists of two silver spruce box spars, of which the stringers are laminated and glued up with casein glue and normal ribs, the whole being covered with plywood. Ailerons of narrow and constant chord operated by rigid duralumin tubes.

FUSELAGE.—Rectangular welded steel-tube structure covered with fabric.

TAIL UNIT.—Normal monoplane type. Wooden tail-plane and metal framed elevators, fin and rudder. Adjustable tail-plane.

UNDERCARRIAGE.—Divided type. Each unit consists of a long vertical oleo leg running down from the front wing spar with the bottom end hinged to the bottom fuselage longeron by a steel-tube [illegible]. If fitted with wheel-brakes normal tail-skid replaced by tail-wheel.

POWER PLANT.—One 230 h.p. Gnôme-Rhône Titan five-cylinder radial air-cooled engine on a detachable engine mounting and cowled with quickly detachable cowling panels. Main fuel tank flexibly mounted in centre section of wing between the spars. Feed to the engine by gravity and fuel passes through a large approved filter. Oil circuit has two extra filters.

ACCOMMODATION.—Pilot's cockpit in front of leading edge of wing and is enclosed. This compartment may accommodate one or two and either single or dual control may be fitted. Below wing is a passenger cabin which may be arranged to accommodate three passengers or may be arranged as a freight or mail compartment. Behind cabin is a luggage compartment with a separate outside door. Cabin dimensions: 6.9 ft. long by 3.6 ft. wide by 5.4 ft. high. Cub. capacity: 134 sq. ft. Luggage compartment dimensions: 2.88 ft. long by 3.49 ft. wide by 5.77 ft. high. Cub. capacity: 58 sq. ft.

DIMENSIONS.—Span 20.12 m. (66 ft.), Length 11.125 m. (36.5 ft.). Height 3.40 m. (11.15 ft.).

WEIGHTS.—Weight empty 950 kgs. (2,090 lbs.), Weight of cabin installation 50-250 kgs. (110 lbs.-552 lbs.), Disposable load 700-900 kgs. (1,532 lbs.-1,985 lbs.), Weight loaded 1,900 kgs. (4,200 lbs.).

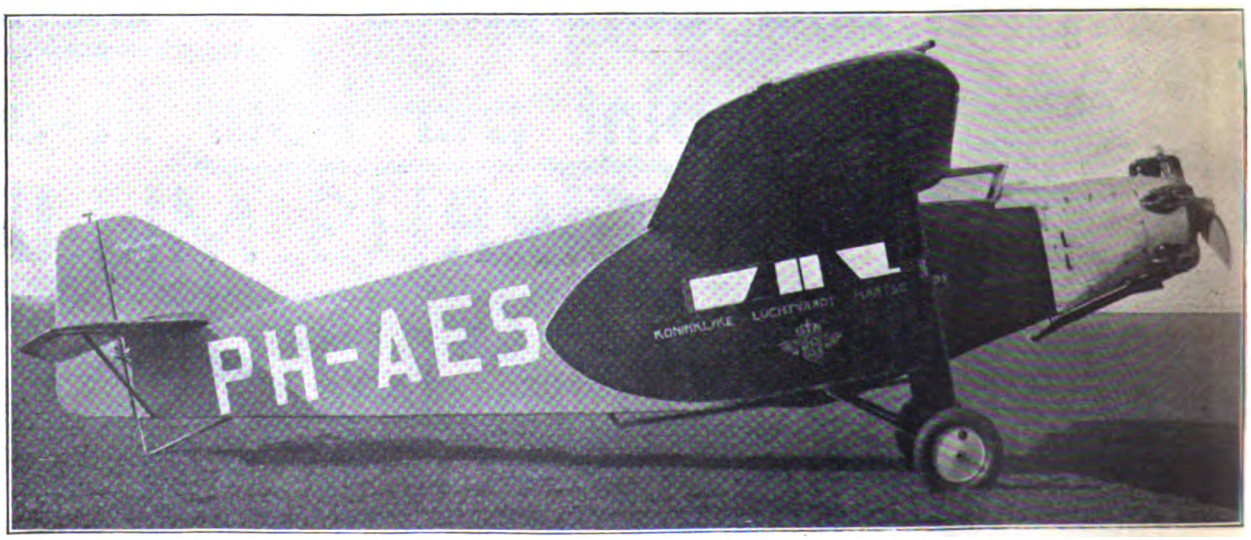
PERFORMANCE.—Speed, maximum, 187 km.p.h. (116 m.p.h.), Cruising speed (195 h.p.) 165 km.p.h. (102 m.p.h.), Landing speed 90 km. (56 m.p.h.), Initial rate of climb 132 m. min. (433 ft./min.) Climb to 1,000 m. (3,280 ft.) 9 min. 50 sec.

Mr. Koolhoven is ready to sell the complete designs to any British firm on reasonable terms. The success of the Desoutter monoplane, modified from Mr. Koolhoven's designs to suit Air Ministry requirements, is evidence of the possibilities of these machines.

AN AERO CLUB IN THE WEST INDIES.

An Aero Club has been formed in Martinique, French West Indies. It is known as the *Aéro-Club des Antilles*. Général Girod, who is President of the Club, is resident in Paris and he has brought pressure to bear on the Ministries of Air and Colonies with the result that these bodies have agreed to send to the Club a demonstration aircraft, two aero-engines and a set of instruments. This will be followed later by a further aircraft.

The Governor of Martinique has granted the Club a sum of 50,000 francs (roughly £400).



WHAT THE MARKET WANTS.—The latest Koolhoven Civil Air Transport monoplane. A type not built in England, but ready to be built by any firm which cares to buy the designs.

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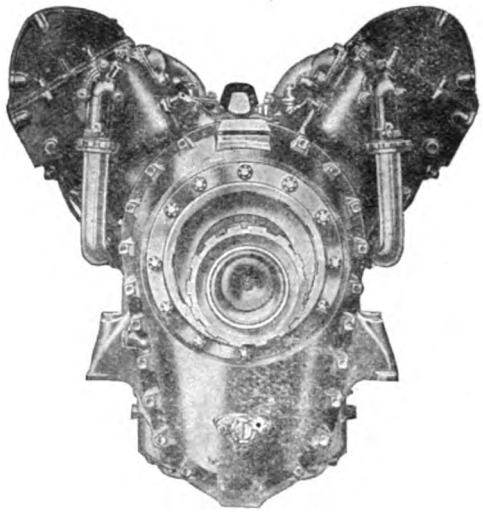
ROLLS-ROYCE
AERO ENGINES



Rolls-Royce 'R' Engine (end view)

THE ADVANTAGES OF WATER COOLING

8.—Speed

The Supermarine S 6, fitted with this Engine, won the Schneider Trophy, 1929, at an average speed of 328.63 m.p.h. and set up a new World's Speed Record of 357.7 m.p.h. Performances such as these are possible only when water-cooled engines are used.

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TWELVE CHAPTERS IN SEARCH OF AN AUTHOR?

[*The Air Traveller's Guide to Europe.* By Captain Norman Macmillan, M.C., A.F.C. Duckworth. The Aeroplane Book Department, Cannon House, Pilgrim Street, E.C.4. 10s. net.]

Captain Norman Macmillan has given us two delightful books, *The Art of Flying* and *Into the Blue.* He could count on our opening a third with eagerness. Now, however, that I have read it, I am almost certain that he did not write it—at least, not all of it. *Style, c'est l'homme,* and this is not the man.

I will concede that he compiled it and did it brilliantly. It would be impossible to find all the information that he sets out so clearly and so availably in any other work. It is really a catalogue of all the Air Lines of Europe, the service, the fares, the machines and engines they use and all the Air Stations. There are some very good photographs and some maps that are too economical to be pleasant.

Although the book is not intended for the sophisticated in aviation our own pilots will find in it many useful things. Our club-chair aviators and aerodrome loafers may be interested in the details of some air lines that are little heard of in this country. The book is addressed to those who have to travel on business or for their pleasure and to whom aerial transport is strange. I base this opinion on the following delightful little passages.

"The gentle undulation of a slight modulation in the air flow is a pleasure compared with the rocking of a train or the rolling of a ship." That is on page 21; on page 72, however, there is a change from poetry to prose. "There need be no fear of air-sickness, as it only happens with extremely bad weather *and is not as bad as sea-sickness.* (My italics.) Preventives of air sickness can be obtained at all aerodromes." Of course.

On the same page occurs the following. "Cotton-wool to stuff in the ears is provided for travellers to deaden the noise of the engines." In what country, do you think? But in Italy we go back to poetry. I quote from page 147: "The Adriatic is near, and above the sound of the motor one seems to hear the insistent song of the sea." *Seems* is good.

There are one or two paragraphs about safety that may come as a shock to some people. Since 1924 Deruluft, a Russo-German line, has only slightly injured two people, and the Czecho-Slovakian State Airline has had no accidents at all. I appeal to Spry to search all Croydon to find some boast to counter that.

In the preface, the author very properly protects himself from slight inaccuracies. He states, on page 34, that in 1924 the CIDNA air line was extended from Stamboul (which he dares to call Constantinople, contrary to Turkish law) to Angora. This was certainly not so last year, and is not mentioned in the latest Aerial A.B.C.

Again, the time taken to drive from the centre of most towns to their aerodromes is shown. For Vienna, this is given, on page 34, as 75 minutes, on page 110 as 50 minutes, and on page 153 as 15 minutes. I know all three to be wrong.

In connection with this it is interesting to note that it takes 75 minutes to reach the aerodrome from Marseilles, 90 minutes from Stamboul, and from Belgrade no time is very wisely given, perhaps because it cannot conveniently be stated in other than astronomical terms.

A large part of the book is given up to the description of various routes. This is where we miss Macmillan. For him to have travelled over them all would have been a task that only his worst enemy would have wished him to undertake. I take it that the descriptions were communicated to and amusingly selected by him. Some are undoubtedly better described than others.

The flight over the Karavanchen Alps (the picturesque spelling Karawanken is not employed) has inspired one writer to the lyrical height of 16,000 feet. Having done that journey in a Moth I can assure anyone that my sensations were quite different from those described in the book. It is during such periods that the magnificent new guarantee behind the Gipsy engine assumes a degree of dulness out of all relation to its importance. I am nevertheless grateful to be able to write this.

Some of the descriptions are lit by flashes of the obvious or of the incomprehensible that give considerable pleasure. Here is a dazzling account of the flight from Prague to Berlin (page 116): "We hurry over plains, over towns and villages, over forests, over a network of roads and railways, and after two hours' flying we sight Berlin. Shortly afterwards this city with its pulsating life is under us. . . ."

For highbrows, who hate the obvious, there is this description on page 112: "One sees the magnificent, frequently perpetuated panorama of Prague." I would have liked "Perpetually perpetuated."

There are notes on towns that have caught their authors a little short of inspiration. On page 54, for instance: "The Hague has witnessed tragedies that are historical, the execution of a Dutch Prime Minister upon a false charge of

Three Weeks To Christmas

SEND BOOKS AGAIN THIS YEAR.

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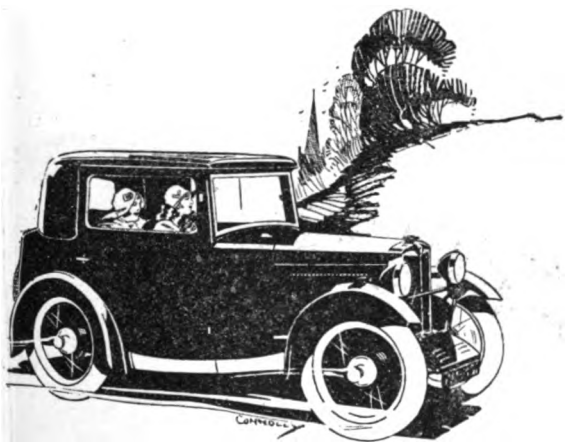

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conspiracy; death by violence from mob laws." Omitting the word "Dutch," you could apply that sentence to pretty well any town.

Riga is described as a typical, beautiful, old German town, and the catalogue of the sights to see, though it includes the post office and the theatre, omits the two most interesting buildings in the place—the Railway Station and the Club of the Blackheads. It is perhaps unfortunate that Riga is described as a great manufacturing centre on a page that faces an excellent air photograph of Essen.

The Balkan section provides, as you would expect, the best fun. What are Balkans for? The hand of the Treaty of Trianon lies heavy on these pages. Yugo-Slavia provides this exquisite sentence: "The National Aspirations of more than a thousand years have been filled to overflowing out of the lucky bag of war." The Yugo-Slavs were given some thousands of square miles of what was once the granary of Europe and belonged to Hungary. The Hungarian view, therefore, is different. "There is little wonder that the romantic, Eastern fatalism of her people, stoical in their Eastern loss of lands and ancient dignities, arouses sympathy in the eyes of more Western peoples."

As a joyous, light-hearted invitation to come and visit the jolly land of the Serbs, I accord this the Nobel prize "The charming hill-cupped town of Sarajevo where the murder of the Austrian Archduke and Archduchess precipitated the Great European War upon the World."

The book, you can see, is entertaining—and, after all, who are we to thank for it if not Captain Macmillan?—

BM/Ivor

THE GLIDING MOVEMENT.

THE GLIDING LUNCH.

The Gliding Lunch, which will have been held on Dec. 4 while this paper is being printed, will be reported in THE AEROPLANE of next week.

THE GLIDING DURATION RECORD.

The Gliding Duration Record was put up to 14 hrs. 43 mins. 25 secs. by Ober-Lt. Dinort on the night of Oct. 19-20, 1929, at Rossiten,—which is in East Prussia on the Baltic Coast. It is on the landward side of a long spit of land some 70 miles long which separates a large sheet of water (the Kurisches Haff), from the Baltic. At the North end of the Kurisches Haff, across the narrow entrance, is the city of Memel.

Rossitten and the Wasserkuppe in the Rhön Mountains, which are north-east of Frankfurt, form the two great gliding centres in Germany.

Ober-Lt. Dinort's glide started at 3.19 p.m. in a wind-velocity of 8 metres per sec. (26.2 ft. per sec. = 17.85 m.p.h.). As darkness came on people with electric torches were posted to mark the turning-points, one kilometre apart.

The wind was from the East so Lt. Dinort was flying along the landward side of the spit. A mechanical defect forced Lt. Dinort to descend.

At first sight this glider appears to be a retrograde step in design. It resembles the training type of glider and has a wing of low aspect ratio. There is a single spar and the leading edge is covered with ply-wood back to this spar.

The outrigger structure carrying the tail-unit and landing-skid on which the pilot sits is of steel-tube—presumably welded together.

The glider was specially designed by Ing. Schwabe and Ober-Lt. Dinort to fly in winds of low velocity up to 12 m./sec (39.4 ft./sec. = 26.85 m.p.h.). Actually during the record flight the wind reached a velocity of 20 m./sec.

The glider has been successfully launched on level ground by towing behind a motor.

DIMENSIONS.—Span 13.10 m. (43 ft. 0 in.), Chord 1.70 m. (5 ft. 7 in.), Length 7.50 m. (14 ft. 8 in.), Wing area 21.60 sq. m. (233.5 sq. ft.).

THE BOWLUS SAIL-PLANE.

A glider flown and designed by W. H. Bowlus flew for 1 hr. 20 mins. at San Diego in October of this year. This machine was built in the shops of The Airtech School of Aviation of San Diego, California. No particulars of the gliding ground are available.

The Bowlus sail-plane is a monoplane glider with a single seat. It resembles the German gliders but has a low aspect-ratio and a special form of aileron.

The wing is of the high cantilever type tapering in plan and chord and uses U.S.A. 35-A aerofoil section. The wing is in three sections. The centre section of 5 ft. span is attached to the main fuselage bulkheads, and the outer panels are each 19 ft. long.

The spars are built-up Pratt trusses with spruce flanges. The ribs have 1/16 in. ply-wood webs which is only ¾ in. deep and have flanges of 1/8 in. by 1/16 in. spruce. Every third rib is made a compression rib by spruce members glued onto the web.

The drag-bracing consists of spruce strips placed diagonally. The leading-edge back to the spar is covered with ply-wood. The whole wing is then covered with fabric.

The ailerons project beyond the wing-tip and are set at 6 deg. less angle of attack than the wing. The section used is Göttingen 410. They are built up with wood ribs, and are mounted on a duralumin tube 1¼ in. diam., which rotates in the end-ribs of the wing.

The fuselage consists of four spruce longerons, ¾ in. by ¾ in. at the pilot's seat and tapering to ⅜ in. by ⅜ in. at bow and stern. The struts are similar to the longerons. The diagonal braces are spruce strips 1½ in. wide by 1/16 in. Behind the pilot are two bulkheads of 3/16 in. plywood to take the front and rear spars. A skid is built into the bottom of the fuselage. The whole is covered with fabric. There are fairing strips to support the fabric covering.

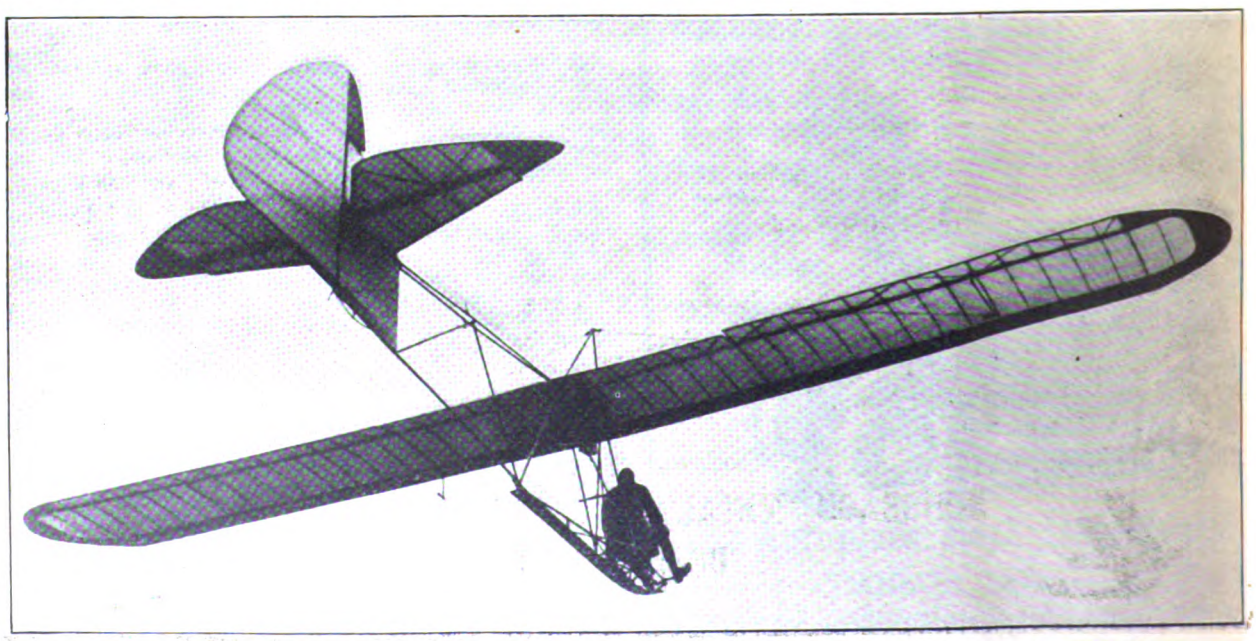
The tail unit follows the German practice of having a very small fin, merely big enough to carry the rudder hinges, and no tail-plane. The rudder is balanced and its structure is like that of the wings. The elevator is like the rudder.

The pilot sits forward of the front bulkhead and has controls of the normal stick and rudder-bar type. The control wires are 1/16 in diam.

DIMENSIONS.—Span 44 ft., Chord at root 5 ft. 6 in., Chord at tip 32 in., Length 25 ft., Aspect ratio 11, Wing area 179 sq. ft.

WEIGHTS.—Weight empty 160 lbs., Pilot 170 lbs., Weight loaded 330 lbs., Wing loading 1.84 lbs./sq. ft.

PERFORMANCE.—Take-off speed 20 m.p.h.



THE RECORD BREAKER.—Ober-Lieut. Dinort and the glider on which he beat the Duration Record.

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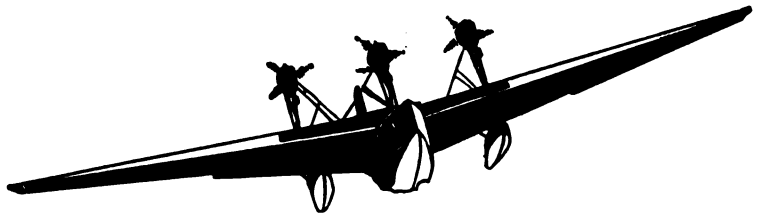

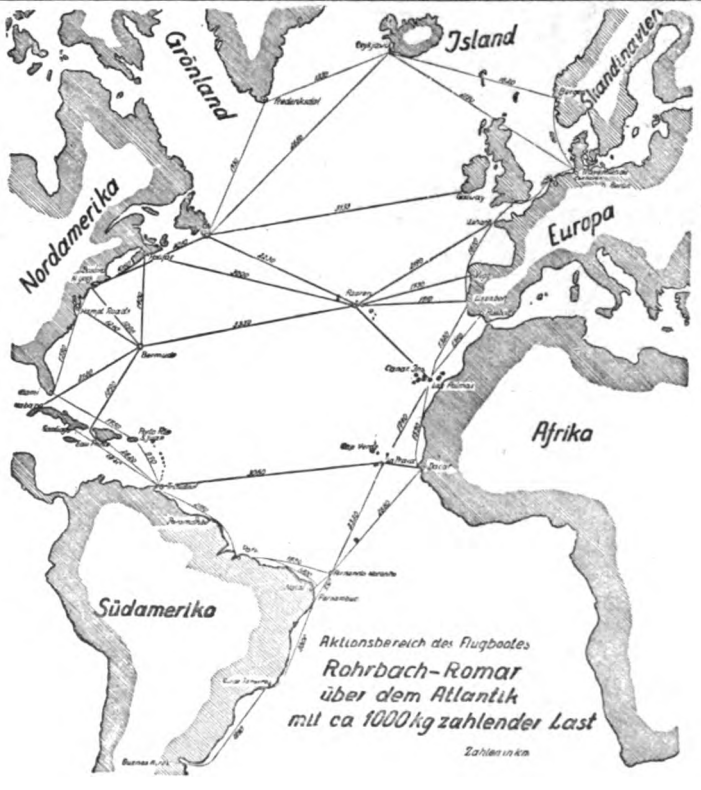

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Item 2 : The boat being stranded on a storm-swept night (November 16/17th, 1928), without suffering the least injury.

Item 3 : Standing up excellently in official seaworthiness tests (sea of force 5), on December 11th and 13th, 1928.

Item 4 : Crowning acceptance flights by world's record: lifting a maximum payload of 6,450 kg. to a height of 2,000 m.

Item 5 : Flying ten hours non-stop from Travemünde to Stockholm and back by order of Deutsche Luft Hansa.

Item 6 : Flying non-stop over five countries, viz.: Germany (Travemünde) — Holland — England — Norway — Denmark and back to Travemünde airport, this flight also being made by order of Deutsche Luft Hansa.

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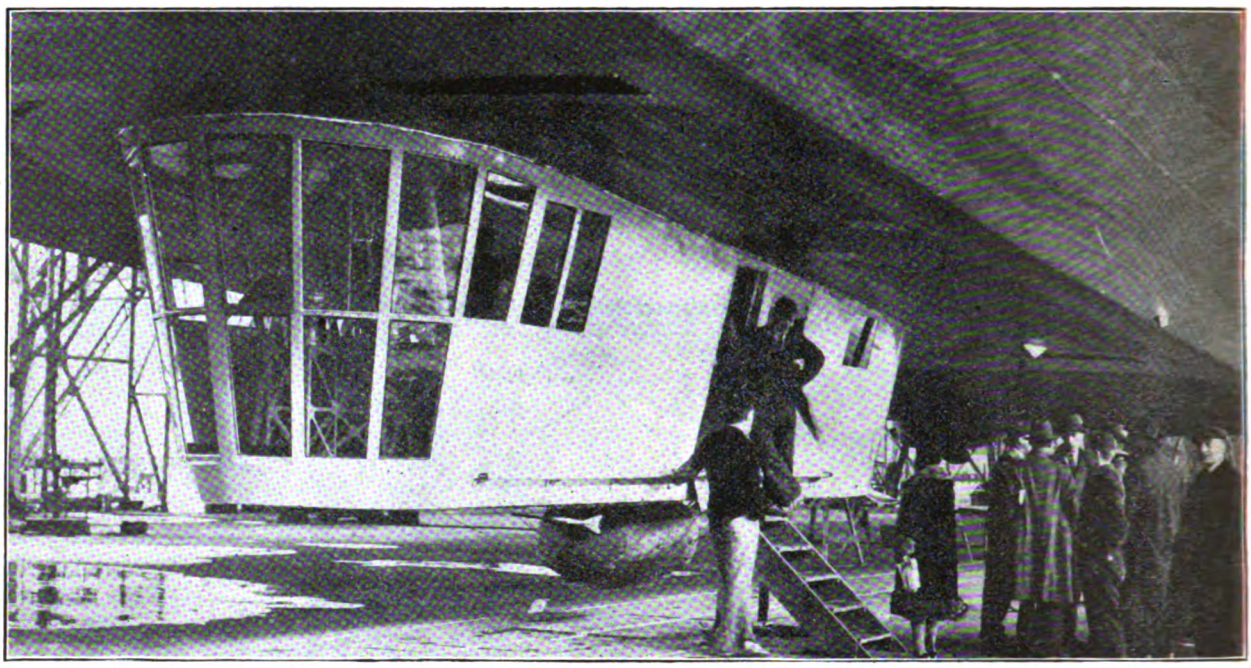
THE PRESS VISIT TO R 100.

By L. HOWARD FLANDERS.



R 100.—The control-car which is, except for the power-cars, the only excrescence from the hull.

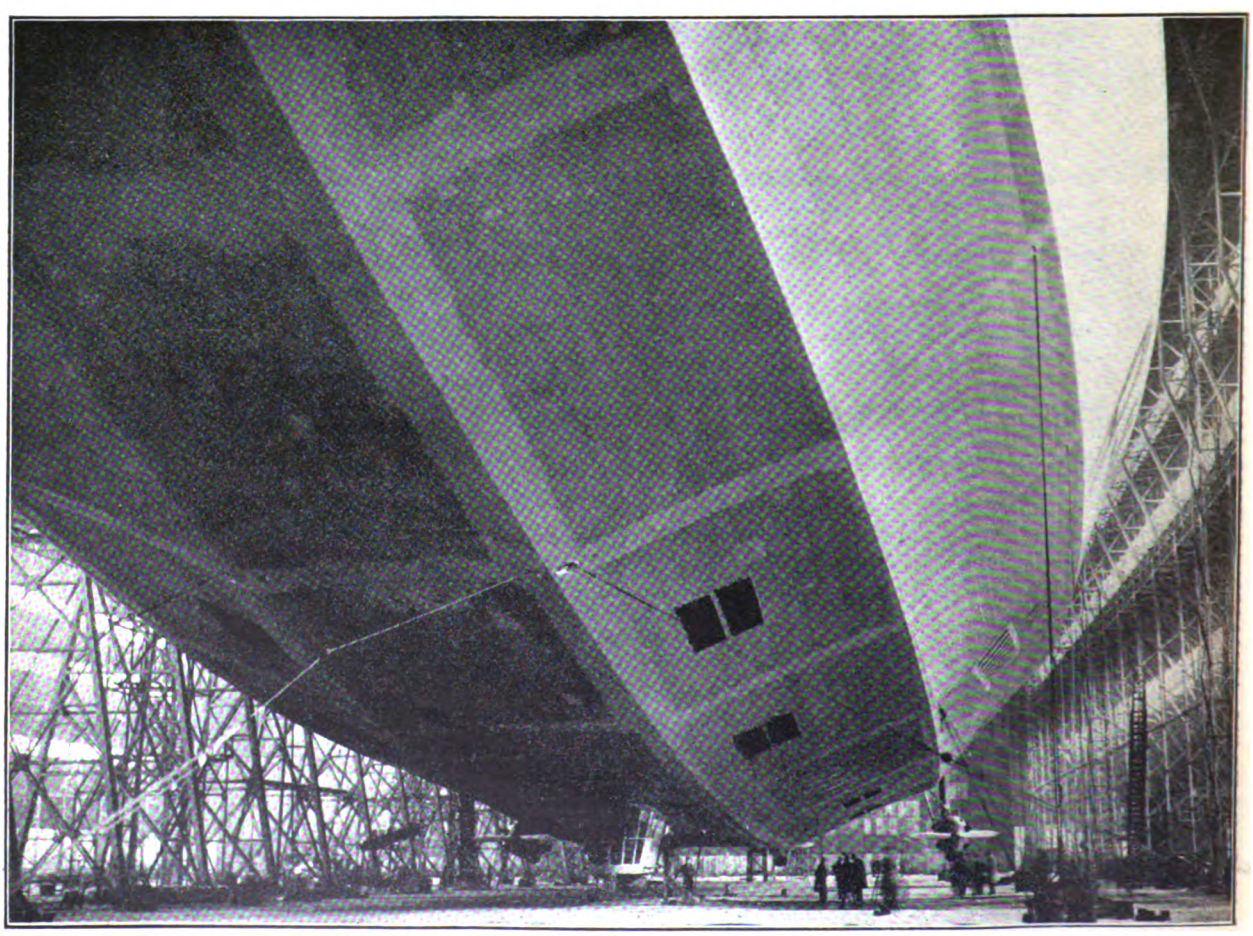
The Airship R 100 which is the second airship built under the 1924 programme, has been completed by The Airship Guarantee Co. Ltd., a subsidiary company of Vickers Ltd. It was taken over by the Air Ministry on November 22nd. On the 28th a Press visit was arranged.

While on the journey to Howden, the writer purchased Northern editions of certain well-known daily papers, and was able to read a full description of the visit that he was about to make. As this description did not appear in the London edition, it is probable that the police are more severe on clairvoyants and fortune-telling in London than in the North.

The dimensions of this airship are almost identical with those of R 101, but in spite of this the appearance is surprisingly different, and there will be little difficulty in identifying them when too far off to see the lettering.

The external differences of R 100 from R 101 are as follow: The mooring spindle with its attendant tubular bracing is external to the covering which ends in the bluff entry of a streamline form. The fabric covering is pulled in to keep it taut, which makes the polyhedral sides concave, and accentuates the prominence of the longitudinal girders.

There are only three power-cars. Each has two engines,



R 100.—A general view from the nose of the underside of the ship in its shed at Howden.

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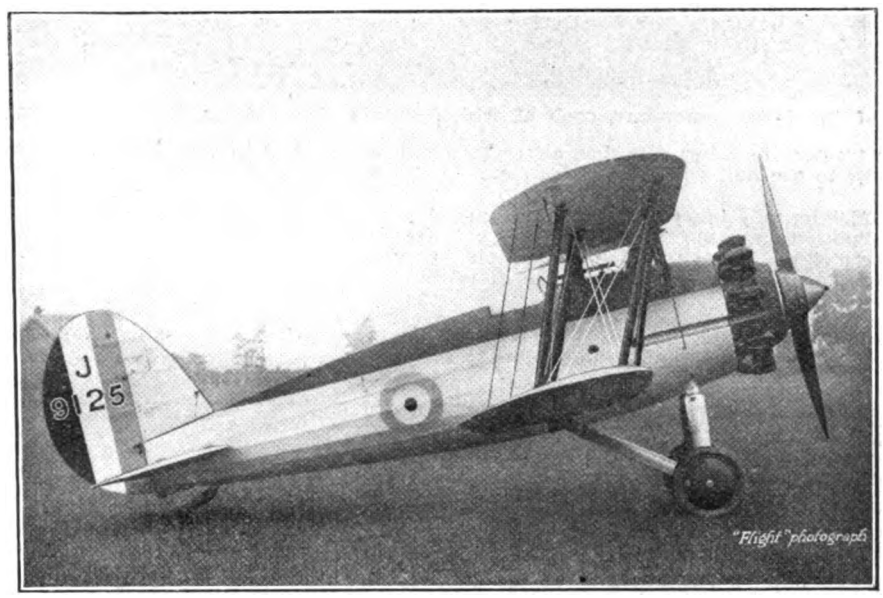

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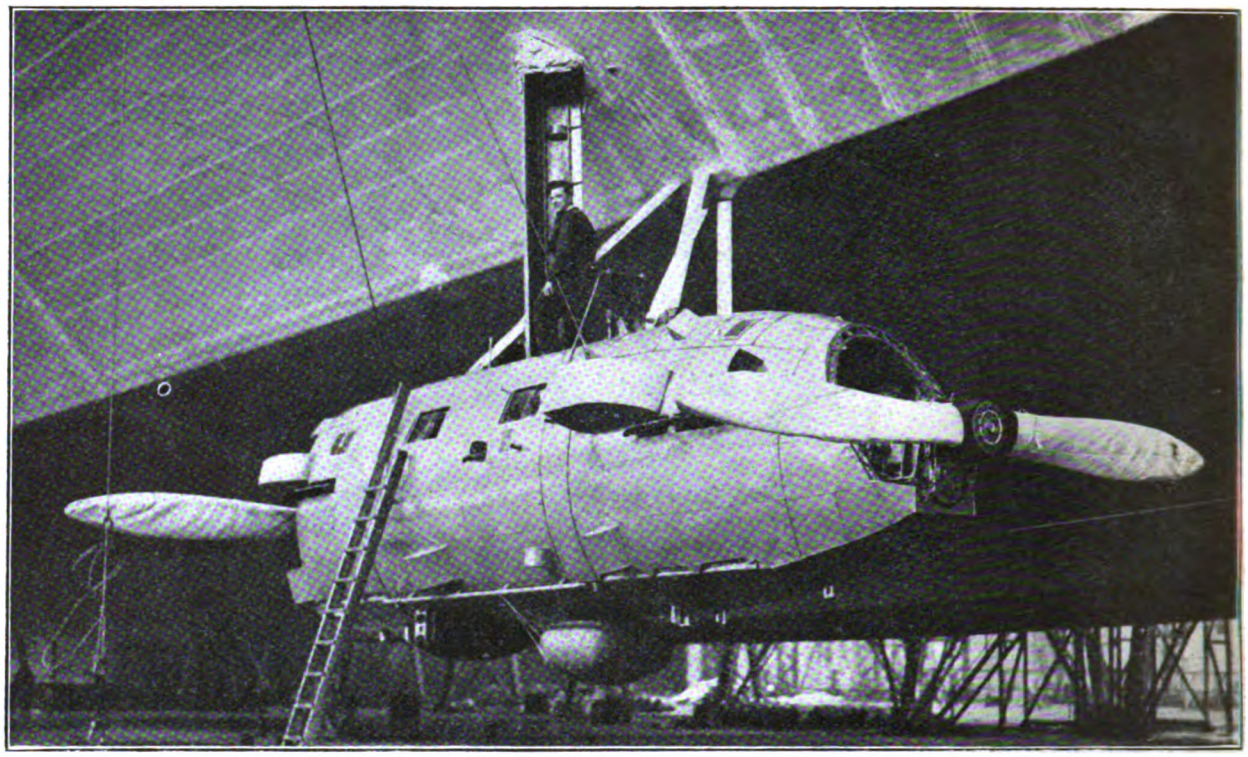


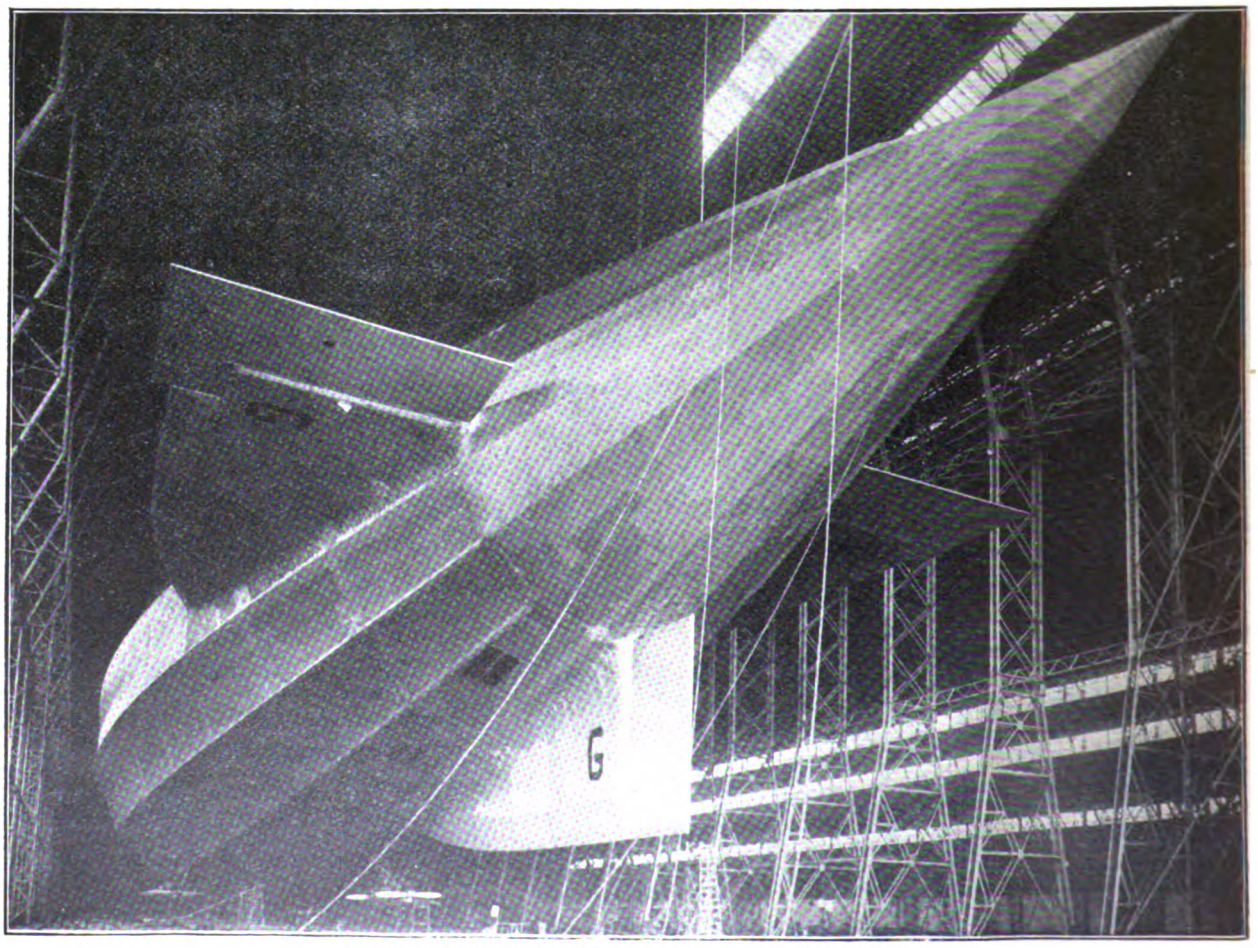
R 100.—One of the three power-cars, each of which contains two 650 h.p. Rolls-Royce Condor engines.

one of which drives a tractor the other a pusher airscrew. The power-cars are close to the hull with reasonable clearance for the airscrews.

The fins are thin and internally braced. The windows in the control-car and passenger accommodation are larger than in R 101, and gauze panels in each section of the hull give the appearance of passenger accommodation the full length of the hull.

Entrance is by way of the control-car and a ladder up to the crew's quarters.

The passenger accommodation follows marine practice, with a divided staircase and gallery round the dining saloon. The delightful large lounge on R 101 is replaced by a promenade each side on the same deck as the saloon, and a narrow promenade on the deck above. The "staterooms" are much larger than in the Government-built airship, they have comfortable berths with real spring mattresses, but most of them open off the saloon or the gallery. As the galley opens directly on the dining saloon the smell of cooking will pervade the whole of the accommodation, though of course this will save the weight of the menu cards. *There is no smoking room.* [The cramped space is



R 100.—A tail view of the ship in the shed at Howden.

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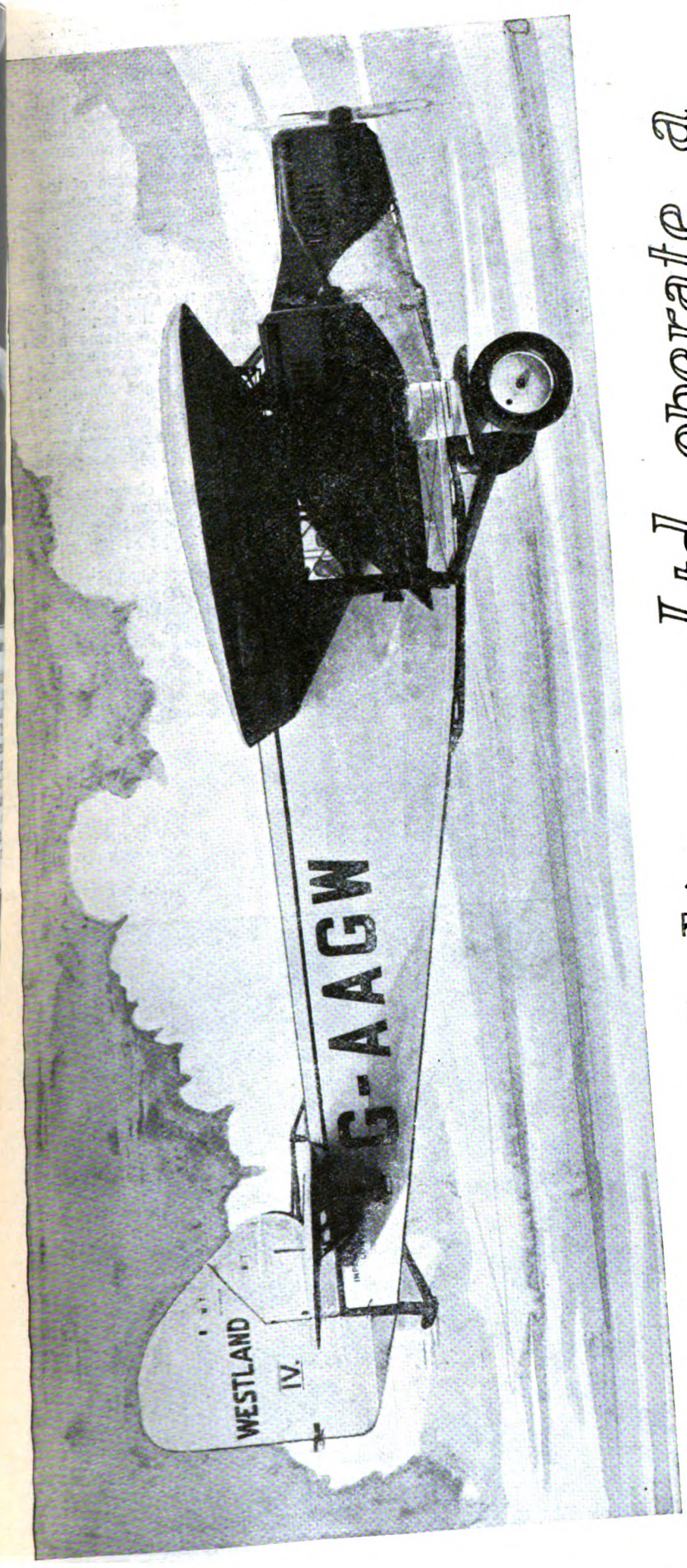

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due to the fact that the Government contract demanded berths for many more people than could be got in R 101.—C. G. G.]

The comparison between the passenger accommodation in the two ships is interesting. One is like a cheap boarding-house, the other like a would-be fashionable hotel, both at a very select seaside resort which is hoping to have a promenade and a pier in a few years' time. D.O.R.A. lives at the one, and the other is not yet licensed.

We were invited to an excellent lunch by Lt.-Commander Sir Dennistoun Burney, Bart., the electric galley worked well, and the "Airship Nippies" who had formerly helped to build the ship showed that adaptability which becomes pioneers.

Major C. C. Turner said a few words on behalf of those present, thanking Sir Dennistoun Burney for his hospitality.

Commander Burney, replying, said that the ship was then lifting 30 tons of fuel and ballast, about 100 people, [about 7½ tons.—L. H. F.], and there were several tons additional load being used to moor the airship. This remark, he said, was to forestall the kind of people who would say that the ship could not lift off the ground.

He then expressed his appreciation of all those who had contributed to the design and construction, which had been drawn from many trades. He thanked the technical and operative staff, and said that there was a human as well as a technical side. R 100 was known as the "Cupid Ship," more than twenty weddings had occurred among the staff. [If you saw the country round Howden, and Goole, the nearest town, you would understand that there was no other entertainment available.—C. G. G.]

It was sad, now the ship was completed and the staff were being disbanded, that these new homes should be faced with the difficulties and hardships of unemployment, but he thought that it was inevitable that they should carry some of the burden of being pioneers.

Turning to the financial aspect of the airship, he said that Vickers Ltd. had always been to the fore in carrying out new work, but the Government must not expect the Engineering Industry to make a second contribution of this magnitude towards airship development. The Airship Guarantee Co.'s contribution in this case amounted to £150,000, to which must be added capital expended on the shed (£50,000).

The position in his opinion is that either the Government must spend about £3,000,000 on a 5 year programme or leave airship development alone, because considerable work and technical progress is needed before the airship can become an economic means of transport.

Commander Burney pointed out that the future of this country depends on making the Empire a political and economic entity, to which aim there are two great enemies, Time, and Distance. The Nation must give up attempting long-distance high-speed transport or must develop airships.

The only real defence against possible enemies is the economic power of the country. We are spending £120,000,000 a year on defences forces. A portion of this should be diverted to the real defence—the development of the economic power of the Empire by high-speed transport.

After lunch we continued the examination of the ship. The three power-cars are similar and interchangeable, each consist of three parts. The middle is rigidly braced to the hull. The forward part and rear part are bolted to the middle. Each end contains a Rolls-Royce Condor mark III B engine, complete with cowling, oil radiators etc. The rear engine in each car has a reverse gear.

Means are provided that, when the ship is at the mast, the engine sections can be lowered to the ground and replaced by others. The middle section contains a Bristol Gas Starter, and a retractable radiator common to both engines. There is plenty of room for two or three engineers, and a top overhaul while in flight should not be impossible, or even very difficult. [All these neat ideas are typical of the genius of Mr. Wallis, who designed the whole ship to be built out of only nine different components, multiplied thousands of times, thus making a mass-production job of one ship.—C. G. G.]

A very ingenious type of ladder which closes and becomes a streamline strut gives sheltered access to each power-car from the hull. These ladders, which may be opened by a handle at either end, open the hatchways at the same time as the ladder.

The six engines in three cars develop 4,000 h.p., of which half may be used for going astern. If the drag of R 100 is the same as R 101, the new ship should be 20 per cent faster with the increased engine power.

It may be recalled that this ship resembles the Zeppelin in the construction of those frames which are braced. In the German construction an "axial" wire takes any longitudinal component of the gas lift. In this ship there is an "axial" girder which takes this load, and at the rear end it is rigidly connected to the X frame which constitutes the spars for the fins.

This X frame is not secured directly to the hull members, but is rigidly braced by external wires between the fins and attached to the hull frames and girders by further external wires. This forms a semi-floating attachment.

The gas-bags are assembled on the axial girder and are fitted with automatic relief valves at the bottom connected to trunks which discharge the gas at the top.

It will be recalled that R 101 is fitted with a servo control

R 100.—One of the promenades alongside the dining saloon.

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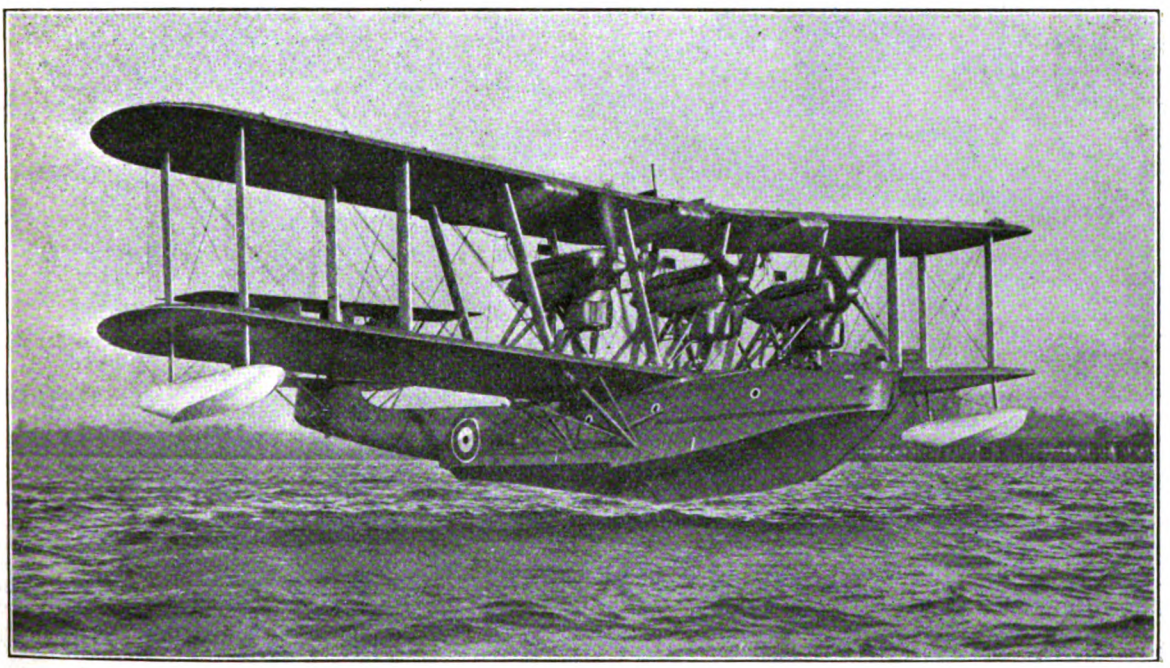

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R 100.—The dining saloon and part of the surrounding balcony and staircase. The waitresses were formerly employed in building the ship.

gear consisting of a Vickers-Janney variable-speed gear and electric motors. A variable speed gear which gives every satisfaction on Naval guns seems rather out of place in an airship. R 100 is fitted with a system of elliptical gears and segments, also a ratchet control wheel with friction clutch, to obtain the same ease of control for a much lighter weight, and doubtless lower cost.

The ventilation of the hull is provided for by gauze windows. As the fabric is securely attached to circumferential wires which may be tightened, there is no need to keep the hull under internal pressure. This allows of the engine cars being much closer to the hull without causing the fabric to pant, and appears to be a considerable improvement on the system used on the Government ship.

The detail construction of this ship is unique. There are only 50 different interchangeable units, which are used in the whole structure, different combinations of these standard units forming all the component parts. This greatly simplifies construction, and facilitates repairs and replacements. A complete girder has been removed for examination, and new parts replaced without dismantling the remainder of the ship.

The girders are made with duralumin tubular booms. These tubes are somewhat similar to the tubes used on the Premier cycles of pre-motor-car days except that the duraluminium tubes are rivetted at the lap. Strip metal is fed into a special lathe which winds it into the tubular form. A few rivets locate the joint.

The tubes are then placed on a mandrel with a compressed air rivet-feeder. As the tube is passed along the mandrel a hole is drilled, pressure on a pedal allows air to feed a rivet into the hole, which is then closed. This operation is quickly repeated, and the tube rivetted up. By this machine rivets can be fed into place 10 ft. from the end of the tube. The operation is semi-automatic.

The girders are made up of these tubes with sheet-metal webs which are stamped out, and are interchangeable. These are attached to the end plates with gland nuts, which system allows a section in the middle of a girder to be removed without dismantling from one end.

Which of the two ships will prove the better, time alone can show. But R 100 has at least as good a chance as R 101 if it is given equal treatment.

AIRSHIP NOTES.

No Joy-riding in the R 101.

In the House of Commons on Nov. 27, in reply to Mr. Day, the Under-Secretary of State for Air said that no arrangements were being contemplated in which facilities would be offered to the public for a trip in the airship R.101 in any of its future trips.

Mr. W. J. Brown asked whether they might assume that facilities would be given to Members of Parliament and whether the trip on the previous Saturday might merely be regarded as an instalment like so much of our legislation.

Replying to Mr. Mander, Mr. Montague said that he did not think there was the slightest likelihood of the general public being invited to go on the first trial trip to Egypt.

Replying to Mr. Hardie, Mr. Montague said that no charge was made for the refreshments served on board the R 101 on Nov. 23. The lunch was an Air Ministry cost.

In a written reply to Mr. Mander on the same day the Under-Secretary of State for Air said that owing to the uncertainty of the weather the consideration of flights for M.P.s in the airships R 100 and R 101 had been postponed until the Spring.

The R 100.

The Capitalist ship R.100 is still in her shed at Howden although her sister ship has vacated the mast at Cardington and is safely inside her shed. There is so little clearance between the R 100 and the sides of the doors that specially good conditions are needed before the Capitalist ship can come out.

The R 101.

The Socialist airship R 101 was taken from the mast-head and put in her hangar on Nov. 30. This was done to make room at the mast-head for the R 100.

While in the shed the hull and engines will be examined. There is some talk of removing the servo-motor from the control system as it has been found unnecessary. The netting over the gas-bags is likely to be slackened,—which will increase the effective lift of each bag. This step was foreshadowed by Col. Richmond in his lecture to the R.Ae.S.

Airship Developments in the U.S.A.

The Times reports that the Pacific Zeppelin Transport Company has been incorporated in Delaware with the backing of the firms of Grayson, M. P. Murphy & Co., Lehman Brothers and W. A. Harriman & Company, bankers, and the Goodyear Zeppelin Corporation of America.

The Company proposes to develop a 36-hour airship service between the chief cities of California and Hawaii, which will be extended to the Philippines and Japan.

The Goodyear Zeppelin Company is ready to begin the construction of two airships for the Pacific service as soon as the two it is now constructing for the Navy have been completed. [Which will presumably take at least two years.—ED.]

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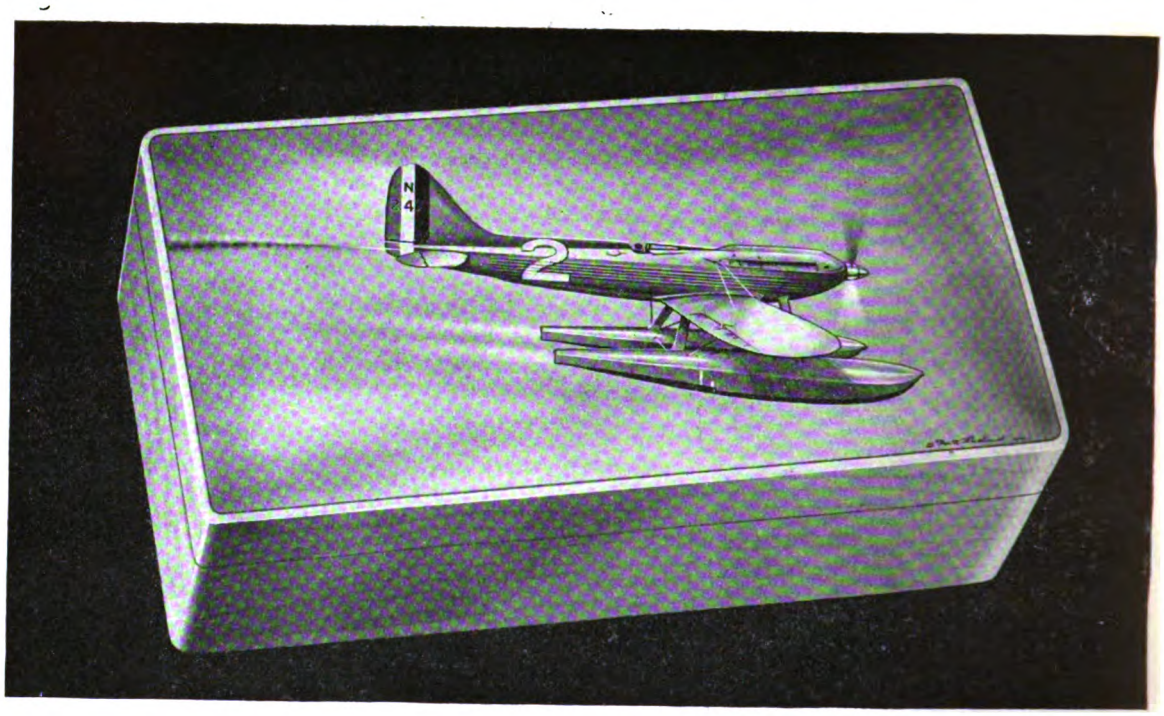

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THE LIGHT AEROPLANE
AND THE FLYING CLUBS.

ANOTHER RACING MOTH.

In the Australian East-to-West race from Sydney to Perth hich was held from Sept. 30 to Oct. 5, the De Havilland rcraft Proprietary Ltd. entered a special Gipsy Moth hich was flown by Major Hereward de Havilland, D.S.O., e Managing Director.

This special Moth, VH-UIQ, was flown as a single-seater ith a covered front cockpit and had fairing behind the ilot's head, a racing undercarriage and wheels, petrol tank n the fuselage, and a streamlined centre-section, and had everal other little refinements to give an extra bit of speed. he engine was fitted with special racing heads, carburetter nd induction pipe but was otherwise quite standard.

This machine made the fastest time in the race, averag-ng over 107.8 m.p.h. for the 2,450 miles. No trouble of any ind was experienced with the engine, which was run, for he whole course, at speeds varying from 2,300 to 2,400 r.p.m. The petrol consumption of 5.8 gallons per hour was actu-ally slightly less than that given by the other standard Gipsy engines in the race.

Twelve of the sixteen other competitors in the race flew H. aircraft of which nine were perfectly standard Gipsy ths, and of these, five were flown by club-trained amateur vate-owners.

No single case of mechanical trouble was experienced with these standard engines although they were all run at full throttle (2,100 r.p.m.) the whole way from Sydney to Perth at altitudes below 500 ft. and very often at 5 feet in the heat of the Nullabor Plain.

The winner of the race on handicap was Mr. H. C. Miller flying an old D.H.9 with Major de Havilland on the special Moth second, and Mr. Cunningham, a private owner of a Gipsy-Moth, third. Mr. Cunningham is a "squatter" by profession, and uses his Moth to fly over his paddocks and "count his sheep." Gipsy-Moths also took fourth and fifth places. On speed alone Major de Havilland was first, with Mr. Heath on Sir Alan Cobham's old D.H.50, now fitted with a Nimbus engine, second, and Mr. H. C. Miller third.

THE SPEED WINNER.—Major Hereward de Havilland.

A RACING MOTH.—Major Hereward de Havilland on the way from Melbourne to the start at Sdyney, with a passenger on board.

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FRESH AIR.—Members of the Bournemouth Young Airmen's League being introduced at Hamble.

BRISTOL ACTIVITY.

Lord Apsley was the first member of the Bristol and Wessex Aeroplane Club to pass his "A" licence tests in the new Air Ministry year, on Nov. 2. The club now has 62 licensed Pilot Members.

At the end of December the club will have to move to the Bristol Air Port. For a short time members may have to camp in the hangar, as the new Club House, though nearly finished, will not have much chance of drying. Enough of the Aerodrome will be ready for club flying.

The Official Opening, for which an important Pageant is being organised, will be on May 31, 1930. This is a date which all good aviators should make a note of. Bristol does things well.

Major Cooper vacates his appointment as Secretary on Feb. 1 next. He will be greatly missed. His courtesy and consideration have won him many friends. And, from this paper's view, he has been one of the best of Secretaries, in sending club notes punctually and concisely.—C. G. G.

HAMPSHIRE ACTIVITY.

With 114 hours 35 mins. flying time for November, the Hampshire Aeroplane Club have passed the total time for last year and have so far completed 1,603 hours. Flying has been almost entirely on two Moths, JR and OH, as the Avian and Spartan were out of commission till the last day of the month.

During these eleven months 35 *ab initio* pupils have taken "A" Licences, and, at the moment, despite the fact that it is now December, approximately 80 members are being instructed.

Eleven new flying members joined the Club during the month, Lts. Rimington and Spencer, R.N., and Messrs. Sanders and Ashby did first solos and Surgeon Comdr. Woodhouse and Mr. Gairdner passed for their "A" Licences. All of which reflects great credit on Mr. W. H. Dudley, the instructor, and on Messrs. Lenny and Riches, the engineers.

The Club will be closed for the Christmas holidays from Monday, the 23rd, to Friday, the 27th of December.

THE BEAGLE MEET AT SYWELL.

The Beagle Meet on Nov. 30 at Sywell, the aerodrome of the Northamptonshire Club, was a great success. A number of people arrived by air, including the Director of Civil Aviation, Sir Sefton Brancker. In all about 20 machines were at the Meet.

Some disappointment was caused by the non-appearance of Mr. Malcolm of the De Havilland company, who was expected to make the most of such an exercising occasion. The disappointment was intensified by the fact that Mr. Linnell had specially flown to Stag Lane to measure Mr. Malcolm for a beagling suit of the type shown in the accompanying illustration. [Perhaps a porbeagle would be more in Mr. Malcolm's line.—ED.]

N.F.S. NOTES.

The Berks., Bucks. and Oxon Aero Club at Woodley, Reading, has now got its second aeroplane, a slotted Moth (Cirrus III). 26 members are now learning to fly under Mr. G. A. Pennington, the club's chief instructor.

Miss Shillington has become the first private owner at Woodley, and has bought a Coupé Moth with slots.

BEAGLING AT SYWELL.—The Northampton Aeroplane Club meets hounds.

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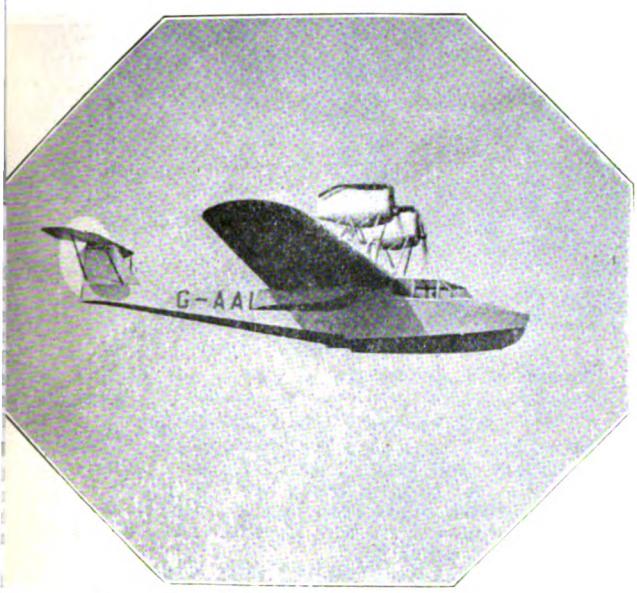
SARO "CUTTY SARK"

CABIN FLYING BOAT.



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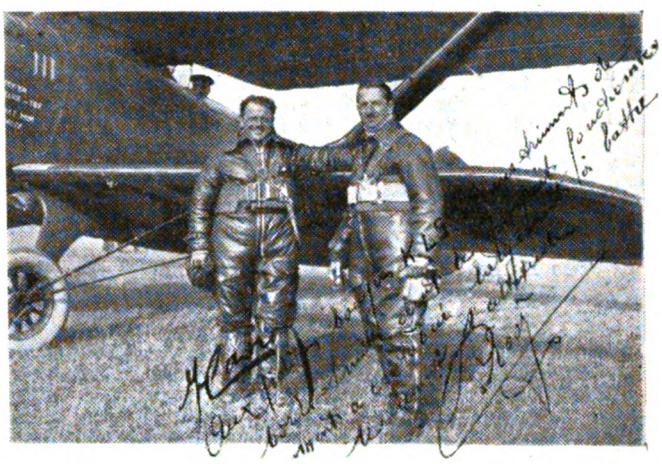
BELGIAN ALTITUDE RECORD



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Private lock-up hangars are being built near the clubhouse. The charge for these is £3 15s. per month and complete maintenance service is provided from £1 a week. Rapid headway is being made with the club buildings, which are being provided by National Flying Services. The main hangar is practically complete and the clubhouse will probably be ready early in the New Year.

Intending members should apply to Miss L. Cribb, the Hon. Secretary, at 12, Highmoor Road, Caversham, Reading, or to Mr. Pennington, National Flying Services Ltd., Woodley Aerodrome, Reading. A limited number of members are being enrolled at the following rates: Flying member, 3 gns. entrance fee and 3 gns. annual subscription; non-flying members, 1 gn. in each case. Members joining now pay subscriptions for 1930,—as membership begins from the date of election.

THE OXFORD ACCIDENT.

The Berks, Bucks and Oxon Aero Club of the Reading Aerodrome are grieved by repeated inquiries about a crash at Oxford some weeks ago in which the machine, a Moth, G-AARM, was wrecked and later burnt. The pilot, Mr. Skuce, of Oxford, was seriously injured, and his passenger, Mr. Buckle, had a remarkable escape. The Committee state that although Mr. Skuce and Mr. Buckle are members of the club, they were not flying a club machine but one believed to be the property of Phillips and Powis Aircraft Ltd., with whom the club (which is a branch of N.F.S. Ltd.) have no connection. Mr. Skuce's condition is improving, but he is not yet able to leave the hospital.

(Communicated by the B. B. and O. Aero Club.)

THE READING AERODROME.

There seems to be a certain amount of misunderstanding as to the ownership of the aerodrome at Reading.

This aerodrome which, just outside Reading, is used by the Berkshire and Buckinghamshire Aeroplane Club and that Club is a Branch of the National Flying Services Ltd Consequently the idea seems to have got around that the whole of the Reading aerodrome belongs to N.F.S.

The position actually is that Phillips and Powis Aircraft (Reading) Ltd. are the actual owners of the freehold of the aerodrome. An acre and a half of it has been let to N.F.S. to put up a shed for their own machines. Also N.F.S. have flying rights on the aerodrome. Apart from that they are definitely tenants of Phillips and Powis, who are not connected in any other way with N.F.S.

(Communicated by Phillips and Powis Aircraft (Reading) Ltd.)

AT THE BERKS, BUCKS AND OXON AEROPLANE CLUB (The Reading Branch of National Flying Services Ltd.).—Left to right: Mr. G. A. Pennington, Instructor; Miss Louie Cribb (commonly known as Toby), Honorary Secretary; and Mr. W. Richardson, a member who is to be congratulated on learning to fly in six days.

THE CANADIAN FLYING CLUB.

Twenty-two Flying Clubs have been actively flying in Canada this Summer.

The Victoria Flying Club have been unable to continue since the Spring owing to the crash of their aircraft.

All Clubs show an increase in membership, the total of which now stands at 4,840. Calgary leads with 1,060, Saskatoon has 603 members and Regina 339.

The operations of the Clubs during the nine months ending Sept. 30 are as follows:—

CLUB.	FLYING TIME.	AB INITIO SOLOIS S.	LICENCE OBTAINED	
			PRIVATE.	COM. MERCIAL.
Cape Breton	123.06	—	—	
Saint John	196.5[illegible]	7	—	—
Halifax	188.53	4	4	2
Grandy	202.57	15	4	—
Montreal	745.50	45	0	5
Ottawa	972.20	16	4	4
Kingston	167.20	4	—	
Toronto	1210.35	37	14	1
Hamilton	629.30	23	7	6
St. Catherines	3 5.50	2	—	—
Brant & Norfolk ...	61.00	—	—	—
London	302.25	14		1
Border Cities	758.05	21		5
Fort William	364 05	7	5	—
Winnipeg	1268.13	17	37	11
Regina	910.10	29	20	7
Moose Jaw	5[illegible]0.25	27	15	6
Saskatoon	89[illegible].22	29	15	1
Calgary	1091 05	22	18	3
Edmonton	701.25	4	4	4
Brandon	78.20	1	—	
Victoria	34.10	11		—
Vancouver	558.50	11	6	3
TOTALS	12,297.46	346	216	69

THE AUCKLAND AERO CLUB.

The Auckland Aero Club began operations at the end of last February, and up to the middle of October had put through 14 "A" licence pilots with only one instructor. A second instructor has been engaged and he is doing an instruction course with the Defence Department before taking up his position.

In October the Club organised what is known as an Art Union (corrupting lotteries are prohibited in New Zealand with the sanction of the New Zealand Government. The exact workings of this Art Union are unknown, but apparently the Club hopes to benefit to the extent of about £2,000, with which it intends to provide for an aerodrome of its own, plant, equipment, etc.

In connection with the Art Union the Club organised a tour of the whole of the North Island with three Gipsy-Moths,—two belonging to the Club, piloted by Major G. A. C. Cowper and Mr. W. S. R. Bloomfield, and one privately owned by Mr. J. C. Horton. The reason for the flight was, theoretically, to develop, or at least to direct the attention of local bodies to establishing, municipal air-parks.

The route followed was by way of Auckland, New Plymouth, Wanganui, Wellington, Martinborough, Masterton, Hastings, Gisborne and back to Auckland, with many stops in between these places. At each stop the machines were met by the Mayor, Councillors, officers of the Chamber of Commerce and the local Aero Club Committee, and the crews gave short addresses on the need of landing-grounds.

Enthusiasm was aroused at each stop and a considerable amount of publicity was obtained in the local press. The organisers foresaw the value of the journalistic co-operation, with the result that certain members of the Tour were directly connected with the New Zealand Press.

Mr. Horton, a partner of Horton and Wilson, the owners of *The New Zealand Herald*, flew his own machine, and Mr. K. R. Hacket, Major Cowper's passenger, is the son of the editor of the same paper.

A CASE OF RABIES.

Some kind of rabies bug must have nibbled the aeroplane of Mr. Roy Tuckett, if the newspapers are to be believed. Mr. Roy Tuckett was hurrying to reach the Cape in record time, but apparently his mount grew restive at being hurried through the tropics.

At Alexandria, owing to some trouble with the throttle control, the machine, when the engine was started, rushed across the aerodrome, rudely pushing its owner and mechanics out of the way until it could bite the hangar, which is now understood to be receiving Pasteur treatment.

FLYING CLUB EQUIPMENT.

Here is the quickest description on record of the equipment of a Canadian Flying Club, which must be nameless, as seen by a visitor:—

They were in the unfortunate position of having had their only Moth visited violently by a wandering prop from an OX5 Waco. There were holes in both wings, and the fuselage. Their two OX Eaglerocks were whole and sound but not working very hard.

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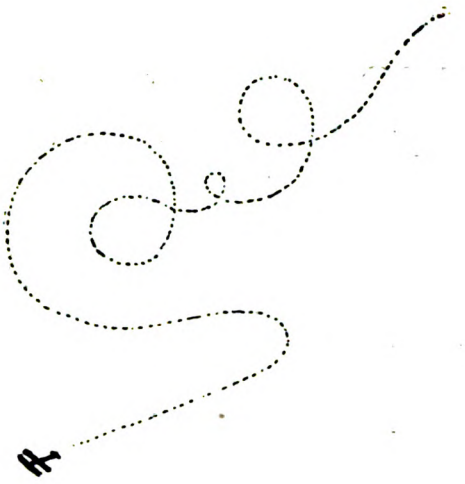

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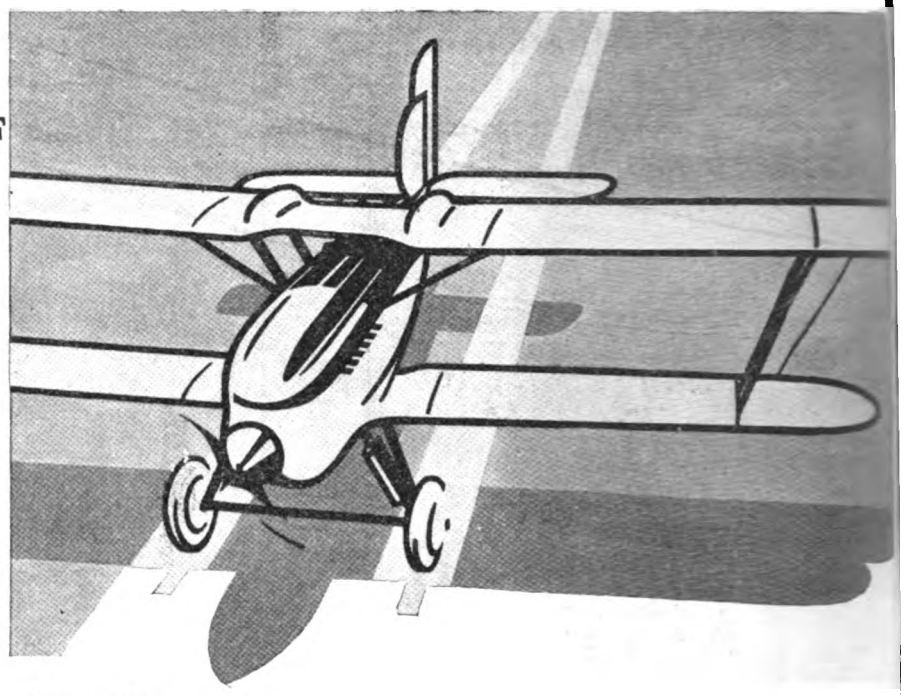

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COMMERCIAL AERONAUTICS.

A NEW CATEGORY FOR PILOTS.

A correspondent of THE AEROPLANE raises a point which ms to deserve the serious consideration of the authorities charge of Civil Aviation. It is also one which might be cussed by the Guild of Air Pilots and Navigators. The estion simply is whether a third, or rather a fourth, kind Air Pilot's licence is required.

At present we have the "A" licence which entitles a ot to fly by himself or to take up some trusting friend d merely guarantees that he is fairly competent not to eak his own neck or that of his passenger.

Then we have the "B" licence which is more or less a arantee that the pilot is a thoroughly trained and comtent person, thoroughly fit in body and mind, who can trusted with the lives of any number of passengers.

As a matter of fact the qualifications for a "B" licence e not nearly high enough. A mere matter of 200 hours in light aeroplane ought not to entitle a pilot to ply for hire reward. No man, still less a woman, can gain enough exrience in the time.

On top of that we have the Master Mariner's licence or ther the Master Air Pilot's licence, which guarantees a an as a navigator as well as an aerial chauffeur.

Now this correspondent suggests that we need yet another cence between A and B licences which will allow a pilot fly for hire or reward carrying freight or testing aeroanes but not carrying passengers.

This strikes one as quite a reasonable proposition. There re a fair number of pilots in this country who cannot get B licence although they are quite good pilots. There are en with slightly defective eyesight, or other defects which re not likely to cause any trouble, but because of them the edical authorities would never stake their reputation on e ability or rather the infallibility of those pilots.

There is, for example, the case of the pilot with one eye, f whom one wrote a week or two ago. He is quite as good pilot as any in this country, but quite understandably the edical authorities are afraid that if he did have an accient with passengers and killed some of them, they might e asked, or rather a question might be asked in Parliament, hy he was allowed to carry passengers when he only had ne eye. The fact of his only having one eye might have othing to do with the crash. But anything is good enough or captious Members of Parliament to hang a question on.

Such pilots, many of them with a great deal of ability and xcellent brains, might very well be allowed to fly for hire r reward just so long as human lives were not entrusted o them. The judge of their ability and the deciding uthority as to whether they got work to do or not would n fact be the Insurance people. If the Insurance Companies were not satisfied about their ability as pilots then hey would not insure either them or their cargo and obviously such pilots would not find employment.

The correspondent who makes this suggestion also introduces another factor which is quite a good argument in favour of this third-class, or rather second-class licence. Under the present regulations a man can only get a "B" licence if he has flown for 200 hours. He must not only be physically fit and able to pass fairly searching tests of his ability as a pilot, but he must also have a certain amount of experience. Our correspondent suggests that the intermediate licence might be granted a pilot who has passed the medical test and the flying test but has not had enough experience to justify being given the Class B licence.

He makes the interesting suggestion that if this new licence could be introduced it would be the means of creating new business and also of providing some part-time piloting for those already employed in other branches of flying. For example when there is a rush of work during the busy season and all regular pilots are otherwise engaged, such intermediate pilots might very well be used in ferry aeroplanes for the newspaper people to fetch photographs, films and so forth from the scene of what the newspaper people regard as events of immediate public interest. And when all passenger-machines are as full as they can hold of passengers such pilots might be put on to pilot freight machines.

There is undoubtedly considerable scope for a more general use of aircraft for various purposes. The present requirements for a B licence, which is necessary for all flying other than that of a private owner himself, are not severe enough, and yet they enforce an unnecessary handicap on many who might take up aviation and find new scenes for activity. Such part time pilots, or inexperienced pilots, would in time thus have a chance which they do not have at present of putting in the full number of flying hours necessary to qualify for a passenger-carrying licence as it should be.—

C. G. G.

THE LOSS OF THE "CITY OF ROME."

In the House of Commons on Nov. 27, in reply to Mr. Lees, the Under-Secretary of State for Air said that the Air Ministry had no information that defects had been reported in the seaplane *City of Rome* prior to the loss of this aircraft off Spezia. The Air Ministry's regulations required a public transport aircraft to be inspected by a licensed ground engineer and certified as safe before each day's flight and he was informed that this requirement had been fulfilled in the present case. There was every presumption that this aircraft was in proper flying condition before it started on its journey but the Secretary of State for Air would wish to await the conclusion of the investigation which the Italian authorities were making in case anything should emerge on this point.

NOW WE'LL TELL ONE.

According to the New York correspondent of *The Times* The General Development Co. of Connecticut announces that it is going to build four aeroplanes bigger than any others in the World. According to the prospectus they will be of the "flying wing" type with a span of 262 ft., a height of 31 ft., a length of 138 ft., and a weight of 72½ tons. Each is to have eight 1,000 h.p. engines. The aeroplanes are designed to carry 160 passengers and a crew of 17, but the maximum capacity is alleged to be 206 people. There is the usual flowery stuff about dining-rooms and spacious lounges and kitchens and lifts and so forth. The prospectus further states that these machines are to be finished before the end of 1930 and that the four together are expected to cost £400,000.

All this sounds very beautiful till one learns that the moving spirit in this scheme is Dr. William Whitney Christmas, "who is said to have been the inventor of the aileron balancing system used on all aeroplanes."

We have heard of Dr. Christmas before. He invented a wonderful high-speed aeroplane which was going to lick creation, and all that happened was that his wings came off soon after it left the ground and killed a very good American pilot. Dr. Christmas has been connected with so many wonderful schemes which have not come up to expectations that one is not filled with faith in the success of this scheme.

Apart from which, even in America four machines of that type could hardly be built before the end of 1930, and one is pretty sure that four such machines could not be built for £100,000 apiece.

The report states that the chief engineer is Mr. Elliot Green, formerly an aeronautical engineer with the United States Department of Commerce, and a well-known aeroplane designer. He may be all that, but one cannot remember him as having designed any well-known aeroplane, so even his name does not lend an air of artistic verisimilitude to the story.

A LOW-PRICE FREIGHT SERVICE.

There is some talk of a freight service between Hull and London. This service will be operated by National Flying Services between the new municipal aerodrome at Hull and Hanworth. The idea is to carry small parcels at the rate of 1d. per 10 lbs. per mile.

ANOTHER CATERPILLAR.

Mr. C. R. L. Shaw (Flg. Off. R.A.O.F.) escaped with a parachute when an experimental aeroplane of the Bristol Aeroplane Co. got out of control over Filton Aerodrome on November 29.

Mr. Shaw got out at over 1,000 ft. and alighted uninjured.

Apropos of this event, the following is taken from the Bristol *Evening World*—a Harmsworth publication, as might be imagined:—

QUICK WORK.—Our £5 prize for a news item has seldom been so well earned as by Mrs. Winchester, of South Rocks-terrace, Winterbourne, who telephoned *The Evening World* last evening immediately she saw Mr. C. R. L. Shaw's aeroplane falling to the ground.

Through her promptness, *The Evening World* was able to print the account of the crash, and of the pilot's fortunate escape in his parachute, in an exclusive story before any other newspaper, while a later edition included the full story from the pilot of how the accident occurred.

Mrs. Winchester was breathlessly telling the story to a reporter at head office. "Is the pilot safe?" asked the reporter.

"I don't know yet," said Mrs. Winchester. "He's still in the air in his parachute."

Thus *The Evening World* was able to have a reporter and a photographer on the way to the scene of the crash a few seconds after Mr. Shaw had come to earth.

Thus efficiently does our Press encourage practical airmindedness in our proletariate.—C. G. G.

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THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 7; Monday, 10; Tuesday, 19; Wednesday, 18; Thursday, 11; Friday, 17; Saturday, 17.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 33, passengers 158, freight 15½ tons. India Route: Inward, passengers 0, mail 617 lbs; outward, passengers 0, mail 826 lbs.

AIR UNION:

Paris—London: Machines 30, passengers 89, freight 16 tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 10, passengers 36, freight 4 tons.

SABENA:

Brussels—London: Machines 13, passengers 25, freight 2½ tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London: Machines 12, passengers 20, freight 2½ tons.

MISCELLANEOUS:

British machines 0, passengers 0.

Foreign machines 1, passengers 1.

Total number of trips by British machines, 33, carrying 158 passengers. Foreign machines, 66, carrying 171 passengers.

COMPARATIVE FIGURES.

Week ending Nov. 30:
Machines, 99; Passengers, 339; Crews, 261; Total personnel, 590.
Corresponding week, 1928:
Machines, 85; Passengers, 326; Crews, 167; Total personnel, 493.
Corresponding week, 1927:
Machines, 55; Passengers, 121; Crews, 94; Total personnel, 215.
Corresponding week, 1926:
Machines, 69; Passengers, 140; Crews, 87; Total personnel, 227.
Corresponding week, 1925:
Machines, 42; Passengers, 91; Crews, 53; Total personnel, 144.
Corresponding week, 1924:
Machines, 69; Passengers, 168; Crews, 85; Total personnel, 253.
Corresponding week, 1923:
Machines, 19; Passengers, 38; Crews, 27; Total personnel, 65.
Corresponding week, 1922:
Machines, 60; Passengers, 130; Crews, 116; Total personnel, 246.
Corresponding week, 1921:
Machines, 29; Passengers, 36; Crews, 49; Total personnel, 85.
Corresponding week, 1920:
Machines, 22; Passengers, 33; Crews, 28; Total personnel, 61.

CROYDON NOTES.

The rain it raineth upon the Just and upon the Unjust in the Main Hall at Croydon Aerodrome, but particularly upon Corko Lino. It does not behave like decent open-air rain, but, collecting stealthily on the roof, it not only becomes impregnated with whitish calcareous matter, but descends suddenly, a month's rainfall at a time. Recently, Corko Lino, sitting behind the bars at the receipt of Custom, suddenly received a douche of this nature, which would infallibly have drowned him if his stream-lined bowler hat brim had not carried off the worst of the flood like a gutter. Chalky alluvial deposits caused Corko to resemble the furred interior of a kettle, but otherwise he was little the worse.

He now operates under an umbrella, standing on some two hundred sheets of blotting paper and daily sends up a muezzin of praise that his rental is so small in comparison with the advantages he enjoys.

A direct answer to prayer is occasionally recorded, but a direct answer to a petition to the Air Ministry is a rarer occurrence.

One has pleasure in announcing, therefore, that the request of the Traffic Officers here for bathing facilities in the quarters allotted to the night-duty officer in the Control Tower, has been suddenly and unexpectedly complied with. They asked for a shower bath or failing that a hip bath. They got both, for the water came through the ceiling and collected about hip high on the floor.

Outside things are not so bad, though the tarmac now borders a promising lake, from which emerge newts, tadpoles and other amphibians, whilst, Organ P. Golley is to be seen about in sea-going spats of inflatable para rubber and an Auliffe lifebelt ready blown up.

Works, and one believes Buildings as well, have dug an enormous well near the Terminal Block which is said to be a soakaway. But unfortunately, they seem to have struck a spring of a highly active nature at the bottom of it.

Persevering persons with buckets on bits of string, have so far kept the soakaway from overflowing and flooding the neighbourhood, but having nowhere to put the water they are completely baffled. It is thought another well will have to be dug to accommodate it.

Last week, one accused Walt. Rogers, Ven Appleby (Master Skoplye), Ernie Parker (Master Uskub), old Uncle Bill Lawford and all, of having caused a W.10 to go to Athens.

In this case it was not a W.10, but an Argosy, and our apologies are herewith tendered to all concerned.

On this flight, the two engineers, Messrs. Parker and Appleby, put up a wonderful show, sacrificing very many hours' sleep and scarcely seeing anything of the towns they passed through, in order to attend to their engines.

Engineers on long-distance flights can make or mar an enterprise, and in this case they certainly made it and made it highly successful too.

Both Imperial and K.L.M. pilots speak with the greatest admiration and respect of the flight engineers who have accompanied them on their long-distance flights, where such energy, initiative and real hard work are absolutely essential qualities in an engineer.

The following K.L.M. regularity figures for October may be of interest:

Amsterdam—London	100%.
London—Amsterdam	100%.
Amsterdam—Paris	97%.
Paris—Amsterdam	100%.

Amsterdam—Paris, unfortunately, had one failure for bad weather, so the month's total is only 99.2%.

All sunburned men are slightly handsome, and it is strange to see all sorts of brick-red people turn up here in November from places like Athens and so on.

Some confusion exists in the minds of some of us whether a certain brick-red hero who recently returned from foreign parts had been on leave doing a golfing tour of Europe, or merely doing a job of work on the Indian Air Mail route.—SPRY.

WHAT TO AVOID.

A Notice to Airmen has recently been issued, reading as follows:—

"SEALAND AERODROME:—Slag is being spread over Sealand Aerodrome. Care should be exercised in landing and horses and carts should be avoided."

Our morbid correspondent Spry has received a letter which is published below, as it may be of interest to pilots contemplating the sort of flying the Air Ministry appears to be worried about:—

Dear Sir,—Your excellent advice to aeronauts to avoid horses and carts when landing and stick to aeroplanes for that purpose calls to mind the oft repeated dictum of my Uncle Solquhoun (pronounced Swoon) who, even in his cups would loudly aver that the horse and cart were never meant to fly with, and were unsuitable for perfect three point landings, owing to the horse having four legs and the vehicle two wheels.

My Uncle was not inexperienced in such matters and over the second bottle he used often to relate an experience he had in 1881 which as it bears out your advice to modern pilots, I beg leave to repeat here.

Uncle had driven our pony phæton to the village to buy Aunt Jobiska a bag of self-raising flour as a birthday gift.

On the return journey, whilst passing Popwell, Fizzle and Funes' pyrotechnic store, that emporium quite suddenly blew up, carrying my Uncle, pony phæton and all with it.

Uncle was seriously put out at the time, for the date was November the 5th, and that Mr. Fizzle was always such a one for a bit of skylarking, but it turned out afterwards that my Uncle was mistaken for nothing was ever found of Mr. Fizzle but a portion of his left whisker and a doubtful incisor.

However, there was poor Uncle travelling with great speed at a thousand feet, keeping the pony's nose into wind with the utmost difficulty and not at all sure our phæton was airworthy, as it was quite an old one.

Magnificent whip though my Uncle was, the task was beyond him. A piece of flying wreckage, believed to be the crown of Mr. Popwell's beaver hat, struck Uncle on the ear, rendering him partially unconscious.

The phæton became inherently unstable and my Uncle had just time to open his gig umbrella and leap for life, before the pony (named Topsy) got into a spin.

What with the umbrella and the bag of self-raising flour which he had in his ulster pocket, my Uncle came down comparatively lightly in the yard of the "Rubber Necked Swan," where, after swallowing a gill of gin, slight concussion, shock and loss of memory supervened, and my Uncle flatly refused to pay for the refreshment and gave quite a lot of trouble.

I do hope, Sir, the dreadful example of my Uncle Solquhoun will be heeded by rash young aviators, as it would be such a pity if broken limbs resulted, for there are few men like my Uncle to-day, and not many ponies as quiet to ride, drive or fly, as our poor Topsy.

I am, Sir,
Your obedient servant,
(Signed) PETRONELLA PRAUGHAN (pronounced Prawn)

FREIGHT TRANSPORT BY AIR AND RAIL.

Arrangements have been made between Imperial Airways and the railway companies for a combined rail and air goods service. Freight may be sent to the Continent from over 100 provincial towns. The goods will travel by train to Croydon whence they will be flown to the Continent. [Where they will doubtless be mis-handled by the French railways for months.—though in Germany and Switzerland and Holland they will be handled efficiently.—ED.]

THE INDIAN AIR MAIL.

The Indian air mail is temporarily being flown across Europe owing to the various calamities that overtook the Calcuttas. On Saturday the machine flying down from Cologne to Nuremberg was unable to find Frankfort in the fog and landed in a swampy field. The undercarriage was damaged and the machine suffered other injuries.

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ROYAL AIR FORCE
QUARTERLY
(Embodying also the Dominion Air Forces)

EDITED BY
SQUADRON LEADER C. G. BURGE, O.B.E., A.R.Ae.S.I. (Retd.)

Assisted by an Advisory Committee of Officers and Ex Officers of the Royal Air Force and Dominion Air Forces.

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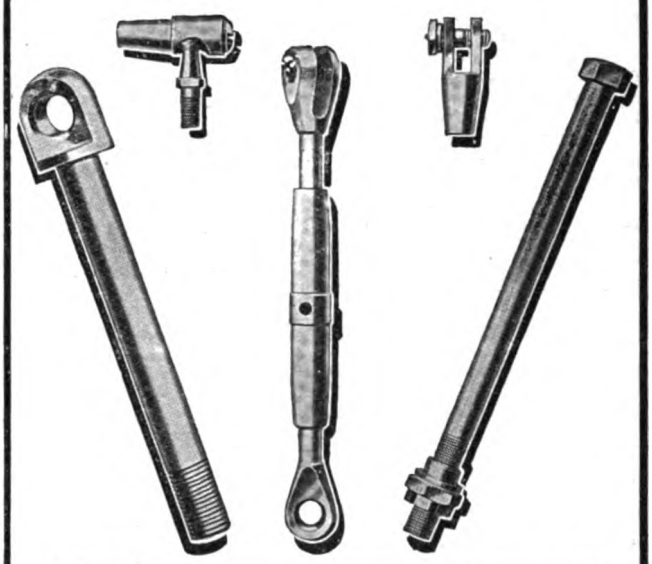

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AIR TRANSPORT OVER POLAND.

On Sept. 23 new regulations came in force in Poland concerning the entry into and passing over Poland by foreign aircraft. In pursuance of these regulations every aircraft proceeding to Poland or passing over its territory should be provided with a certificate containing necessary particulars of the aircraft, its crew, passengers and cargo.—The Polish Consular representatives abroad are authorised to issue such certificates.

The aircraft of countries which have acceded to the International Air Convention of 1919, or aircraft of countries which have concluded air agreements with Poland will receive the said certificates immediately and free of charge. An exception includes military aircraft or other State aircraft, whose entry into Poland or passing over its territory is to be settled by way of diplomacy.

Commercial transport of passengers and cargo by aircraft requires in Poland a special licence from the competent authorities.

Regarding the entry of Poland or passing over Poland of private aircraft of other countries, the persons concerned should apply to the Polish Consular representatives abroad who will in each case communicate with the competent Polish authorities.

AGENCIES WANTED.

A firm of good repute in Portugal wants agencies in that country for British firms. At the present moment the firm is not in a position to place definite contracts for deliveries, but it would like to communicate with British firms with a view to possible business on commission in anything from complete aircraft and aero-engines down to accessories and raw materials. Letters addressed L. H., c/o THE AEROPLANE, will be forwarded.

SIMPLIFIED LUBRICATION.—The Adcol Movable Oil Pump.

A USEFUL ACCESSORY.

The well-known firm of Alexander Duckham & Co. Ltd. have produced a very useful servicing outfit.

This consists of a small chassis on which are mounted two ten-gallon drums and two delivery pumps of one quart capacity each.

The drums carry two grades of Adcol, N.P.5 Aero Oil, and also a Castor Grade, Adcol A.E.R., the former being to Air Ministry Specification D.T.D.—109.

This small outfit enables oil to be delivered direct to the sump of the machine and thereby avoids the possibility of dirt entering the engine. It also does away with a lot of worry and mess.

We understand that these outfits are being offered to Aircraft Operators and Clubs on very favourable terms.

THESE COLD TIMES.

Now that the cold weather is coming on and cautious people empty their radiators at nights a good many readers of THE AEROPLANE may like to have one of the Radiator Warning cards issued by Alexander Duckham and Co., of 6, Broad Street Place, E.C.2.

On the card, which has a string to be hung over the radiator cap, is the word "Warning" in red in big letters and below, also in big black letters, the words "Radiator Empty." In the middle is an inoffensive Duckham trade-mark which deserves to be there if only as an acknowledgement of the firm's thoughtfulness in issuing such cards as a warning to garage hands not to go starting up the engine,—and incidentally as a reminder to the owner himself that he has emptied the radiator.

Any reader of THE AEROPLANE can have these cards for nothing by writing for them and mentioning THE AEROPLANE.

A FIT NOT TO BE FORGOTTEN.

Although the motto of the K.L.G. people is "Fit and Forget," users of internal combustion engines of all sorts ought not to forget that there is always a K.L.G. fit for their particular engines. Consequently the very neat list recently issued by the K.L.G. people ought to be in the hands of all motor users. A copy of it can be had gratis and post free by writing to K.L.G. Sparking Plugs Ltd., Robinhood Engineering Works, Putney Vale, London, S.W.15, and mentioning THE AEROPLANE.

NEW COMPANIES.

NAVARRO SAFETY AIRCRAFT LTD.—Private company. Registered Nov. 14. Capital, £4,000 in 25,000 "A" shares of 2s. each and 30,000 "B" shares of 1s. each. Objects: To carry on the business of manufacturers of and dealers in aerial conveyances and aircraft of all kinds, and the component parts thereof, etc. The provisional directors are: R. Shelton, 49, Dudley Road, Ilford, costs accountant. F. W. Cheeseman, 29, Lincoln Road, South Norwood, S.E.25, shorthand clerk. Remuneration: 5% of the net profits in any year. Solicitors: Scott, Bell and Co., 15, Queen Street, Cheapside, E.C. Registered office: Finsbury House, Blomfield Street, E.C.2.

PERSONAL NOTICES.

MARRIAGE.

MYLNE—ADAM.—On Nov. 9, at St. Peter's, Eaton Square, by the Rev. Austin Thomson, Sq. Ldr. Athol W. Mylne to Eleanora Constance Adam.

FORTHCOMING MARRIAGES.

DON—BIRKBECK.—A marriage has been arranged, and will shortly take place, between Wing Cdr. Francis P. Don, No. 502 (Ulster) Squadron, R.A.F., Aldergrove, Co. Antrim, third son of the late Robert B. Don, of The Lodge, Broughty Ferry, and Angela Jane Birkbeck, only daughter of the late Edward L. Birkbeck and of Mrs. Edward Birkbeck, Elmham House, Norfolk.

LANDON—WARREN.—The engagement is announced between Group Capt. J. H. A. Landon, D.S.O., O.B.E., R.A.F., only son of Mr. and Mrs. Frank Landon, of Brentwood, Essex, and Biddy, younger daughter of Col. Pennefather Warren, C.B.E., Chief Constable of Buckinghamshire, and Mrs. Pennefather Warren, of Wing Lodge, Leighton Buzzard.

ORR—BIRMINGHAM.—A marriage has been arranged, and will shortly take place, between Lionel Frank Hastings Orr, R.A.F., only son of Lionel Fitzgerald and the late Mrs. Orr, 2, Grove Avenue, Blackrock, Co. Dublin, and Sheelagh, younger daughter of the Rev. Robert and Mrs. Birmingham, 22, Belgrave Road, Monkstown, Co. Dublin.

BIRTH.

DEACON.—On Nov. 18, at Ambala, India, to Moira, wife of Capt. H. W. Deacon, R.F.C., R.A.—a daughter.

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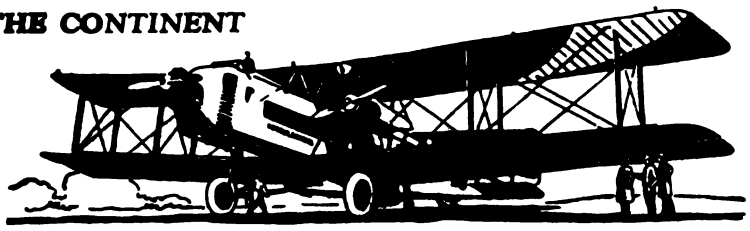

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All Advertisements for this column should arrive at this office by first post Monday, to ensure insertion.

For the convenience of Advertisers, replies can be received at the office of THE AEROPLANE, Cannon House, Pilgrim Street, London, E.C.4.

Special PREPAID Rate—18 words 4/6, 3d. per word after; 13 insertions, 18 words, 4/-; 26 insertions, 18 words, 3/6; 52 insertions, 18 words, 3/-, 2d. per word after. Situations Wanted ONLY—18 words 1/-.

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Airwork Limited undertake all aircraft and engine repairs and overhauls. Fully qualified staff. Completely equipped service hangar. Heston Air Park. Hayes 410.

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Air Survey Co. Ltd., 39, Grosvenor Place, S.W.1 (Sloane 6048), Dum Dum, Calcutta, and Monkey Point, Rangoon.

The Aircraft Operating Co. Ltd., 8, New Square, Lincoln's Inn, London (Holborn 8131), and Bulawayo, Southern Rhodesia; Cairo, Egypt; Rio de Janeiro, South America: Contractors to the Ordnance Survey. Laboratories and Subsidiary Company for aerial photography in the British Isles. Aerofilms Ltd., Colindale Avenue, Hendon (Colindale 6183 and 6184).

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AIRCRAFT INSTRUMENTS.

Aeroplane Wheels, New. Fitted with Dominion 26 x 2½ heavy tread tyres, and new tubes. Pair, complete with axle and bushes, 70s. carriage forward; Windscreen Frames and Brackets, without glass 2s.; K.L.G. Plugs, F.9 new, 9s. 9d. doz. Revolution Indicators, Smith's, 600-2,600 r.p.m. with 3 ft. drive, 22s. 6d.; Above postage paid. Send for free list. Coley Ltd., Ordnance Works, Queen Elizabeth Road, Kingston-on-Thames. 'Phone 0365.

AIRCRAFT CAMERAS.

"Eagle" Aircraft Cameras and Equipment. Specialists in air photographic apparatus. Particulars from the manufacturers and patentees, Williamson Manufacturing Co., Litchfield Gardens, Willesden Green, London, N.W.10. Telephone 0073-4 Willesden. Telegrams, "Kinetogram Willroad London." Contractors to the Admiralty, Air Ministry, War Office

AIRCRAFT FOR SALE.

Monoplane Glider for Sale. Nearly new. Price £20. Write Box No. 5742, THE AEROPLANE, Cannon House, Pilgrim Street, E.C.4.

Moth X Type Cirrus II in excellent condition throughout. C. of A. until next September. Completely equipped with compass watch, etc. Engine just completely overhauled and modified. Trial flight by appointment. Price and further particulars.—King, Northcroft, Byfleet.

National Flying Services Ltd. Tel., Ger. 9316. Quick deliveries. New or second-hand machines.

Phillips and Powis Aircraft (Reading) Ltd.—Authorised Moth Agents. Immediate delivery. Unique hire-purchase terms offered. Exchange Specialists. Reading Aerodrome. Sonning 114.

Up to date Passenger Machines for Sale, all fitted with double control for 8 and 15 passengers, single, twin and three engine machines. Apply to K.L.M., Royal Dutch Air Lines, Hofweg 9, The Hague.

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Air Taxis Ltd., Stag Lane Aerodrome, Edgware. 'Phone: Edgware 0849.

Aerofilms Limited, Aerial Tours, Taxi Work, Aerial Photography. Air Survey. Colindale Avenue, Hendon, N.W.9. 'Phone: Colindale 6183 and 6184.

British Air Lines.—Croydon Aerodrome. Cabin monoplanes for charter, day or night, all machines fitted with wireless telephony. Our own private car picks you up anywhere within a radius of 25 miles, free of charge. 'Phone:—Fairfield 5824. Telegrams:—Britalyne—Croydon.

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Wainwright's Flying Equipment.—Wainwright Flying Helmet (passed by A.M.) lined chamois, 22s. 6d. in Black or Tan, Fur trimmed helmets 12s. 6d., 15s. 6d. White helmets, pique or drill, 12s. 6d. Flat type earphones, complete with connections and "Y" pieces, 12s. 6d. Flying mask goggles, clear or anti-dazzle, 12s. 6d. Genuine R.A.F. Sidcots 57s. 6d. Chrome Leather flying coats, 84s. to £8 8s. Write for catalogue, Wainwright's, 300-302, Euston Road, London, N.W.1. 'Phone: Museum 6280.

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CINQUE PORTS flying club (Subsidised). **WINTER RATES** commence Oct. 1. 6 months' sub. 31s. 6d. Entrance fee 21s. Monthly sub. 21s. No entrance fee. Seven of our members took "A" licences in 4 weeks ending Sept. 26. Under 2 hours by car from London. Enlarged Club Room and Bar. Send 6d. to Hon. Sec., Hythe, Kent, for illustrated brochure. "LEARN AT LYMPNE."

CHEAPEST FLYING IN THE WORLD! at the Norfolk and Norwich Aero Club. Subscription £3 3s. Instruction rate 25s. per hour. Accommodation can be arranged on Aerodrome. Applications to Secretary, Mousehold Aerodrome, Norwich.

Learn on latest types of Gipsy Moth, Hermes, Avian, and Gipsy Bluebird light aeroplanes. Chief Instructor, Captain V. H. Baker, M.C., A.F.C., Airwork Limited, Heston Air Park, Hayes 410.

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The De Havilland School of Flying, Stag Lane Aerodrome, Edgware, Middlesex. Fourteen machines: Nine Moths, five advanced training machines. Seven Pilot Instructors. Lecture Classes, Restaurant and Recreation Pavilion. The largest and most up-to-date civilian organisation for flying tuition in the British Empire.

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Assistant required by Prominent Aircraft Firm to deal with their Apprentice Training. Works Library, Engineering Society and similar semi-technical duties. Applicant must have secretarial experience and good educational and practical training. Reply stating experience and salary required to Westland Aircraft Works, Yeovil.

Wanted, Six Good Engine Installation Fitters immediately. A. V. Roe and Co. Ltd., Manchester.

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Public School Boy seeks progressive position abroad where aircraft communications are being developed, preferably in Colonies. Keen, Pilot's "A" Licence, slight business experience. Box No. 5741, THE AEROPLANE, Cannon House, Pilgrim Street, E.C.4.

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We offer sound Instruction in Aeroplane Design, Fitting and Rigging, and Aero-Engine Fitting and Rigging; also expert training for Ground Engineers (Categories A, B, C and D). All tuition is by correspondence. Write to-day for our "Aeronautical Engineering" Booklet. International Correspondence Schools Ltd., 179, International Buildings, Kingsway, W.C.2.

AEROPLANE PHOTOGRAPHS.

Copies of Aeroplane Photographs (indicated as such in the inscriptions under the pictures) may be had from:—THE AEROPLANE Office, 175, Piccadilly, London, W.1. Single prints, 6 in. × 8 in. cost 2s. 6d. each, and 1s. 6d. for each number of the same print. Larger sizes or larger quantities may be had at special prices.

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DEC. 11, 1929.

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Incorporating

Aeronautical Engineering

VOL. XXXVII No. 24.

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ON VARIOUS THINGS.—III.

(*Continued from p.* 1224.)

Mail Work.

Some day, no doubt, one of these powerful financial groups, which we have referred, will awake to the fact that if ey can only make suitable contracts with our Post Office ey will find running Air Mail lines a very paying proposi-n. Compared with an aeroplane designed for carrying number of passengers, a pure mail-carrying aeroplane is nparatively cheap.

If a great financial group, with a few millions of pounds its disposal whenever it wants them, comes along to the st Office, and proposes to run an Air Mail line to the Cape to South America, the Post Office cannot very well use to do a deal with them, no matter how much the overnment may feel itself committed to giving Imperial rways Ltd. first choice on any existing Air Mail route, nply by virtue of the fact that Imperial Airways is sub-lised by the Government and the Government expects get something for its money out of that particular firm efore it enters into an alliance with any other firm, even ough it is not asked to put up a subsidy for such a firm. nd so we may expect to see developments in this direction. Apart from this no great imagination is needed to fore-e that some day somebody will produce a passenger-rrying aeroplane, or at any rate an aeroplane which carries assengers and freight, which can do either or both at a ofit.

When somebody produces such an aeroplane they may nd that there is money to be made by running in direct ompetition from our London Terminal Aerodrome to the ontinent or to Africa, or for the matter of that to India nd Australia, along the routes which have already been repared in any of those directions, with their own com-ercial aeroplanes,—somewhat in the way in which the irate 'buses have tried to run alongside the London eneral Omnibus Co.'s cars on the public roads,—but with etter prospects of success.

Future Policy.

This, then, is the really interesting side of aviation which s likely to develop in the course of the next few years. nd, obviously, if The Aeroplane is to publish information bout what is being done in commercial aviation all over he world, as is its duty, it cannot spare room for the minor affairs of aviation—such as Clubs, or individual flights, —whether for self-advertisement or not.

Be it remembered that when we are dealing with Commercial Aviation in this paper, we are not dealing merely with whatever the British Aircraft Industry may turn out in the way of commercial aeroplanes, or with what British aircraft operating firms are doing with whatever aeroplanes they happen to have. If we are to do our best for the progress of British aviation we have to tell in this paper what is being done by the great Aircraft Operating Firms all over the world. And we have to describe the types of aeroplanes which they use, and the types of engines they use, and we have to publish all we can learn about how all foreign competitors achieve the results which enable them to get ahead of us when they do so, or at any rate we have to describe everything they do which may conceivably show some progress over us.

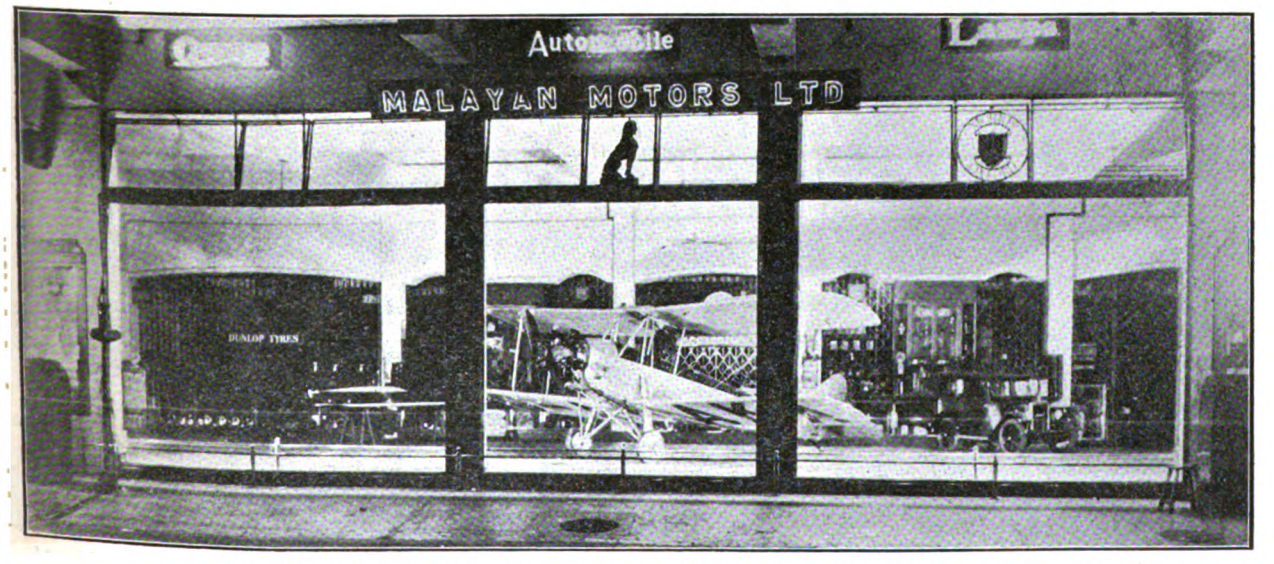
As a matter of fact, already there is so much doing in other parts of the world in commercial aviation that a paper the size of The Aeroplane could be filled perfectly easily every week with information about the technical developments and commercial developments of aircraft operators in other countries.

All this does not in the least mean that one has not the highest esteem for all the good people who have done good work in promoting the club movement. Compared with the way in which certain club pilots and certain ground engineers of flying clubs have carried on during the last two years with inadequate equipment, and without the wholehearted support which they should have had from the members of the club, and sometimes the Committees, the Children of Israel in Egypt had a comparatively soft job in making bricks without straw.

In fact, one's greatest regret about all the information ever been published in this paper about the Club movement is that those who have sent the Club notes have never given full credit to the pilots and the ground engineers by describing adequately how they achieved the excellent results which they have achieved.

Therefore, if and when anybody in any Club does come across any good ideas either for the betterment of aeroplanes or engines, or training, we, of the staff of The Aeroplane newspaper, will be very glad to hear about those ideas

"TRADE WHICH, LIKE BLOOD, SHOULD CIRCULARLY FLOW."—*(Dryden.)*



ENTERPRISE OVERSEAS.—An Avro Avian (Genet) in a shop-window in Singapore.

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and to give full credit to the particular individual who happens to be responsible for them. Also, if any individual who does deserve such credit and has such ideas, is too modest to rush into print himself about them, we shall be very pleased to have description of those ideas and to publish them without mention of the name of the modest person who is responsible for them.

So far from wishing any ill to the clubs, one hopes most sincerely that they will all continue to be great successes, whether as individual clubs or as members of the network of allied clubs which is being formed by National Flying Services Ltd.

PROPRIETARY SCHOOLS.

This point, incidentally, opens up another aspect of the case. Those Clubs which have been taken over by National Flying Services Ltd. (and more are likely to be taken over by that organisation) have practically become proprietary clubs and have ceased to be co-operative clubs. They will have ceased to draw the Government subsidy, but they will, on the other hand, have the advantage of a central organisation which can supply them with aircraft and all the material for the maintenance and repair of aircraft at a lower price than that at which they could buy such equipment as individual clubs. In fact, those clubs will then be in the same position as the various proprietary flying schools which have existed ever since flying first began and have still done fine work in training pilots since the club movement began some five or six years ago

Of course, club members and club committees will be frightfully annoyed with one for daring to suggest such a thing, but there are fairly good reasons to believe that pilots who are being trained, or who have been trained, at proprietary schools do in fact get a better kind of training than those who have been trained in club schools.

One does not for a moment suggest that the club instructors are any less efficient than are the instructors in proprietary schools. What it all means really is that under the driving force of commercial necessity the proprietary schools have to be more highly efficient or else shut down, because they are not drawing a Government subsidy. Also the individual proprietor of the school, if he be competent to look after his business, is bound to be more efficient than the busiest committee you can imagine.

A MINOR FALLACY.

Mr. Goodfellow makes the point that a great many club-trained pupils have become private owners. The inference is naturally that if they had not learned to fly at a club they would not have bought aeroplanes and that our Aircraft Manufacturers would have been poorer in consequence. This one believes to be a fallacious argument.

Admittedly the Clubs have popularised aviation to quite a considerable extent. But, the type of man or woman who can afford to buy a private aeroplane would sooner or later have become enthusiastic about flying even if clubs had not existed. He or she would have learned fly at one of the flying schools, and in due course, ha qualified as a pilot, would have bought his or her o aeroplane.

As one of those who supported the club movement m enthusiastically when it was first started one may perh say now that about the worst thing that ever happened the clubs was the institution of the Government subsidy

If the clubs had had to work or starve there would h been a lot more enthusiasm in them than there is present. There would have been more members worki in the sheds on the machines, helping the ground eng neers, and probably there would have been less opportu of lounging about in armchairs in those very comforta club premises which now exist, largely thanks to the subsidy

BIG MONEY.

All this discussion of Big Money interests, and commer cial prospects, and Government subsidies,—or doles, whi are the same thing—leads naturally to a letter from Sir Aliott Roe, who wishes his views on high finance to en lighten the readers of this paper. A. V., as some of u still prefer to call him, has always had ideas on how the wicked world ought to run itself, so here is his letter:—

In your report of the Authors' Club After-Dinner discussion you say I spoke of the need of more money in the aviation business.

My point is—We could spend £300,000,000 a year more on aviation and yet have some thousands of millions a year more left over spend on other things. The way to arrive at so desirable a situation is to relinquish our old habit of breaking one of the world's most unenviable records, viz., "excess of imports over exports."

No other country can anywhere near approach our insane record which leads to soul-destroying unemployment, poverty, and over taxation. Other progressive nations foresaw years ago this inevitable result of allowing imports to exceed exports. They accordingly safeguarded their industries, and are amazed at our delay in doing likewise, for they know that when we do, healthy internal competition will automatically bring about extraordinary prosperity, and soul-inspiring opportunities.

When Mr. Baldwin talked of safeguarding some few years ago a number of applications for sites and works came from foreign industrialists. But they ran like rats from a sinking ship when it fell through.

By our folly we are not only holding up our own progress but the progress of the world, for when we fall in line with other leading nations, and introduce a judicious system of safeguarding, we shall all the sooner discover how to trade to our mutual advantage.

It seems inconceivable that a people could be so utterly devoid of sense as to continue importing goods, year after year, to the tune of hundreds of millions that could be advantageously produced in its million odd unemployed, and still more millions of inefficiently employed. Money left and spent in a country, goes on creating wealth for that country, but we send it abroad, without let or hindrance, to help to strengthen rival industries.

Some of your readers may say, "What is this to do with aviation?" It has everything to do with it, for after all is said and done, the

THE HIGHEST AIR FORCE IN THE WORLD.—Pupils and Instructors of the Air Force of the Republic of Bolivia, with Mr. W. H. R. Banting—Chief Instructor—and a Vickers Vespa (Bristol Jupiter) on their aerodrome at Alto La Paz, 14,000 feet.

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A HIGH PERFORMANCE ENGINE OF PROVED *RELIABILITY*

The Napier aero engine is an up-to-date engine of proved design.

It has been developed and improved as a result of eleven years' experience in actual service in all types of aircraft.

It develops 570 b.h.p. at 2,585 r.p.m.

It weighs less than 1¾ lb. per h.p.

No other engine has such a record of reliability.

Some recent achievements with Napier production engines.

ENGLAND TO AUSTRALIA
The first formation flight from England to Australia was achieved by four Royal Air Force Supermarine Southampton flying boats each fitted with two Napier engines — 180,800 engine miles without mechanical trouble.

ENGLAND TO INDIA
The first non-stop flight from England to India was accomplished by a Royal Air Force Fairey monoplane fitted with Napier engine — 4,130 miles in 50 hours 38 mins.

THE KABUL RESCUES
600 men, women and children were conveyed to safety by Vickers-Napier Aircraft. Machines had to fly over mountainous country where landing was practically impossible and everything depended on reliability of engines.

NAPIER

The finest aero engine in the World

D. NAPIER & SON LTD.
ACTON, LONDON, W.3

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industries of any country, including aviation, depend on the productivity and buying power of its people. We therefore cannot be surprised that we are only spending a fraction of what other nations are spending on aviation, and that the Blackpool Airport only had one landing fee of 1s. in four months!

If we produced as much a head as the Americans, we would be over £3,500,000,000 a year better off. We could produce this huge extra wealth with less exertion and worry than we are expending at the present time with the existing inadequate equipment, as we have unrivalled facilities for economical production.

Let us hope that "The Empire Economic Union," which has just been formed by leading industrialists, will put the country on the right track, for when we stop unnecessary imports, we shall enjoy ever-increasing prosperity, and then we can rest assured that aviation will play a big part in the scheme of our affairs.

I reminded the Authors' Club that they could do much towards moulding public opinion.

(Signed) A. VERDON-ROE.

On no account would one dare to argue with the astronomical figures set forth by Sir Aliott Roe. To most of us who are much more intimate with the first two or three figures than with the whole nine figures mentioned by him in his second paragraph, such sums mean absolutely nothing. Consequently we may take him at his word.

But where one does venture to disagree with him is about the epithets which he applies to the state of affairs in this country. We may have a million or so unemployed, but the probability is that 95 per cent. of them are unemployable. Whether they cannot work or they will not work or they cannot keep a job simply because of incompatibility of temper does not matter.

Many of the best workmen one has ever met could not hold down a job for more than a week or two, simply because they could not work alongside other men without quarrelling with them. Also, what with firms going bankrupt owing to fatuous management, and markets falling short, and bad trade in different parts of the world cutting off orders in this country, there are bound to be some hundreds of thousands of unemployed, some of them only temporary.

Short of some form of slavery, under the euphemistic title of "compulsory labour" if you will, there is no way of employing these million or so unemployed. And a very large proportion of them are physically or mentally incapable of doing an honest day's work if it was set for them to do.

Apart from that, the working classes of this country are in fact better fed and better housed and better clothed and better amused than are the working classes of any other country in the world,—including the United States. There is probably less real poverty in this country than in any other. And though we may appear to be overtaxed, one notices that most of us are now living in greater comfort than we did before the war. At any rate, such is obviously the case so far as all the members of the Aircraft Industry are concerned.

Certainly protection is not going to make any man work any harder than he does at present. If we produce less per head than the Americans do, as Sir Aliott Roe alleges, then that merely proves that we do not work as hard as the Americans do or as intelligently.

One is certainly entirely in favour of what he calls the Empire Economic Union. But before we can expect our Overseas Dominions to trade with us, our manufacturers must see to it that we offer them articles which are just as good as are offered by our competitors in America and in Germany, and at the same price. There is no reason why an Australian buyer should pay more for an aeroplane than he is asked to pay for an airplane. And as yet there is no dumping.

PATRIOTISM.

And that brings us to the question of Overseas Trade again. Last week's leading article has not made me any more popular with those good old-fashioned manufacturers in this country who would like to be spoon-fed by the Air Ministry in the comfortable shade of a tariff wall.

They hate the idea of having to go out and work for their livings against foreign competition. But sooner or later they will have to do it, or starve. And so the sooner they start the better.

Here are a few outside opinions to encourage them. The first is from Wanstead—near where A. V. Roe made his first flights:—

Allow me to thank you for a thoroughly enjoyable quarter of an hour on Patriotism. Surely it is unjust to accuse anyone of being unpatriotic because they are trying to open the eyes of the die-hards.

As you say, the United States are composed mostly of our own race, and no doubt they have enticed some of our best brains to that country for their own benefit. But there must be many men as good and better still in the Old Country, who, but for the want of capital could go ahead and knock spots off all our rivals, both in design and business methods. You mention the fact of there being plenty of capital available for this purpose—if so, why is it not more widely advertised?

There is young blood and there are splendid brains hungering for the opportunity to get going, only to find that the best offers are to be obtained from our rivals.

I only hope that "straight left" of an article of yours gets home to the right spot, and may it not be your last on the subject.

"PATRIOT"

Following that is a letter from Mr. Stuart Hirst, a successful business man in Leeds, a pioneer of British Aviation who had the sense to make a fortune outside of flying and stick to it. He says:—

I feel I must congratulate you upon your lucid and masterly statement regarding the position of the British Aircraft Industry. I think your comparisons with the cycle trade and the motor trade are absolutely apropos, and I not only hope that you will be credited with impartiality but that your statement will be taken to heart by British manufacturers.

The fact of the matter is, it is not so much the engineer or the designer who is the first to foresee the trend of design. These people simply carry out what such people as *we* divine as public demand and public taste. The mistake is that too often they think themselves the whole shoot.

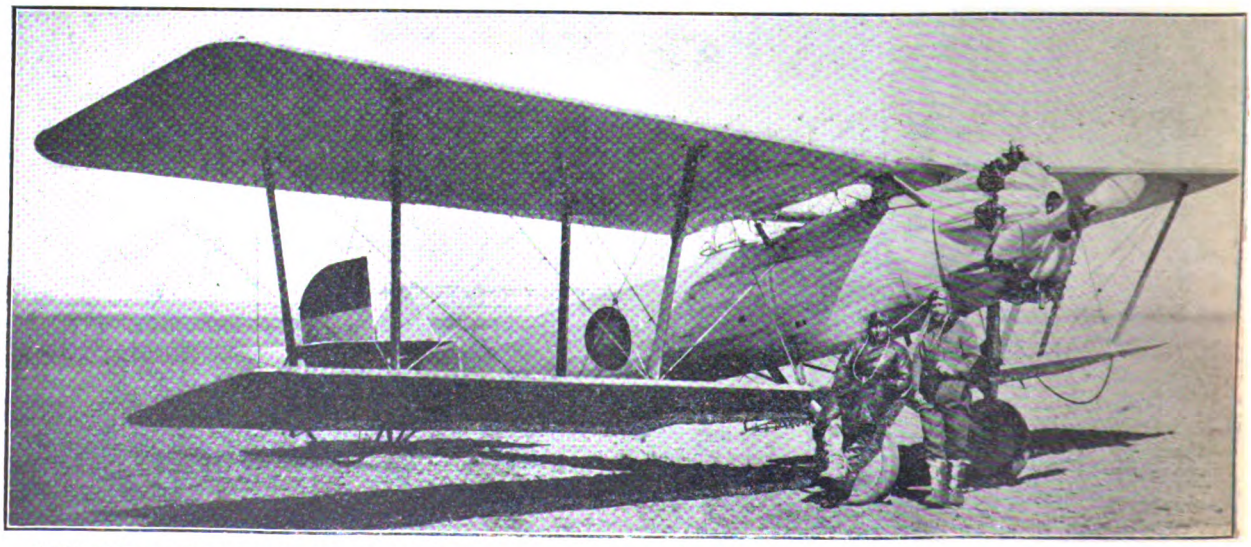
All honour to our engineers and designers for what they have accomplished, but too often do they need more vision; and your lead, I think, will be valuable.

While coming of an old family of engineers, I am not an engineer myself, but in regard to the trend of design, I have frequently indicated developments which have subsequently come to pass—notably in my address on "Civil Aviation," which, on behalf of the Blackburn Company, I gave at the Savoy Hotel on April 7th, 1919, when we were celebrating the exhibition in London of the first post-war civil machine.

British designers have got to jettison a lot of their old ideas and cudgel their clever brains in order to devise and build types that will fill immediate needs, and, as you say, we can learn a great deal from the Americans in foresight and adaptability.

With renewed thanks to you for your enlightened attitude and your definite service to British aviation.

And so, even though some of our old die-hards do not like having new ideas put before them, I propose to go on publishing the latest available information, in the knowledge that if they do not make what the market wants, some younger and cleverer man or firm or nation will do so.—C. G. G.



ALTITUDE TRAINING.—Mr. H. W. R. Banting and Mr. Siemel (with camera) on the Alto La Paz Aerodrome (14,000 ft.) just before starting in the Vickers Vespa (Bristol Jupiter) for a 2½ hour flight to Illimain 24,200 ft., and Illampu Lake 25,000 ft.—without oxygen or supercharger.

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'PLANES 8,700 MILES.

Cairo to West Africa and Back.

CAIRO, Friday (Reuter).—The R.A.F. flight to West Africa and back finished at noon to-day, when three Fairey 3F. planes landed at Helouan after covering 8,700 miles without a hitch. The flight began on October 19. The planes visited Nigeria and the Gold Coast, landing at Lagos, Accra, Maiduguri, and Tamale, among other places.

Extract from press, November 29, 1929

FAIREY AIRCRAFT

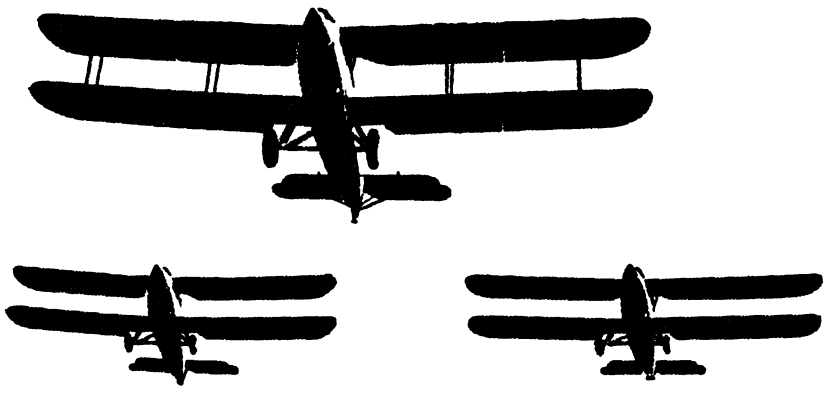
COMPLETE RELIABILITY DURING AN AGGREGATE OF OVER 26,000 MILES OF TROPICAL FLYING

* * *

For several years now, since its inception, the annual Royal Air Force African operations have been undertaken by a number of Fairey Aircraft from units stationed in Egypt. These annual flights, of which there are two, one known as the Kano and the other to the Cape, are of a very extensive nature involving many thousands of miles of flying near the Equator, including co-operation manoeuvres. That Fairey Aircraft should be chosen regularly for these arduous duties affords a definite indication of their exceptional merit.

*

THE FAIREY AVIATION CO., LTD.,
HAYES, MIDDLESEX



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SEAWORTHINESS AND AIRWORTHINESS.

[Nobody in this country, or in any other, knows more about seaplanes, including flying-boats, than does Mr. Oswald Short, of Short Bros. Ltd. of Rochester. Consequently his letter, which follows, is of outstanding importance. After it will be found a discussion of some of the points which he raises.—C. G. G.]

In the last few issues of your journal there have appeared several articles from your pen with reference to the design of flying boats, following upon the recent loss of the *City of Rome* in the Mediterranean.

In these articles you have, generally speaking, classed all existing types of flying boats as unseaworthy, and in the first article on this subject you particularly criticised three engined machines as being, in your opinion, useless so far as the prevention of forced landings are concerned. The question thus raised is an interesting one to those who follow aircraft development, and naturally aircraft constructors have something to say on the subject.

In the first instance, the impartial observer must fail to see any indication of a "craze" for three-engined aircraft, such as you suggest exists, as he will equally fail to see a craze for single-, double-, or quadruple-engine systems in aircraft. The three-engined aircraft has arrived in the natural course of aircraft development where designers, faced with certain specifications of requirements, have set out to meet those requirements with the use of existing types of engines and materials.

No one to the writer's knowledge has claimed infallibility for three-engined machines. It would be equally illogical to claim infallibility for machines fitted with four, six or any number of engines. The word is indeed scarcely applicable to any man-made apparatus.

What has been claimed, however, and also proved beyond all doubt, is that the multiple-engine system, in certain specific designs, greatly reduces the risk of forced landings. Certain twin-engined machines will fly with the full designed load on one engine, and certain three-engined machines will fly quite strongly with one engine stopped.

This property is not necessarily achieved by a wastage of power, or by carrying a very light and uneconomical load. On the other hand there are three-engined machines, and even four-engined machines that will not fly with one engine stopped. It is a question of design, and of the reserve power available for flight in a particular machine.

The "Calcutta" type of flying-boat may be taken as one instance of an aircraft that will fly well on two engines out of three, while carrying quite a big commercial load. The figures are,—Pay load 6,250 lbs. plus petrol and oil for 300 miles in calm air.

Controllability in the case of one engine stopping is naturally not improved, but it is reasonably good, and quite effective, and the machine can be turned against the offset thrust-line with either starboard or port engine stopped. With improvements in the design of both engines and machine, in course of time the three-engined aircraft will leave little to be desired as regards performance and controllability on two thirds of its maximum power.

In the case of a four-engined aircraft, flight with one engine stopped should on the face of it be easier to accomplish, but at the present moment it must be admitted that there is no four-engined boat in use that will fly as well on three engines as the Calcutta flies on two. In fact it appears that there is no four-engined boat which can compare with the Calcutta type as regards pay-load carried and range, and general performance, although existing four-engined boats have 25 per cent. more power available for flight.

That being the case, there is no justification for implying that British designers are behind the times in flying-boat construction, as you appear to do in your references to four-engined machines and to the Dornier type in particular.

That leads us to consider the question of types of flying-boats.

There is a strong tendency on the part of some writers to favour the monoplane flying-boat, and to assume that the biplane flying-boat with a central hull and wing-tip floats is obsolete in design. The principal cause of this tendency of thought is the feeling that wing-tip floats are unsatisfactory where the seaworthy qualities of a flying boat are being considered.

The tendency may also be due to a feeling that a type which has remained so long in existence without apparent alteration must necessarily be obsolete in design. It is, however, perhaps time to say that no machine is obsolete until something better exists to replace it. If that be the case, then certainly the type of flying-boat which has come to be looked upon as peculiarly British is still the best.

Designers cannot successfully sacrifice every other good point in flying-boat design to obtain maximum seaworthiness. A flying-boat is essentially a compromise to the requirements of two elements—air and water. A flying-boat which gets off quickly, climbs rapidly, has a high ceiling and a big speed-range, is probably much safer as a vehicle of the air than one which is deficient in those properties, but is more seaworthy.

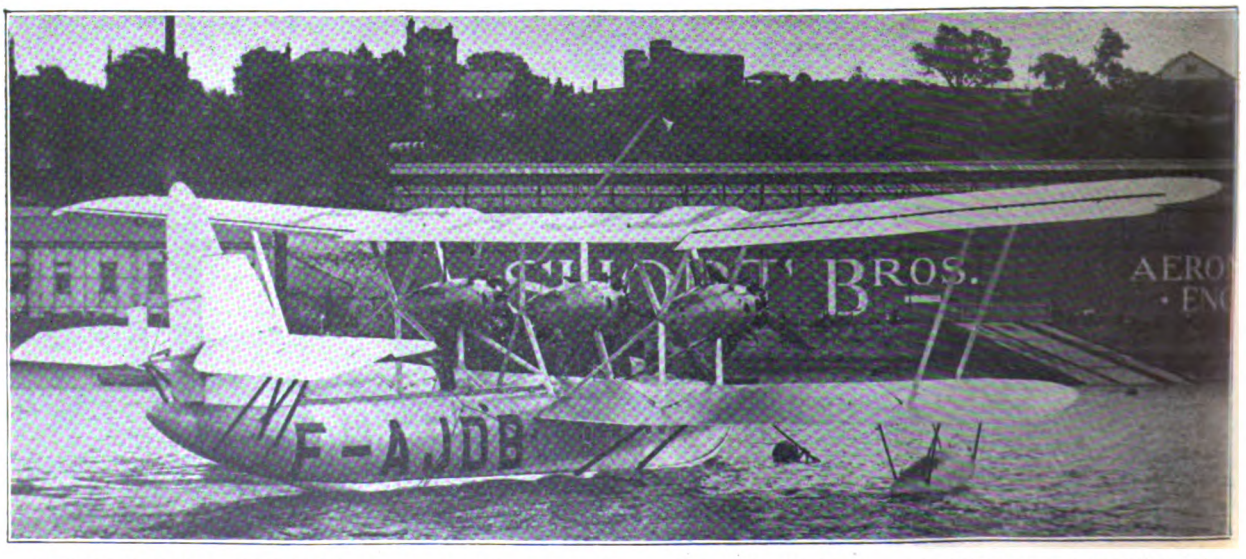
When we read, as we frequently do, of vessels of thousands of tons displacement foundering in rough seas, we must realise that a great problem faces the flying-boat designer, who, in the light of present knowledge of flying-boat design, has to build a vessel which cannot furl its sails in emergency. Flying boats as at present designed, however, have demonstrated that they have a considerable degree of seaworthiness.

Rough as the sea was which sank the *City of Rome*, she would probably have survived if she had not been taken in tow. It is quite possible that she was towed under, as has happened to bigger surface craft on many occasions.

It becomes clearer every day that the work of flying-boats is to fly from one stretch of sheltered water to another. Designers will not spare any efforts to obtain the utmost degree of seaworthiness possible under all the requirements of flying-boat design, but when that is done a flying boat battling in a hurricane in the Mediterranean or Mid-Atlantic is out of place. Its place between ports is in the air, and our greatest efforts should be directed towards keeping it there.

(Signed) OSWALD SHORT.

Mr. Short's letter is of unusual interest, particularly so because it gives the opinion of one of the most progressive aircraft constructors in the World. Mr. Oswald Short together with his brother, the late Mr. Horace Short, were responsible for what were in fact the first successful seaplanes in Europe. Ever since those early days of 1911 or 1912 he has been continually engaged in the design and construction of seaplanes.



THE CALCUTTA AT HOME.—A Short flying-boat (thr ee Bristol-built Jupiters) bought for comparative tests by the French Government.

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PROOFS THAT CIRRUS ENGINES ARE

THE WORLD'S MOST RELIABLE LIGHT AERO ENGINES.

¶ The great majority of Light Aircraft of British manufacture are fitted with CIRRUS or CIRRUS HERMES engines.

¶ There are more different types of Light Aircraft of Foreign manufacture fitted with Cirrus engines than with any other power unit.

¶ Cirrus engined aircraft won the King's Cup in 1926 and 1927 and the Siddeley Trophy in 1928 and 1929.

¶ Cirrus engines are in use by the British Royal Air Force and are standardised by National Flying Services Ltd.

¶ Cirrus engines are now fitted in over 40 different types of British and Foreign Aircraft.

¶ Cirrus Hermes engines are now fitted in 19 different types of British and Foreign Aircraft.

¶ The record of Cirrus engines in World Flights, International Competitions, Racing, and in every other activity in which Light Aircraft are employed cannot be approached by any other type of British or Foreign low powered engine.

CIRRUS SUPREMACY IS FOUNDED UPON CIRRUS PERFORMANCE.

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From the ordinary type of float seaplane he has extended his experience until to-day he is the constructor of some of the largest and quite the most successful flying boats in the World. To-day he has abuilding a four-engined flying-boat with a stainless steel hull and a three-engined monoplane on floats,—each marking still further progress intellectually and mechanically.

At the beginning of his letter Mr. Short really combines two separate issues which one has discussed in this paper. One is the seaworthiness of flying boats as such, the other is the efficiency of three-engined aircraft as such. Let us deal with the latter subject first.

When one has referred to the craze for three-engined aircraft one has had in mind the fact that practically all over the World aircraft manufacturers are turning out both sea-planes and land-planes with three engines, disposed in a variety of ways. Possibly one might have referred to the popularity of three-engined aircraft rather than to a craze for such an arrangement of engines. Or one might have used a phrase which Mr. Short himself has used when he refers to "a strong tendency in favour of monoplane flying boats." Be that as it may, there is undoubtedly a large number of three-engined machines of one kind or another being built to-day.

The majority of these three-engined aeroplanes have fuselages of the normal type. And whether they be biplanes or monoplanes they almost invariably have one engine in the nose of the fuselage and one engine attached somehow or another to the wings or between the wings, one on either side of the fuselage.

The objection to this most popular type is that if you put an engine, whether big or small, in the nose of a big fuselage, where practically the whole of the diameter of the air-screw is blanketed by the mass of the fuselage behind it, the air-screw simply cannot do its job.

This objection applies equally well to any form of tractor aeroplane. In the ordinary single-seater or in the two- or three-seater machine, in which the pilot and passengers sit in tandem, the fuselage is comparatively small compared with the size of the engine and the air-screw, and the effect is less bad. But in big passenger-carrying machines the area of the fuselage in cross-section is sometimes actually bigger than the area swept by the air-screw.

With more modern aircraft and more modern engines this objection is overcome to some extent by using geared engines in which the air-screw is so much bigger than it is when it is driven direct that there is enough of the air-screw blade outside the area of the fuselage to give it some chance of doing useful work. But even so a great deal of the effective area swept by the air-screw is still blanketed by the fuselage, and consequently the middle engine of the three cannot possibly do as much useful work as is done by each of the wing engines.

Consequently the efficiency of a twin-engined aeroplane in which the power of the two engines together is equal to the combined power of three engines in a tri-motor aeroplane is invariably higher than that of the tri-motor machine,—other things being equal.

Three engines *can* be arranged so that all three can be equally effective. For instance, some years ago Mr. Koolhoven, the famous Anglo-Dutch designer, built a three-engined monoplane in which the two wing engines were slung under the wings in the way first popularised by Mr. Antony Fokker and the third engine was carried on a kind of trestle on the top of the fuselage. This method certainly should be more efficient than putting the third engine in the nose of the fuselage.

Engines have been since, or possibly before, arranged on trestles in this kind of way both by Dr. Dornier and by Dr. Rohrbach, and by the Italian Savoia firm.

The method used by Mr. Short himself in his Calcutta flying boat is another way of doing it. In the Calcutta, as the three engines are arranged in line mid-way between the planes and above the hull of the flying-boat, each engine has just about the same amount of obstruction from struts and wires and engine-mountings behind it. Whichever engine cuts out it does not seem to make much difference to the power delivered by the other two.

The only difference is that if the middle engine cuts out it may affect the rudder and elevator controls more than if a side engine cuts out,—because it will remove the slip-stream from the tail unit. On the other hand, if the middle engine cuts out and the two wing engines keep going, at any rate there is a properly balanced pull on each side of the machine, and the engines do not have to drag the machine against the rudder, which has to be held over to counteract the loss of the dead engine on one side.

Where four engines are used, as in the new big Fokker monoplane, which was unfortunately crashed in America the other day, then all four engines, as they are slung two in tandem on each side of the fuselage, are free from the obstruction of the fuselage and there seems every probability that they are more efficient than any possible three-engine arrangement. This tandem arrangement has proved itself very successful in the Dornier Flying Boat and in the Savoia.

There is, however, some difficulty in using air-cooled engines arranged in tandem,—as has been proven. If the front engine happens to stop, the aft engine suffers from over-heating, and even when there are four engines, if one of the forward engines stops, the boat has to come down because shortly after one engine has stopped its rear engine will also stop. This trouble, however, can be got over by a proper and skilful arrangement of the cowling round and between the two engines and particularly over the rear engine.

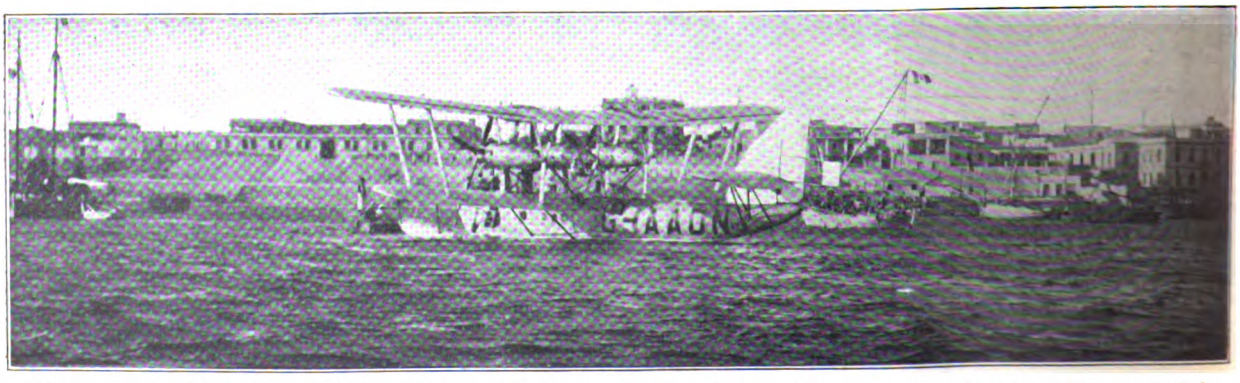
One quite agrees with Mr. Short that apparently there is no four-engined flying-boat which can compare with the Calcutta, power for power, and size for size, for efficiency and performance. All the four-engined seaplanes or flying-boats of which one has heard are of the heavy German monoplane type, in which there is still an immense amount of room for improvement. The Calcutta, on the other hand, represents just about the last word in the development of the braced bi-plane type of structure as applied to flying boats.

In this type of aircraft, which includes also the Blackburn Iris and some of the later developments of the Supermarine Company, we in this country appear to be far ahead of any other nation. And one feels sure that Mr. Short himself and Major Rennie of the Blackburn Company, and Mr. Mitchell of the Supermarine Company, would themselves never think of claiming that they are at the end of the development of this type.

Never for a moment did one think of implying that British designers are behind the times in flying-boat construction. We, in this country, certainly know far more about hull design and about the best way of attaching the wing structure to the hull than do any foreign constructors. But one does rather think that a four-engined tandem arrangement similar to that of the Dornier, if applied to any of our big flying-boats, might make an even better job of them.

The strong tendency or craze on the part of some writers to favour the monoplane flying-boat, to which Mr. Short refers, has never found place in THE AEROPLANE newspaper. With the exception of the Dornier Do.X one has never seen any monoplane flying-boat which looks as if it would be anything like as sea-worthy as a Short or a Blackburn or a Supermarine.

Mr. Short says, that no machine is obsolete until something better exists to replace it. That is an aphorism worth remembering. But at the same time one can fairly say that any existing type becomes at any rate obsolescent as soon as anything is in sight which looks like replacing it. Common rumour in the aircraft industry has it that Mr. Short is building an enormous three-engined monoplane on



ON CIVIL SERVICE.—A Short Calcutta (three Jupiters), belonging to Imperial Airways Ltd., moored in Tobruk Harbour.

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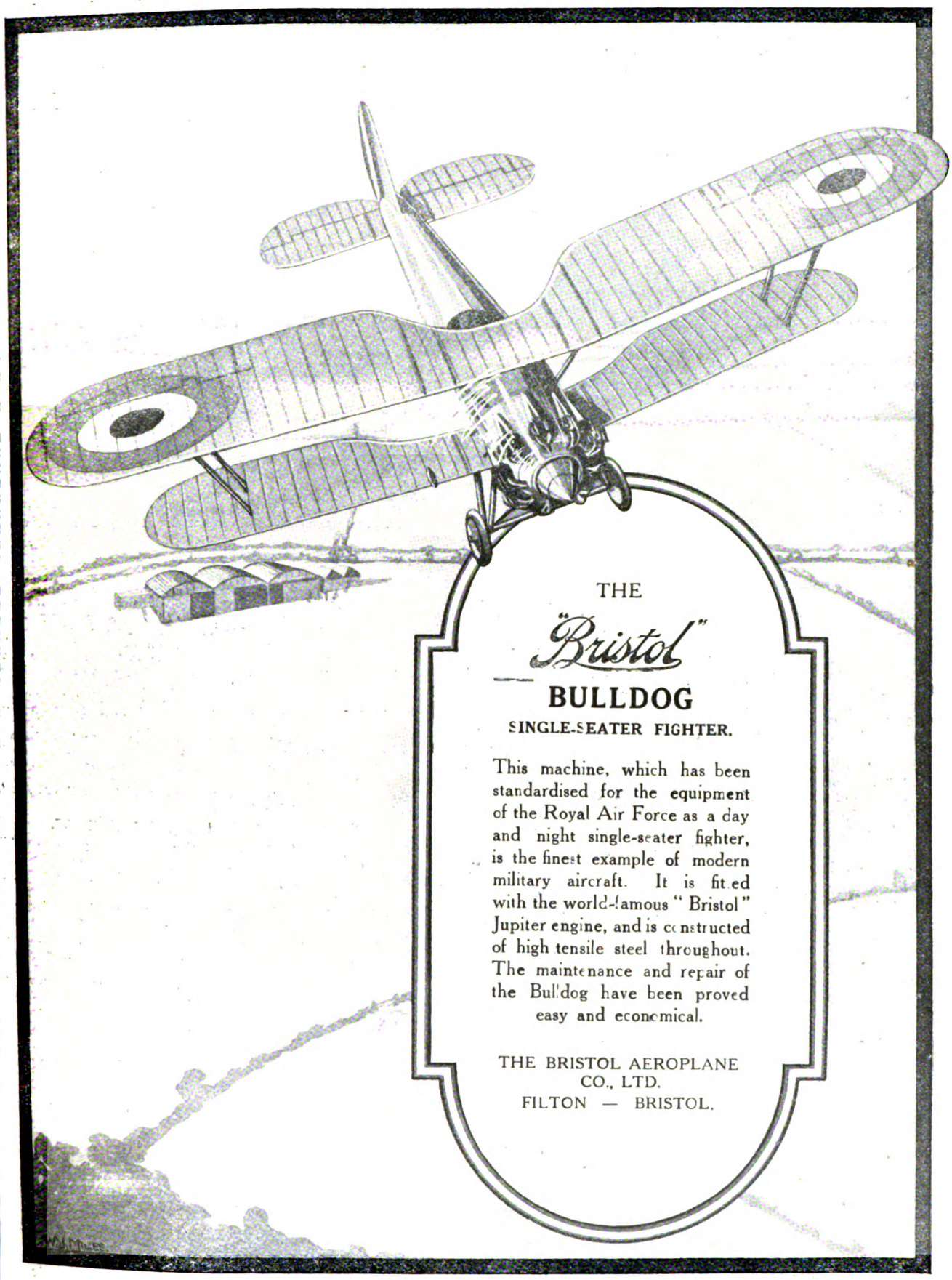

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floats. In fact, it is said to be so large that the floats themselves amount almost to being twin boat-hulls. If this rumour be true, then Mr. Short is engaged in an exceedingly interesting experiment.

He would seem to be combining his own unrivalled experience of seaplane floats and flying-boat hulls with the Italian Savoia idea of a twin-hulled monoplane flying boat. If as yet we know too little about such a type of aircraft to say that it makes all our big flying boats even obsolescent, the experiment itself is at any rate a noteworthy effort in the direction of progress. And Mr. Short deserves full credit for it.

The real point at issue between Mr. Short and the present writer is the interpretation of the word "seaworthiness." One quite agrees that, so far as any flying-boat with wings permanently attached can be sea-worthy, we in this country have come as near producing a sea-worthy flying-boat as anybody is ever likely to get.

If we build an enormous flying-boat of the size of the Dornier Do.X then we shall achieve as much sea-worthiness. We may even achieve more, for as yet nobody knows how much hammering in an open sea the Dornier Do.X is likely to stand.

But of one thing one is absolutely certain. That is that even if we built a flying boat as big as the *Mauretania* it would still be un-seaworthy judged by the ordinary mariner's standard of sea-worthiness.

When one reads of what high seas in the Atlantic do to our giant Atlantic liners, one realises how much more they would do to any kind of flying-boat, in which the wings would necessarily be of greater area than the hulls of the flying machine itself. The greater the area exposed to the wind and the waves, the greater must be the damage done.

As a matter of fact the damage which is done by giant waves is not done by the waves overtopping the structure and falling on it. It is done because the waves are obstructed by huge hull, pile themselves up against the side of the hull, or against the bow, and simply overflow onto the deck and carry away whatever may be moveable thereon.

Great waves cannot be withstood but they can be dodged. Which is precisely why a small lifeboat can go over and through waves which are smashing the hull of a great ship.

The conclusion then is that the building of a sea-worthy flying boat is impossible. Also that the building of an infallible engine is impossible. Therefore, we can never hope to have flying-boats which will never be compelled to come down in the water and we can never have a flying boat which can live in a heavy sea when it is down.

The obvious thing to do is to set about designing, first of all, a flying-boat or float sea-plane or twin-hull flying machine which will be as nearly as possible infallible in the matter of forced alighting, and can, when it is forced to alight in such a sea as cannot be withstood by the wing structure, get away from the said wing-structure and save the lives of the crew and passengers in a detachable motor lifeboat.

Such a machine need not be of very great size. There never is any need for an aircraft to be of any great size. But such a machine will be produced some time or another as a commercial proposition.—C. G. G.

ANOTHER SIDE OF THE PICTURE.

The Times of India of Oct. 11 published criticisms of the Imperial Airways arrangements from a recently arrived passenger.

This passenger, while admitting the skill of the technical side, said that there appeared to be a very serious shortage of pilots and an insufficient margin of reserve men for emergencies, resulting in serious over-work.

It was not uncommon for a pilot to arrive at his destination after a tiring flight to find that he must start within a few hours on the return journey, though this may have been due to an unforseen occurrence.

His second point of criticism was to the effect that there is apparently a similar shortage of machines, resulting in serious delays. His third complaint is of poor arrangements on some parts of the journey in the matter of the passengers' feeding accommodation. For instance, he says that, on arriving at Lingeh, the half-way house on the long flight from Basra to Jask, he found no accommodation.

A native clerk, representing Imperial Airways, could produce only two string beds, without bedding, and food was only available in the Persian bazaar. The machine had, moreover, to risk a night landing, and to proceed to Jask, where the rest-house was quarantined, and the party had to be entertained for the night in the bungalow of the telegraph department.

The remaining stopping-place, Gwadar, was equally uncomfortable. The accommodation there was a small tent, while a few dry sandwiches and undrinkable tea, prepared by the native watchman, was all the available food that the passengers obtained between their departure from Jask at daybreak and their arrival, late in the afternoon, at Karachi. Finally, at Karachi, there were no feeding arrangements at the aerodrome. Other places were found to be satisfactory.

IMPERIAL AIRWAYS ACCIDENTS.

In the House of Commons on Dec. 4, in reply to Mr. Le[illegible] the Under-Secretary of State for Air said that since the institution of Imperial Airways nearly six years ago there had been in all five fatal accidents to aircraft of the company, of which four had been on regular service. The number of persons who had lost their lives had been 19 passengers, nine employees of the company and one Government servant. There had been, in addition, five accidents in which the aircraft had been wrecked or seriously damaged but none of these had caused any personal injury. The aircraft had been of various types but for the most part without distinctive names.

Replying to Capt. Balfour, Mr. Montague said that as far as he knew the log-books of the *City of Rome* were in the possession of the Commission which had been inquiring into the accident.

CIVIL AVIATION IN INDIA.

In the House of Commons on Nov. 4, in reply to a question by Major Pole, Mr. Wedgwood Benn, Secretary of State for India, said that up to March of this year the Government of India had expended about £240,000 on civil aviation. Of this £30,000 had been a contribution to the Imperial airways scheme and the rest had been mainly spent on ground organisation. A further sum of about £180,000 had been provided in the current year's estimates, which included about £26,000 as a contribution to the cost of the proposed Karachi—Delhi service. About £28,000 would have been contributed to light aeroplane clubs during the two years ending next March. He could not say when the Karachi—Bombay service would be in operation. Mr. Benn then circulated a statement in the *Official Report* which reads:—

The expenditure of the Government of India on civil aviation including the cost of provision of wireless and meteorological facilities during the last five years is as follows:—1925-6, £9,150; 1926-7, £[illegible]; 1927-8, £76,250; 1928-9 (Revised Estimate), £39,300; 1929-30 (Budget Estimate), £178,050; Total £400,720.

The figures for 1929-30 include a sum of £26,250 as six months' subsidy for the Karachi—Delhi extension of the London—India Air service.

The figures for 1928-29 and 1929-30 together include a sum of £[illegible] representing the assistance given by the Government of India to four light aeroplane clubs in India. This assistance is in the form of the supply to each club of two D.H. Moth aeroplanes and a spare engine, an annual maintenance grant of £1,500, a grant of £675 towards the provision of a hangar, and a bonus of Rs.150 (approximately £[illegible]) per pilot for a limited number of pilots trained by the clubs.

The clubs are under the control and supervision of the Aero Club of India and Burma, which, in return for the services it renders in this connection, has received from the Government grants of £2,250 in each of the two financial years 1928-9 and 1929-30.

A scheme for training Indians in civil aviation by means of Government scholarships in this country, estimated to cost £15,900 over a period of seven years, is also in operation.

The total estimated expenditure of the Government of India on civil aviation during the four years 1929-30 to 1932-33 (subject to the approval of the Legislative Assembly) is £1,250,000 (including meteorological and wireless facilities).

Of this sum, £375,000 represents the estimated cost of subsidies for the operation of trans-India air services.

THE FOKKER COMBINE IN THE U.S.

The General Motors Corporation, the biggest automobile combine in the World, has acquired 400,000 shares of Fokker common stock, or a 40 per cent. interest, in the Fokker Aircraft Corporation.

As the result of this deal General Motors is turning over to the Fokker Company all the capital stock of the Dayton-Wright Company, the assets of which include McCook Field, Dayton, Ohio, a number of patents, and cash assets of $6,500,000 (£1,300,000).

General Motors also owns 2 per cent. of the stock in the Bendix Aviation Corporation which was recently formed to take over the Bendix Brake Co. and the Eclipse Machine Co., makers of the Bendix aero-wheel brakes and the Eclipse engine-starters respectively.

The present personnel of the Fokker Aircraft Corporation will remain unchanged but will be augmented with additional staff from General Motors.

Under the new arrangement full advantage will be taken of the General Motors World-wide distribution system for the marketing of Fokker aircraft.

Presumably the United Kingdom and Canada will be barred by the agreement between A. V. Roe and Co. Ltd. and the Fokker firm.

AVIATION ESPIONAGE IN GERMANY.

On Nov. 23 the Supreme Court at Leipzig sentenced three men charged with espionage to terms of imprisonment ranging from six to three years. One of the men was an employee at the German Aeronautical Research Institute and was charged with conveying a secret drawing to a foreign Power. The other two men were charged with complicity.

Although Germany is forbidden by the Versailles treaty to have any military aircraft the Court decided that secrecy over certain matters was necessary in the interests of national defence.

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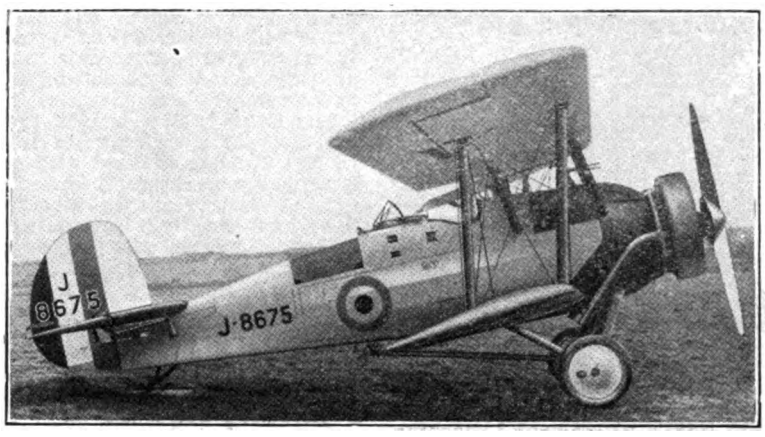
ARMSTRONG WHITWORTH
AIRCRAFT



THE ALL STEEL ATLAS
(ON WHEELS, FLOATS OR SKIS)

THE all-steel Atlas is the best aircraft for land or sea reconnaissance.

It is the standard Army Co-operation two-seater of the Royal Air Force.

Its steel construction accounts for its unrivalled durability and ease of maintenance. Fitted with the world-famous Armstrong Siddeley Jaguar engine (plain or geared type), its speed, climb and ceiling fulfil the severest Service requirements. It is produced on the grand scale by the best equipped aircraft works in Europe.

PERFORMANCE FIGURES

ATLAS WITH JAGUAR ENGINE AND TOWNEND RING

Fuel, 75 gallons (337 litres). Oil, 7 gallons (32 litres). Military Load, 880 lbs. (400 kgs.)

	Plain Engine.	Geared Engine
Approx. total weight	4000 lbs.	4115 lbs.
	1820 kgs.	1870 kgs.
Speed at ground level	143.5 m.p.h.	149 m.p.h.
	231 km.p.h.	240 km.p.h.
" " 5000 ft.	139.5 m.p.h	145 m.p.h.
" " 10000 ft.	134 m.p.h	140 m.p.h.
" " 15000 ft.	125 m.p.h.	131 m.p.h.
" " 1000 metres	226 km.p.h.	236 km.p.h.
" " 3000 metres	216 km.p.h.	225 km.p.h.
" " 5000 metres	193 km.p.h.	204 km.p.h.

	Plain Engine.	Geared Engine.
Time to 5000 ft.	5.25 minutes	4.25 minutes
" " 10000 ft.	12.5 "	10.5 "
" " 15000 ft.	36 "	21.75 "
" " 1000 mtrs.	3.5 "	2.5 "
" " 3000 "	12.5 "	10.25 "
" " 5000 "	34 "	27.5 "
Absolute Ceiling	19000 ft.	19100 ft.
	5800 metres	5830 metres
Service Ceiling	17300 ft.	17700 ft.
	5280 metres	5400 metres

Maximum allowable R.P.M. 2200. Normal R.P.M. 2000

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LIMITED

Works and Aerodrome: Whitley, Coventry. London: 10 Old Bond Street, W.1

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ON THE GUGGENHEIM CONTROVERSY.

There are always two sides to every question, and the other side to the Curtiss Tanager *versus* Handley Page Gugnunc controversy over the Guggenheim Competition deserves a full hearing.

As was made fairly clear in the article on this Competition in THE AEROPLANE last week we of THE AEROPLANE are not in the least concerned about patent rights or anything of that kind. What does concern us is the policy involved on each side, with the idea that good sportsmanship and good policy are in the end one and the same thing in an international competition of this kind. That is to say, the competition should be fought in the best sporting spirit and any legal questions should be fought out afterwards.

The other side of this argument is that the Curtiss Co. did not act in a properly sportsmanlike spirit either.

As most people connected with aviation know, the U.S. Navy bought the use of the Handley Page Slot patents a good many years ago. As part of that purchase the technical people of the U.S. Naval Air Service are entitled to know all about the latest developments under the Slot patents.

Consequently certain information about the automatic slots was sent to the U.S. Navy Bureau. And the Navy Bureau quite reasonably wanted experiments made on the strength of this information with a type of wing which is commonly in use in the U.S. Naval Air Service.

Therefore the Curtiss Co. were given an order to produce an experimental machine, with a wing of a section which is peculiar to that firm, fitted with automatic slots used according to the latest Handley Page method,—apparently a method which is not yet in use in this country.

On the day fixed as the last on which machines for the Guggenheim Competition could be presented by competitors for test the Curtiss Tanager arrived, with wings of the precise section used in the Navy's experimental machine, with automatic slots used according to the latest Handley Page principle. And apparently it was accepted without question by the controllers of the Competition.

Quite incidentally, as it has no direct bearing on this argument, the Tanager also has, instead of ordinary ailerons, balancing planes, similar to those used on the Hill Pterodactyl and called controllers instead of ailerons by Captain G. T. R. Hill, the designer. These are aerofoils projecting beyond the wing-tips and allowed to float without any angle of incidence in the air. They are so arranged that they float thus no matter what the angle of the main plane and of the machine itself may be. Consequently whatever the machine is doing these controllers can never become stalled, unless they are deliberately stalled by the pilot.

Anyhow, the point is that the Curtiss people sprung this machine on the other competitors without having indicated in any way to the Handley Page firm that they were going to use slots. They apparently justify themselves by saying that they built the machine in the interests of scientific progress without bothering whether they infringed anybody's patent or not. Which seems reasonable as an argument.

What seems to have raised Mr. Handley Page's ire, also very naturally, is that they never said anything to him about it. If they had said in effect "We are going to use slots and we don't care whether they are your patent or somebody else's patent, we are just going to see what is the best that can be done with a slotted machine under the rules of the Competition, and as we happen to have built a rather nice job on these lines for the U.S. Navy we are going to use that information in our Guggenheim competition machine," the probability is that no objection would have been raised.

Possibly, even probably, Handley Page Ltd. might have pushed in a writ for infringement of patent, but the probability is that there would not have been any objection to the machine as a competitor in the Guggenheim trials. A legal objection and a sporting objection are two entirely different things.

As the matter stands at present, an official objection to the machine has been lodged and there is a possibility of legal action following. All of which is very sad, and is very good for the lawyers, but it is not particularly good for the progress of aviation on either side of the Atlantic.

Over and above all this, the rules of the Competition seem to have been interpreted rather freely, or even loosely, —which may have been good sportsmanship, or may have been because so few machines were entered, that, at the finish, to make a field, machines had to be admitted which ought to have been disqualified. One machine in particular was admitted days late because it had started from home on the day for presentation, and was delayed by bad weather. Another broke a crankshaft and was allowed to wait till a new shaft could be got from Europe.

However, the Tanager and the Gugnunc seem to be the only serious competitors. And we must now wait and see which is adjudged the winner. There seems to be no fixed date for the end of the Competition, so presumably the tests will go on until one or the other is completely written off.—C. G. G.

ON THE GUGGENHEIM COMPETITION.

An American correspondent who has been watching the Guggenheim Competition writes as follows:—

The Guggenheim competition is coming on very [illegible] as you have doubtless heard. Unfortunately, a good [illegible] of the entries never showed up. Cierva, I guess, [illegible] dare send his autogiro.

The most interesting entries are the Handley Page, [illegible] Curtiss Tanager, the Cunningham-Hall ship, and a [illegible] machine designed and built by Major Schroeder. The [illegible] two named have had practically no test work done on them and even their designers do not know what their performance is. [The latter has crashed since then.—ED.]

The Cunningham-Hall was flown two or three times [illegible] then the crankshaft in the motor broke. The motor [illegible] a new type of Walter engine, there was no other [illegible] America, and they are now waiting for a new one to come from Prague. Schroeder's ship had never flown but [illegible] arriving here in a truck, and I believe has been cautiously flown several times since.

The Handley Page ship is, to my mind, the most promising, because everything on it is purely automatic. The Curtiss Tanager is fitted with automatic slots, but the [illegible] is manually operated. It is also equipped with an ingenious type of floating aileron which is attached to the end of the lower wing and counter-weighted so that it is never stalled no matter what the angle of the wing is.

Of course, the result of these tests is still somewhat secret, so please do not quote this as being authentic, but I am pretty darn sure that there is quite an argument [illegible] between Handley Page and the Guggenheim Fund in regard to the slow speed of his machine. I have gotten this from the pilots and not from any of the officials.

They have been trying to get the low speed by dragging a pitot-head below the ship; and I have found in my experience that this is not a very accurate method as it is possible to get quite different readings with the same equipment. Mr. Handley Page, of course, is backed up by the Martlesham Heath tests, and I think should be fairly able to prove his case.

I only hope that they do not break either of the machines before they get through testing them, because landing them over the barrier they certainly come down with an awful bang and all of them have broken wheels and under-carriage struts so far.

I do not believe much in this slow landing speed and gliding speed myself, because the result is that both the Tanager and the Handley Page entries have to be led out onto the field with a man on each wing if the wind is blowing over twenty miles an hour.

This is the same trouble we have had with Avians and Moths and is very annoying. It makes an airplane decidedly impractical, because sooner or later, if a ship of this type is used extensively, one will land under conditions where the men are not available and turn the machine over.

Practically everybody who has flown a Moth or an Avian to any extent in America has had this happen to them once or twice. Whereas with a machine that lands around fifty miles an hour, it takes practically a hurricane to have much effect on it once it is on the ground. And with good brakes it can be pulled up very short.

A CHANCE FOR THE INDUSTRY.

The Bombay correspondent of *The Times* says that the firm of Tata and Sons Ltd. have written a letter to the Bombay Municipal Corporation in which Tata and Sons Ltd say they have approached the Government of India for a contract for an air service between Bombay and Karachi to link with the Croydon—Karachi service.

If the Indian Government approves the scheme, Tata and Sons Ltd. will make arrangements to buy aircraft so that a start may be made before the next monsoon.

Tata and Sons Ltd. are said to be the largest steel firm in India, and to have immense resources. They do not build aircraft, so they will have to buy them.

Such a firm is not likely to start a route of this kind unless they believe that one day soon air lines will be wanted all over India and because on a short route of this kind useful experience can be gained.

To operate this short route with aircraft that they could later build under licence would be, one imagines, an attractive proposition to this Indian firm who would thus be able to supply the *matériel* required for India's own air lines. Perhaps the Industry in this country will look into this chance and act accordingly.

A RIVAL FOR THE CALCUTTA.

The French Government have recently acquired a Short Calcutta flying-boat for service on the French air lines.

Now comes a statement from the *Vossische Zeitung*, the German newspaper, that the French Government has placed an order "on reparation account" for a Rohrbach-Romar flying-boat of the type of which three samples have been ordered by the Deutsche Luft Hansa for eventual use on an Atlantic service by stages to South America. The price is stated to be about £50,000.

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THE ROYAL AIR FORCE.

The London Gazette.

Air Ministry, December 3.

ROYAL AIR FORCE.

;ENERAL DUTIES BRANCH.—E. M. Morris is granted a S.S. comn. as . Off. on probation with effect from and with seniority of Nov. 6. ;roup Capt. J. R. W. Smyth-Pigott, D.S.O., is placed on the half- list, Scale B, Dec. 2, 1929, to Dec. 1, 1930, inclusive; Flg. Off. Rigby is placed on the half-pay list, Scale B, Oct. 6 to 7 inclusive. Ving Cdr. G. F. Pretyman, D.S.O., O.B.E., is placed on the retired on account of ill-health (Nov. 30); Flt. Lt. B. J. W. Brady, D.S.M., placed on the retired list at his own request (Nov. 28); Flg. Off. L. Drew is transferred to the Reserve, Class A (Dec. 1); Mate H. Gardner, R.N., Flg. Off., R.A.F., relinquishes his temp. comn. return to Naval duty (Nov 7).

RESERVE OF AIR FORCE OFFICERS.

;ENERAL DUTIES BRANCH.—Plt. Off. on probation A. N. Spottiswoode confirmed in rank (Sept. 27); Flg. Off. K. Maconochie is transferred m Class A to Class C (Dec. 3).

'he following Flg. Offs. relinquish their comns. on transfer to the lian Army:—A. T. S. Studdert (Sept. 13); R. J. Stevens (Oct. 22). : Off. E. M. Morris relinquishes his comn. in the Special Reserve appointment to a S.S. comn. in the Royal Air Force (Nov. 6).

;RRATUM.—In *Gazettes* of Dec. 6, 1927, July 24, 1928, and Aug. 6, '9.—*For* M. E. Morris *read* E. M. Morris.

AUXILIARY AIR FORCE.

;ENERAL DUTIES BRANCH.—No. 600 CITY OF LONDON (BOMBER) UADRON.—The following to be Plt. Off.:—G. P. Kerr (Nov. 2).

'RINCESS MARY'S ROYAL AIR FORCE NURSING SERVICE.—Staff Nurse ss G. F. H. Lloyd is promoted to the rank of Sister (Oct. 4).

Appointments.

Week ending December 9.

;ENERAL DUTIES BRANCH.—Group Captains W. F. MacN. Foster, .E., D.S.O., D.F.C., to No. 1 Air Defence Group H.Q., to command, e Air Commodore E. L. Gerrard, C.M.G., D.S.O., 11/11. M. Spicer, H.Q., Inland Area, Stanmore, for Engineer Staff duties, on' asing to be seconded to the Royal Australian Air Force, 12/11.

Wing Commanders J. T. Babington, D.S.O., to Air Ministry (C.A.S.), appointment as Air Representative to the League of Nations, 11/11. E. Sutton, D.S.O., O.B.E., M.C., to Special Duty List, for duty as structor at the Imperial Defence College, 11/11.

Squadron Leaders L. H. Slatter, O.B.E., D.S.C., D.F.C., to No. 111 dn., Hornchurch, 23/10. C. F. Gordon, O.B.E., M.C., D.F.C., to and G. School, Eastchurch, 8/11. R. G. Gardner, D.S.C., to R.A.F. pot, Uxbridge, 4/11. W. S. Caster, M.C., to Experimental Section, A.E., S. Farnborough, 20/11. E. B. C. Betts, D.S.C., D.F.C., to Q., Aden Command, 16/11.

Flight Lieutenants J. H. Hagon, to H.Q., Coastal Area, 14/11. G. S. ddie, D.F.C., A.F.C., to Experimental Section, R.A.E., S. Farnborough, /11. S. P. George, to R.A.F. Depot, Uxbridge, 12/10. C. Crawford, A. and G. School, Eastchurch, 15/10. A. J. E. Broomfield, D.F.C., No. 58 Sqdn., Worthy Down, 3/11. G. H. Vasse, to A. and G. hool, Eastchurch, 21/10. G. M. Lawson, M.C., to R.A.F. Depot, xbridge, 25/11. E. A. Hodgson, to C.F.S., Wittering, 3/10. W. A. ncan, to R.A.F. Depot, Uxbridge, 3/11. P. Murgatroyd, to Aircraft pot, 'Iraq, 22/10. V. B. Bennett, to H.Q., R.A.F., India, 20/11. R. D. Swain, to No. 6 Sqdn., Middle East, 13/11. R. W. G. Lywood, R.A.F. Depot, Middle East, 1/11.

Flying Officers D. D. MacA. Eastwood, to R.A.F. Depot, Middle East, 11. R. D. Adams, to R.A.F. Depot, Uxbridge, 12/10. F. D. Biggs, to No. 207 Sqdn., Bircham Newton, 18/11. V. S. Bowling, to No. 501 Sqdn., Filton, 9/11. P. G. Lucas, to No. 41 Sqdn., Northolt, 12/11. A. W. H. Nelson, to E. and W. School, Cranwell, 1/11. J. Parsons, to No. 5 F.T.S., Sealand, 1/11. E. M. Thompson, to Station H.Q., Donibristle, 1/11. W. F. Bryanton, to R.A.F. Depot, Uxbridge, 21/10. W. R. J. Spittle, to R.A.F. Depot, Uxbridge, 12/10. C. K. J. Coggle, to No. 3 Sqdn., Upavon, 15/11.

Pilot Officers R. A. Sprague, to No. 6 Sqdn., Middle East, 13/11. F. S. Barron, to No. 47 Sqdn., Middle East, 6/11.

MEDICAL BRANCH.—Squadron Leader T. Montgomery, M.B., D.P.H., B.A., to R.A.F. Combined Hospital, Aden, 16/11.

Flight Lieutenants (Hon. Sq. Ldr.) J. W. H. Steil, M.B., to Station H.Q., Kenley, on appointment to a temp. comn., 30/10. C. A. Lindup, to Station H.Q., Upavon, 18/11. E. P. Carroll, to No. 6 Sqdn., Middle East, 26/10. R. W. White, to No. 20 Sqdn., India, 8/10. R. L. C. Fisher, M.B., to No. 31 Sqdn., India, 8/10. A. A. Townsend, M.B., to Aircraft Park, India, 8/10. J. A. Quin, M.D., B.A., to No. 25 Sqdn., Hawkinge, 13/11. R. G. J. Charlesworth (Dental), to M.A.E.E., Felixstowe, 26/11. R. E. Edwards (Dental), to R.A.F. Depot, Uxbridge, on appointment to a temp. comn., 8/11.

Flying Officer C. M. Leckie (Dental), to R.A.F. Depot, Uxbridge, on appointment to a temp. comn., 18/10.

STORES BRANCH.—Flight Lieutenants K. D. G. Collier, to Station H.Q., Mount Batten, 16/12. N. Robertson, to No. 100 Sqdn., Bicester, 25/11. G. C. Wilson, to R.A.F. Base, Gosport, 6/12.

Flying Officers A. J. Redman, D.F.C., to No. 602 Sqdn., Glasgow, 14/11. C. S. Whellock, to No. 2 Stores (Ammunition) Depot, Altrincham, 6/11. E. A. Burridge, to R.A.F. Depot, Middle East, 5/11. C. Thripp, H. A. Wrigley and J. S. French, to R.A.F. Depot, Uxbridge, 2/12.

ACCOUNTANT BRANCH.—Flight Lieutenant B. G. Drake, to H.Q., Aden Command, 16/11.

Flying Officer H. D. Conner, to Station H.Q., Northolt, 23/10.

CHAPLAINS BRANCH.—The Rev. J. Lavin, to R.A.F. Depot, Uxbridge, on appointment to a S.S. Comn., 20/11.

An Air Tour of India.

Air Marshal Sir Geoffrey Salmond, K.C.B., K.C.M.G., D.S.O., Air Officer Commanding, R.A.F., India, left Delhi on Nov. 30 on a tour of inspection of aerodromes in India.

The tour will last until about Dec. 19 and the greater part of it will be made by air. Sir Geoffrey Salmond is flying as a passenger in a Service Westland Wapiti and he will be followed by members of his Staff in a Handley Page Hinaidi.

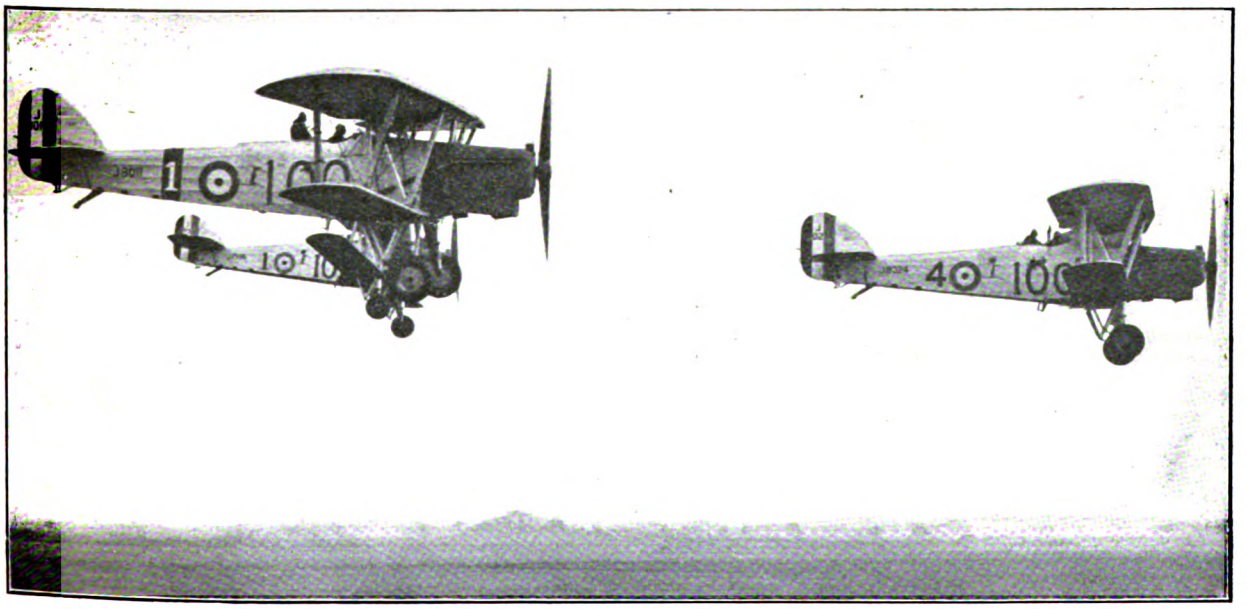
The route of the tour is Jhansi, Saugor, Jubbulpore, Kamptee, Secunderabad, Deccan, Madras, Mandepam.

A few days will be spent at Mandepam from which base flights will be made over Ceylon at the invitation of the Governor.

From there Sir Geoffrey Salmond will fly over Mysore to Bangalore, where he will be the guest of the Maharajah He will then go to Bellary, Poona, Nasirabad, Bikaner and back to Delhi.

The Fairey Long-range Monoplane.

The R.A.F. Fairey (Napier) Long-range monoplane, which flew non-stop from Cranwell to Karachi last April, flew from Northolt to Cranwell on Dec. 3. While the machine was at Northolt, H.R.H. the Prince of Wales made a flight with it.



NEMO ME IMPUNE LACCESSIT.—A Flight of Hawker Horsleys of No. 100 (Bomber) Squadron, R.A.F., coming home to tea. —(*"Aeroplane" photograph.*)

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An attempt will be made this month to beat the existing World's record for long-distance. The runway at Cranwell which was built to enable this machine to get off with full load, has been extended until it is now well over two miles in length.

The new attempt will be made towards the Cape and the pilots will again be Sq. Ldr. A. G. Jones-Williams, M.C., and Flt. Lt. N. H. Jenkins, O.B.E., D.F.C., D.S.M.

The monoplane has been overhauled since it returned from India and on the next voyage a small wireless transmitting set will be carried and the crew will send out messages notifying their position at four-hourly intervals.

A Fatal Accident.

The Air Ministry regrets to announce that as the result of an accident near Henlow to a Bristol Fighter machine of the Home Aircraft Depot, Henlow Camp, Bedfordshire, on Dec. 3, Flg. Off. Harold Vernon Forbes, the pilot of the aircraft, was dangerously injured and died after admission to sick quarters. Flg. Off. Donald Vernon Ivins, the other occupant of the aircraft, was seriously injured.

At the Inquest at Henlow on Dec. 4, the Coroner said that shortly after 11 o'clock on Tuesday the aeroplane was seen over Clifton flying upside down at about 100 ft. from the ground. It passed over a farm, and Mr. Morris, the farmer, would say that it was going at a moderate speed. Eventually it crashed about 50 yards away in Lime Lane, Clifton. Flg. Off. Forbes died in the Depot hospital.

Flt. Lt. R. J. M. St. Leger, of Henlow, who detailed the machine to the pilot, said it was in a fit and airworthy condition. Flg. Off. Forbes had done 681 flying-hours, and had been in this particular machine before. Flt. Lt. St. Leger could not explain the fact that the machine was flying upside down about 100 ft. above Clifton, and agreed that it would be an unusual procedure.

Fatal Accidents.

In the House of Commons on Nov. 26, in reply to a question by Mr. Hore-Belisha, the Under-Secretary of State for Air said that during the year 1929 there had been twenty-nine fatal accidents in the Royal Air Force involving thirty-nine deaths.

[Mr. Montague's figures include two accidents at Reserve Training Schools involving the deaths of two officers of the R.A.F. Reserve.]

Extensions of Service.

The following officers have been selected for extensions of the active list period of their short-service commissions:—

MEDICAL BRANCH.—(*Extension to five years*): Flt. Lt. J. E. Foran, M.B., Flt. Lt. D. Loughlin.

CHAPLAINS BRANCH.—(*Extension to six years*): The Rev. K. C. H. Warner, D.S.O., M.A.

Long Service and Good Conduct.

The Long Service and Good Conduct Medal has been awarded to the following airmen with effect from the dates mentioned:—

8331 S-M.1. Watson, J. E., 3-10.29; 897 S-M.1. Borrett, W. G., M.M., 19.8.29; 43 S-M.2. Caulfield, M., 26.4.29; 17654 S-M.2. Goodhand, V., 5.8.29; 5778 S-M.2. Mansfield, E. G., 19.9.29; 2023 S-M.2. Rose, L. H., 19.8.29; 315032 F-S. Clarke, A. R., 23.8.28; 314245 F-S. Hill, G. M., 10.8.29; 241437 F-S. Howard, A. W., 7.8.29; 119011 F-S. Jeram, A. B., 1.5.29; 315029 F-S. Lade, G. H., 7.8.29; 144630 F-S. May, S. E., 4.9.29; 313865 F-S. Poile, W., 6.4.29; 313269 F-S. Stonebridge, C., 6.9.28; 11256 F-S. Wheeler, H. J., 28.8.29; 261941 Sjt. Frend, A., 26.4.27; 26150 Cpl. Delaney, A. P., 6.8.29.

A certificate in accordance with para. 251 of K.R. and A.C.I. has been awarded to the undermentioned airman (an ex-Naval rating) with effect from Aug. 7, 1926:—

241437 F-S. Howard, A. W.

The Accountant Branch.

The Air Ministry announces that an examination will be held in the latter part of March, 1930, under the scheme inaugurated in 1924 for the entry into the Accountant Branch of the R.A.F. of qualified and experienced civil accountants. About six vacancies are likely to be available. The age limits are 22 to 26.

The competition will be held in London by the Civil Service Commissioners and will include (1) an examination in book-keeping and accountancy (excluding partnership and executorship accounts), the standard being that of the final examinations of the Institute of Chartered Accountants and the Society of Incorporated Accountants and Auditors; (2) an examination in English and general knowledge (essay, précis and questions to test knowledge of matters of general interest); and (3) an interview before a selection board at which stress will be laid on accounting experience and special weight given to the type of experience provided by articled service.

Application should be made to the Secretary, Air Ministry (S.7), Kingsway, London, W.C.2, for the regulations and for application forms. Completed application forms should reach the Air Ministry by Feb. 1 next or at latest by Feb. 15.

Aircraft Apprentices.

The Civil Service Commissioners announce that open competitive examinations for the entry of (1) aircraft apprentices and (2) apprentice clerks into the R.A.F. will be held in Belfast, Birmingham, Cardiff, Chatham, Edinburgh, London, Plymouth, and Portsmouth, on April 23, 1930.

The limits of age are:—Aircraft apprentices, 15-17, on Aug. 1, 1930; apprentice clerks, 15½-17, on July 1, 1930.

Request for forms of application should be sent to the Secretary, Civil Service Commission, Burlington Gardens, London, W.1.

The Clarke Cheetah.

The draw in the ballot for the Clarke Cheetah has been postponed from the advertised date because some of the Stations have not yet returned their counterfoils. The new date will be announced shortly.

SPORT IN THE R.A.F.

The Rugger Trial.

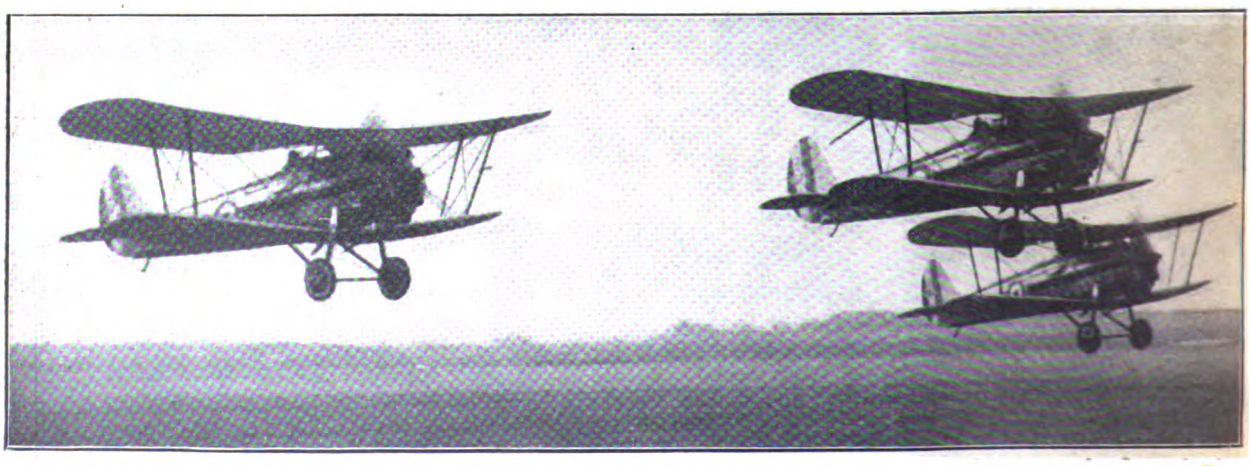
The R.A.F. final Rugger trial was played at Uxbridge on Dec. 6 and if the results pleased the Selection Committee they were rather depressing to the ordinary spectator.

In the first half the Whites (or Probables) side, led by Flg. Off. G. R. Beamish, lost two unconverted tries to the Colours (or Possibles). In the second half the Whites were stiffened by taking over one or two of the Colours in exchange for lesser Whites, and the Probables, assisted by half a gale behind them, scored two converted and six unconverted tries.

During both halves the Whites got practically every ball out of the scrum but the lack of co-operation among the backs, which is common to all trials of this description, prevented their scoring until the second half was well under way.

The whole game was notable for a complete lack of either individual enterprise or combined effort of an outstanding nature. On the whole the forwards in the Whites side were fairly good but apart from Flg. Off. Beamish the only noticeable forward was Plt. Off. R. W. Letchworth, who was Captain last season of the Cranwell Cadet team which beat both Sandhurst and Woolwich.

Behind the scrum Flg. Off. D. L. Maclean has improved since last year and if he keeps his head may well fill the vacancy caused at scrum-half by the lamented retirement from the Rugger field of Sq. Ldr. Russell. Flg. Off. F. S. Hodder, who played so well for the R.A.F. a few seasons ago and is just back from his overseas tour of service in 'Iraq, put up a very good show on the Whites' left wing. On the few occasions that he was given the ball at all he showed a fine turn of speed, a good swerve and straight running. He scored two beautiful tries in the second half. The other wing-threequarter will probably be Flg. Off. N. E. White.



SINGING IN THE RAIN.—A Flight of Bristol Bulldogs (Bristol Jupiters) of No. 3 (Fighter) Squadron, R.A.F., taking off in wind and rain.—(*"Aeroplane" photograph.*)

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who was not playing in this trial possibly because he was playing on the following day in the English trials at Northampton. Plt. Off. J. G. Llewellyn, who was a successful full-back in last year's team, has been moved to inside three-quarter and the place at full-back seems to be very adequately filled by Plt. Off. G. M. Ievers, who was in the Sandhurst XV last year but has since taken a short-service commission in the R.A.F.

None of the Cadets who will pass out of Cranwell this month and will therefore be available for the first match of the R.A.F. representative side were played in this trial.

The trial teams were:—

Whites:—Plt. Off. G. M. Ievers; Flg. Off. J. F. McKenna, Flg. Off. J. R. H. Pott, Plt. Off. J. G. Llewellyn, Flg. Off. F. S. Hodder; Flt. Lt. R. V. M. Odbert, Flg. Off. D. L. MacLean, Plt. Off. G. E. S. Williams, Flg. Off. G. R. Beamish, F-S. Kerby, Flg. Off. J. G. Franks, Flg. Off. J. Beaumont, Sjt. Hall, AC. Maxwell, Plt. Off. G. M. Gillan.

Colours:—Plt. Off. C. M. Rees; Flg. Off. R. R. Nash, AC. Lawson, Plt. Off. B. J. Hurren, Flg. Off. R. D. Cotton, Plt. Off. I. L. S. McNichol; Plt. Off. J. J. Owen; Plt. Off. C. R. Davies, Plt. Off. A. E. V. Mathias, AC. Warren, Cpl. Brereton, Plt. Off. R. W. Letchworth, Flg. Off. J. H. T. Simpson, F-S. Cockle, L-AC. Philip.

Reserves:—Plt. Off. H. G. J. Purcell, L-AC. Blennerhasset, Flg. Off. H. A. Constantine, Flt. Lt. C. D. Adams.—C. M. MCA.

Boxing.

The annual boxing match between the R.A.F. and the Household Brigade was held at Uxbridge on Dec. 5. Fifteen bouts were decided and the result was a draw, each side scoring 22 points.

There were over 1,000 spectators present and the prizes were presented to the winners by Air Vice-Marshal C. A. H. Longcroft, C.B., C.M.G., D.S.O., A.F.C., R.A.F. (Retired).

The results in detail were:—

Light-weight.—AC. Varley (R.A.F., Martlesham) beat Drummer Thorne (2nd Batt. S.G.) on points. Varley repeatedly scored with hooks to the head and body.

Middle-weight.—L.-cpl. Stewart (1st S.G.) beat AC. Nee (R.A.F., Tangmere) on points. AC. Nee put up such a game resistance that the referee ordered an extra round, which Stewart easily won with a left to the face. Cpl. Wood (R.A.F., Henlow) beat Gdsm. Cooper (1st G.G.) on points. AC. Collins (R.A.F., Sealand) beat Gdsm. Davies (3rd G.G.) in the first round. Gdsm. Pughe (2nd C.G.) beat L-AC. Clapp (R.A.F., Old Sarum) on points.

Light-heavy-weight.—L.-cpl. O'Grady (2nd G.G.) beat L-AC. Bartlett (R.A.F., Bircham Newton) in the third round. Gdsm. Midgley (C.G.) beat AC. McCann (R.A.F., North Weald) on points. AC. Munkley (R.A.F.) knocked out L.-cpl. Beecham (1st C.G.) in the third round with a right to the jaw.

Welter-weight.—L-AC. Garrett (R.A.F., Manston) beat Gdsm. Duffy (S.G.) on points. Duffy was outclassed and floored twice in the second round from right swings to the jaw. Cpl. Wassell (R.A.F., Catterick) beat Gdsm. Jarman (2nd G.G.) on points. Drummer Woolland (2nd S.G.) beat AC. Foley (R.A.F., Tangmere) on points in a very clever bout. L-AC. Buchanan (R.A.F., Uxbridge) beat L.-Sjt. Hind (2nd C.G.) on points. Sjt. Harper (R.A.F., Henlow) beat Gdsm. Bruce (2nd S.G.) in the third round, the referee intervening after Bruce had been floored from hard rights to the jaw.

Heavy-weight.—Gdsm. Stevens (2nd S.G.) w.o., AC. Woolley (R.A.F.) unfit. Gdsm. Plaice (1st G.G.) beat Flg. Off. G. S. Williams (R.A.F.) Digby) on points.

Six-round Contest.—AC. Hurlehey (R.A.F., Uxbridge) beat L.-Sjt. Smith (R.A.) on points. The bout was the best of the evening. The Artilleryman was punished severely in the fourth and fifth rounds, but came up full of fight for the final round.

The Squash Rackets Championship.

The R.A.F. Squash Rackets Championship was held at Queen's Club on Dec. 3 and 4.

Wing Cdr. F. L. Robinson (holder) won the Championship by beating Flg. Off. F. L. Downing in the final round by three games to nil (9—2, 10—8, 9—3).

In the semi-finals Wing Cdr. Robinson beat Wing Cdr. H. J. F. Hunter by three games to nil, and Flg. Off. Downing beat Sq. Ldr. A. Coningham by three games to one.

AN AIR MINISTRY FOR GREECE.

A report in *The Times* says that a draft Bill has been introduced in the Greek Chamber providing for the formation of an Air Ministry.

The Bill provides that each successive Prime Minister will be *ex officio* Air Minister, and will be assisted by a responsible Under-Secretary and Ministry, who will control military and naval aviation, special attention being paid to the development of civil aviation, for which a separate section will be formed.

TO BE NOTED.

[THE AEROPLANE dated Dec. 25 will contain, as part of the *Aeronautical Engineering Supplement*, an important article by Mr. R. J. Mitchell, designer of the two last Schneider Trophy winners, on "The Effect of High-Speed Flying on Aircraft Design." This article should be of particular interest to all pilots, as well as to all technical readers. Therefore those who want copies should make a special note to order them early, as newsagents are apt to take little interest in ordering technical papers at Christmas-time.—C. G. G.]

Two Weeks To Christmas

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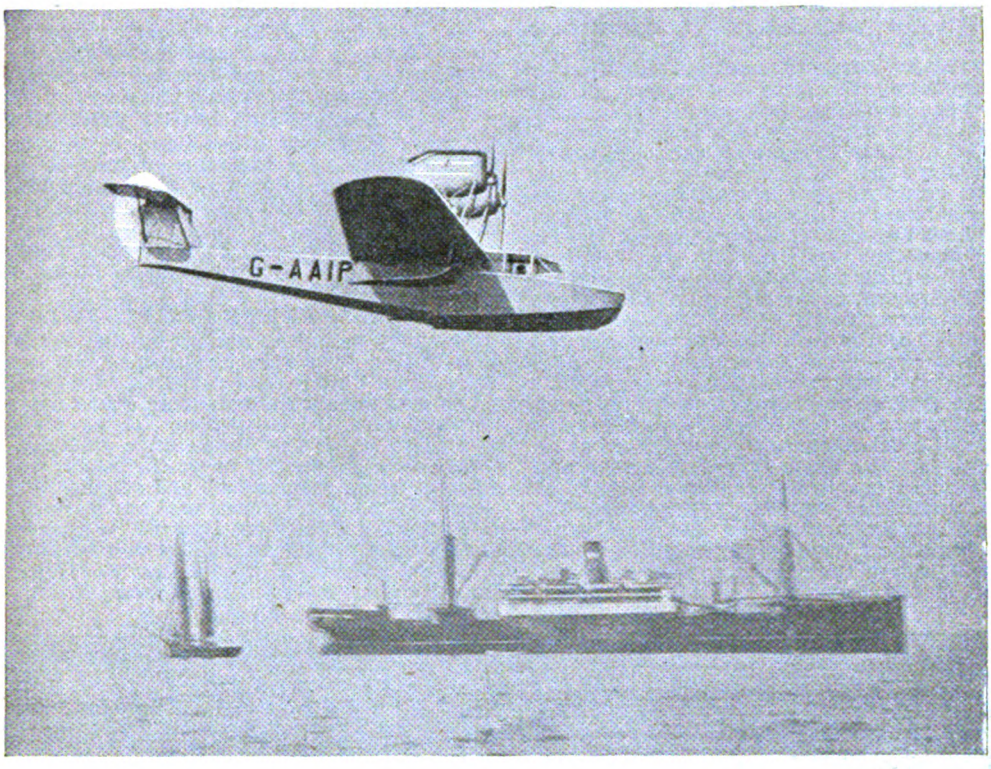

Saro "Cutty Sark." Two Cirrus Hermes.

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AIRCRAFT OPERATION AS IT SHOULD BE.

The Aircraft Operating Co. Ltd. is to be congratulated on having made a contract with the Government of Northern Rhodesia for an air survey covering an area of 63,000 square miles in that Colony.

This stroke of business is directly connected with the recent Colonial Development Act and the Hilton Young Commission, which Commission, in discussing the future of East Africa, insisted on the need for a thorough survey of the topographical resources of any colony before any large schemes were embarked on. The Colonial Development Act authorises work of Empire value to be undertaken with the aid of loans from the British Government spread over a number of years.

Mr. J. H. Thomas, as Minister for Employment, lately made a public reference to the possibilities of air survey as a means of helping Empire development and settlement. On the strength of this Major Hemming, the Managing-Director of the Aircraft Operating Co., with the support of the Governor of Northern Rhodesia, laid before the British Government details of an air survey of a large portion of of Northern Rhodesia which is regarded as a potentially rich copper and mining area.

This scheme was examined by a special committee appointed to examine schemes put forward under the Act and it has now received the requisite Treasury approval.

A specially low quotation was made by the company which, on its experience in air survey, is fully convinced that the key to rapid development of large tracts of the Empire lies first in a general survey from the air. The low quotation was further aided by the fact that the company has now acquired a special type of aircraft—the Gloster Survey biplane—designed to meet its own exacting requirements.

This machine with its high performance, ability to fly on one of its two engines and its very complete photographic equipment should enable the company to do the work at its maximum efficiency. The new Eagle automatic camera and the special photographic equipment developed largely as the result of past experience will further enhance the accuracy of the work and at the same time lead to economy.

The survey will begin next April and in addition to the main area of 63,000 square miles the company will also make aerial plans of the townships of Nkana, Ndola, Nchanga, Luanshya, Mufukira, and Mpika, which additional work will cover an area of 150 square miles.

The Aircraft Operating Co. has already completed a survey in Northern Rhodesia covering an area of 11,000 sq. miles and the new territory to be covered will extend eastward from the earlier survey towards the borders of Portuguese East Africa.

FLYING-BOATS.

In the House of Commons on Dec. 4, Sir G. Dalrymple White asked the Under-Secretary of State for Air whether seeing that Italy had lately ordered three Do.X. flying-boats from Germany, he would say whether it was the intention of the Government to secure one at least of these flying-boats for this country or to build an experimental boat on similar lines here.

Mr. Montague said that the reply to the first part of the question was in the affirmative, but that the Government experimental programme included new types of flying-boats of approximately the same horse-power as the Do.X.

A WARNING ABOUT STREAMERS.

Ground Engineers are warned by Air Ministry Notice No. 24 of this year that the attachment of banners and streamers for advertising or other purposes to aircraft is considered as a modification which affects the safety of the aircraft.

No such banner shall be fitted until approval has been given as required by Paragraph 35 of the Air Navigation Directions 1928 (A.N.D. 7).

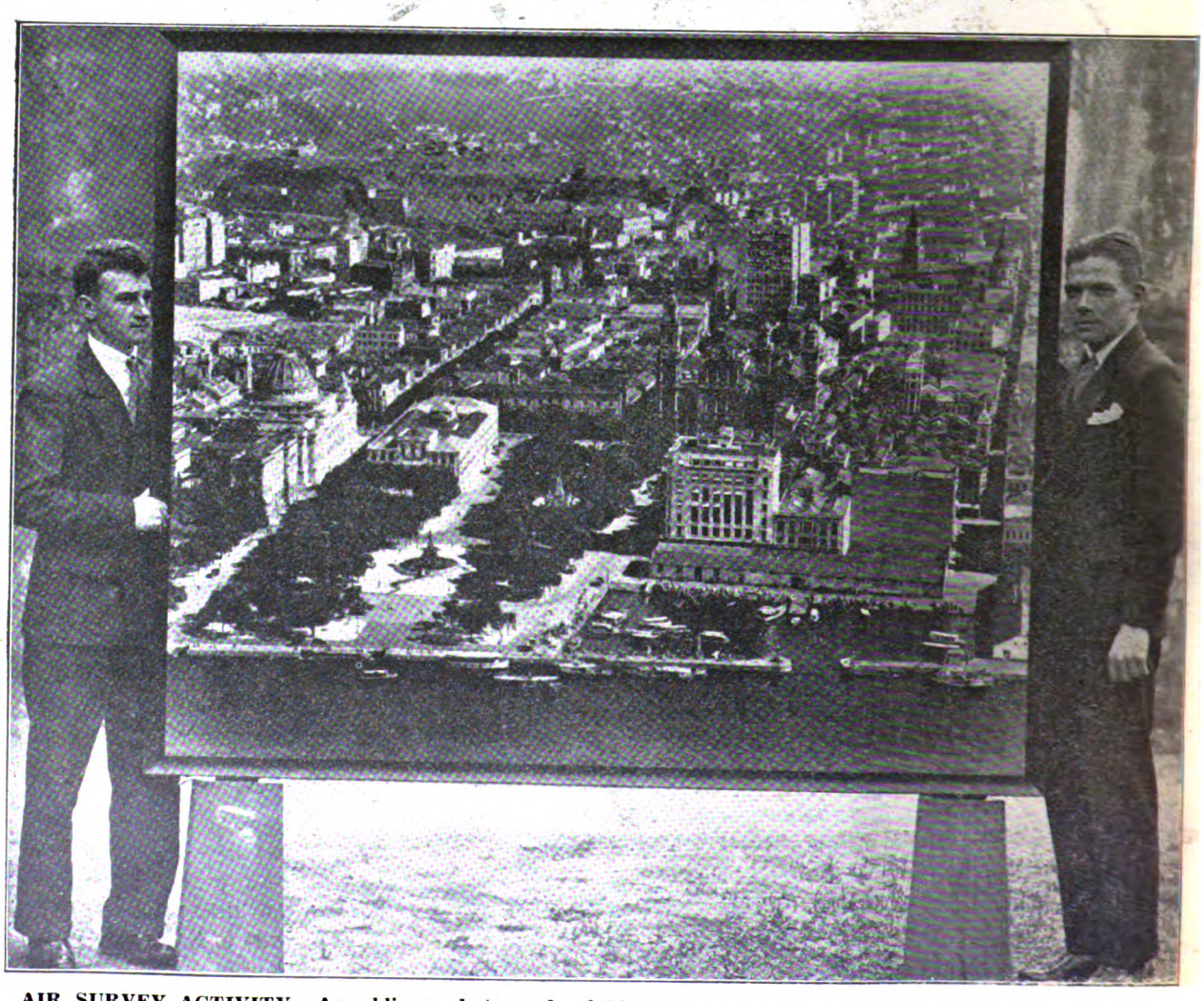
AN ALTERATION OF DATE TO BE NOTED.

Owing to urgent circumstances Sir Philip Sassoon has been obliged to change the date of his lecture on "The Third Route" from Saturday, Dec. 14, to Friday, Dec. 20.

The date may actually be more opportune, because people who had arranged to go away for the week-end will now be able to go to the lecture on a week-day. Also a good many young people may be by then down from the Universities or home from school and so may be enabled to go.

Readers should remember that the proceeds of the lecture go to the Royal Northern Hospital, so that besides pleasing themselves they will be helping a good object.

Tickets, price 8s. 6d., 5s. 9d., and 2s. 4d., may be had from the Secretary, 25, Park Lane, London, W.1.



AIR SURVEY ACTIVITY.—An oblique photograph of Rio de Janeiro, made by the Aircraft Operating Co. Ltd.

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On Saturday, December 7th, gale warnings were issued and, in consequence, all air lines from England to the Continent suspended operations and cross-channel boat services were withdrawn.

A party of four persons had to cross the channel at all costs on that day. Two were private owners of Gipsy Moths and, unpleasant as conditions were, it was decided to fly over. In spite of an adverse 60 m.p.h. gale, terrific bumps and blinding rain, both machines landed successfully at St. Inglevert.

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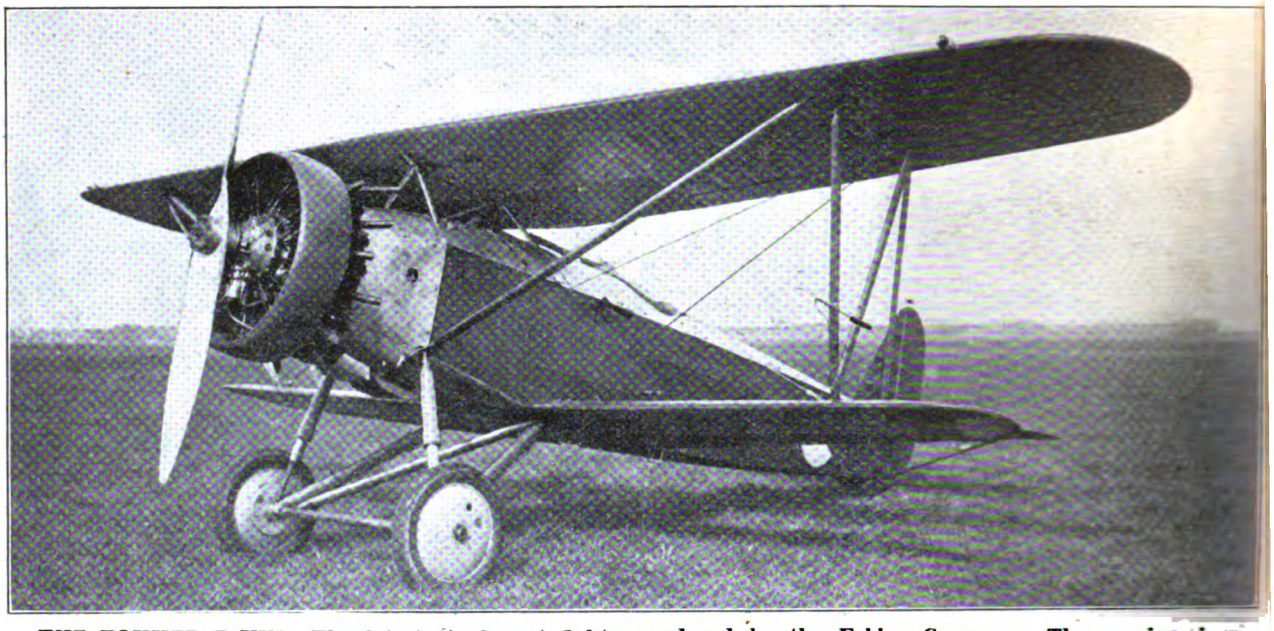
TWO NEW SINGLE-SEAT FIGHTERS.



THE FOKKER D-XVI.—The latest single-seat fighter produced by the Fokker Company. The engine is a supercharged Armstrong Siddeley Jaguar with the Townend cowling-ring.

Hereafter follow descriptions of two very recent single-seat fighters of foreign origin, both with Armstrong Siddeley Jaguar engines.

The Fokker D-XVI is the product of the N. V. Nederlandsche Vliegtuigenfabriek of Amsterdam and the Svenska Jaktfalk has been designed and built by the Svenska Aero A.B. of Stockholm. The machines bear a striking resemblance.

The Fokker D-XVI is interesting in that it departs from the familiar Fokker cantilever wing principle. The wings are braced with rigid bracing-struts as well as cross-bracing wires. Another departure from Fokker practice is oleo springing for the undercarriage.

TYPE.—Single-seat fighter sesquiplane.

WINGS.—Unequal span staggered single-bay sesquiplane. Top wing in one piece carried above fuselage on inverted Vee cabane. Bottom wings, with slight dihedral, attached to bottom longerons of fuselage. One set of "N" type interplane struts on either side of fuselage. One rigid bracing strut from front spar to bottom longeron of fuselage on each side. Wing bays cross-braced with streamline wires. Structure of wood covered partly with plywood and partly with fabric. Narrow chord ailerons on top plane only.

FUSELAGE.—Welded steel tube rectangular structure covered on sides and bottom with fabric and on top with quickly-removable sheet aluminium panels.

TAIL UNIT.—Monoplane type. Welded steel tube framework covered with fabric. Unbalanced surfaces.

UNDERCARRIAGE.—Cross-axle Vee type. Front legs have oleo springing. One diagonal bracing strut between rear legs of Vees. Wheel brakes fitted. Steerable tail skid fitted if desired.

POWER PLANT.—One Armstrong Siddeley Jaguar series B supercharged air-cooled radial engine. Any other air-cooled engine of similar power such as Jupiter, Wasp, Hornet, etc., may be installed. One oval aluminium fuel tank with "Semape" fire-proof cover in behind fire-proof bulkhead with feed by two A.M. pumps to engine. Fuel capacity 71 Imp. gals (320 litres). Oil tank with cooler below and in rear of engine.

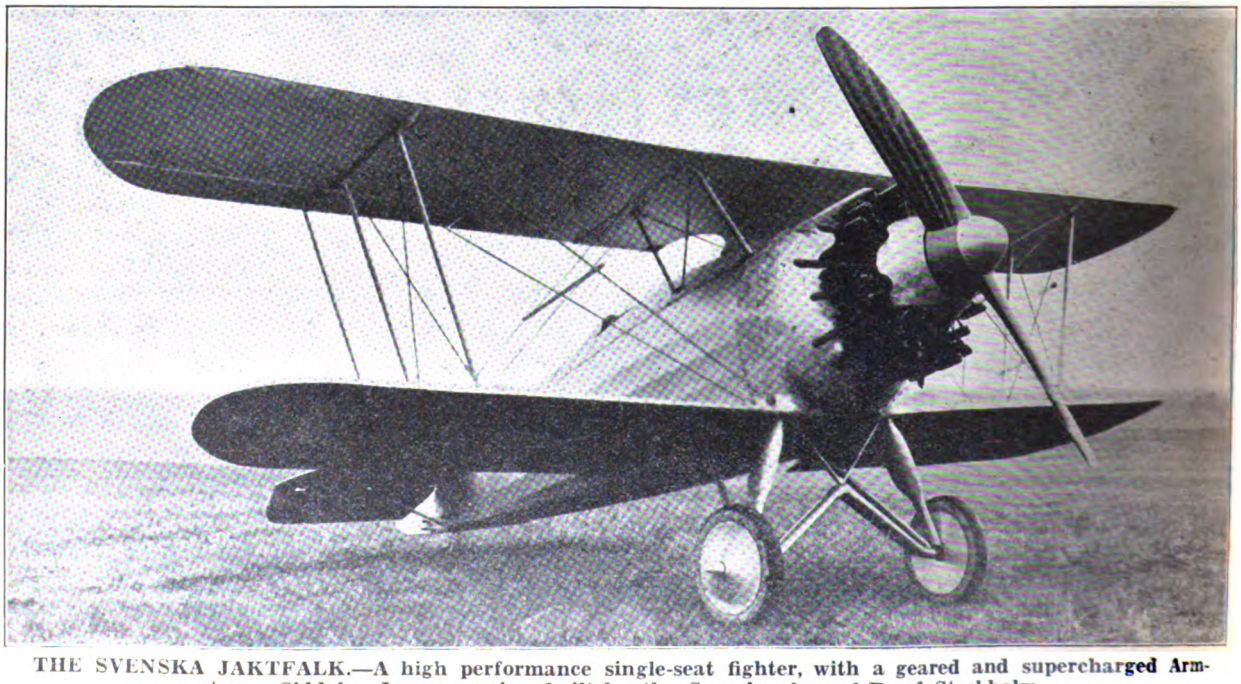
ACCOMMODATION.—Pilot's cockpit aft of trailing edge of wing.

DIMENSIONS.—Span 14.4 m. (47 ft. 4 in.), Length 7.3 m. (24 ft.) Height 2.7 m. (8 ft. 10 in), Wing area 18.5 sq m. (199 sq. ft.)

WEIGHTS AND LOADINGS.—Weight empty 920 kgs. (2,024 lbs.), Pilot 85 kgs. (187 lbs.), Fuel and oil 240 kgs. (528 lbs.), Military equipment 145 kgs. (319 lbs.), Weight loaded 1,390 kgs. (3,058 lbs.), Wing loading 75 kgs./sq. m. (15.3 lbs./sq. ft.), Power loading 3.5 kgs./h.p. (7.7 lbs./h.p.).

PERFORMANCE.—No data available.

The Svenska Jaktfalk is the first original single-seat fighter design from the Svenska works. This company builds aircraft under licence from the German Heinkel company, but during the last few years it has produced several aircraft of its own design. Their first aircraft was the Pirat, a two-seat convertible land- or sea-plane designed as an interchangeable advanced training or fighting aircraft. For training it is fitted with the 200 h.p. Armstrong Siddeley Lynx engine and as a fighter it has the 425 h.p. Armstrong Siddeley Jaguar engine.



THE SVENSKA JAKTFALK.—A high performance single-seat fighter, with a geared and supercharged Armstrong Siddeley Jaguar engine, built by the Svenska Aero A.B. of Stockholm.

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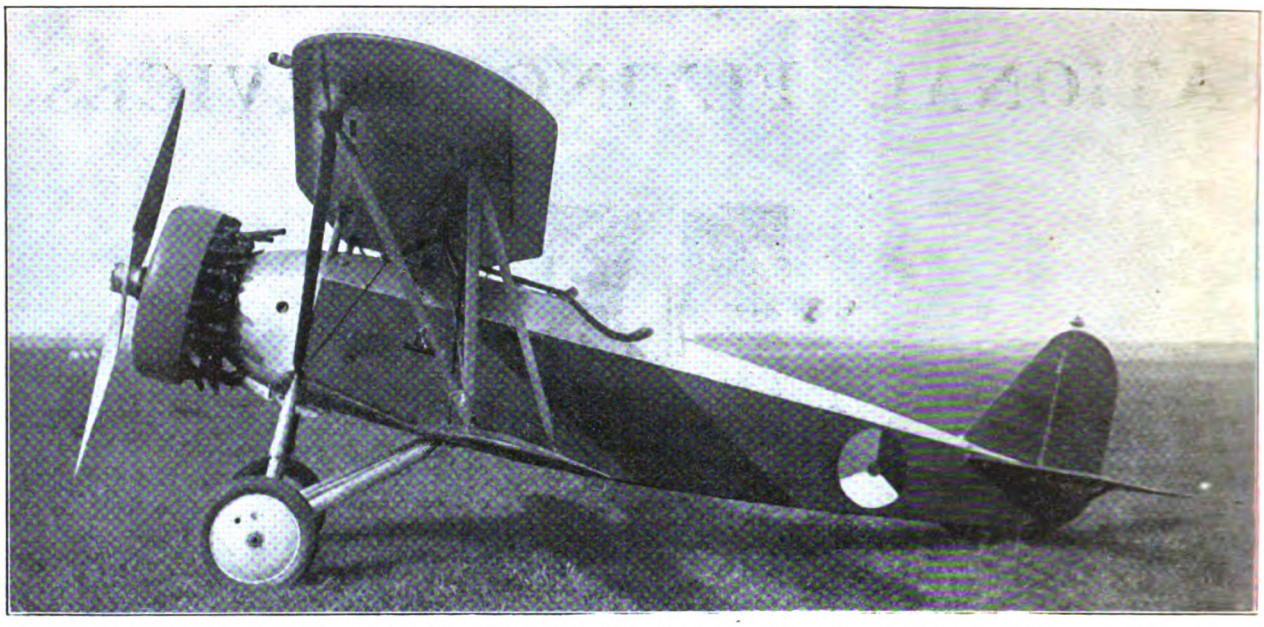


THE FOKKER D-XVI.—A side view of the latest Fokker military product.

Their second aircraft was the Falken, a two-seat land-plane designed as an interchangeable primary or advanced training biplane with either the 135 h.p. Armstrong Siddeley Mongoose or the 230 h.p. Armstrong Siddeley Lynx engine.

Their third original product is the Jaktfalk, which is illustrated and described herewith.

All these aircraft are built of high grade Swedish steels and timber.

TYPE.—Single-seat fighter biplane.

WINGS.—Unequal span, staggered single-bay biplane. Centre-section carried on splayed-out steel tube struts with one pair of parallel interplane struts on either side of the fuselage. Wing structure consists of two rectangular steel tube spars with either wood or steel ribs, the whole being covered with fabric. Narrow chord ailerons on all four planes.

FUSELAGE.—Rectangular structure of welded steel tube faired to an oval section and covered with fabric.

TAIL UNIT.—Normal monoplane type. Steel-tube framework covered with fabric. All surfaces unbalanced.

UNDERCARRIAGE.—Split type. Consists of two side Vees, the front legs of which incorporate oleo spring, with two bent half-axles hinged to a steel-tube Vee under the fuselage.

POWER PLANT.—One 500 h.p. Armstrong Siddeley supercharged and geared Jaguar engine. Main fuel tanks in the fuselage.

ACCOMMODATION.—Pilot's cockpit behind trailing-edge of wings. Armament consists of two fixed guns in the top cowling and firing through the airscrew.

DIMENSIONS.—Span 9 m. (29 ft. 8 in.), Length 7.1 m. (23 ft. 5 in.), Height 3.46 m. (11 ft. 4 in.), Wing area 22 sq. m. (237 sq. ft.).

WEIGHTS AND LOADINGS.—Weight empty 875 kgs. (1,921 lbs.), Disposable load 500 kgs. (1,100 lbs.), Weight loaded 1,375 kgs. (3,025 lbs.), Wing loading 62 kgs./sq. m. (12.7 lbs./sq. ft.), Power loading 3 kgs./h.p. (6.6 lbs./h.p.).

PERFORMANCE.—Speed at 4,000 m. (13,120 ft.) 320 km.p.h. (196.7 m.p.h.), Landing speed 90 km.p.h (55.8 m.p.h.), Climb to 5,000 m. (16,404 ft.) 9 min., Ceiling 9,500 m. (31,160 ft.).

THE CLERGET DIESEL ENGINE.

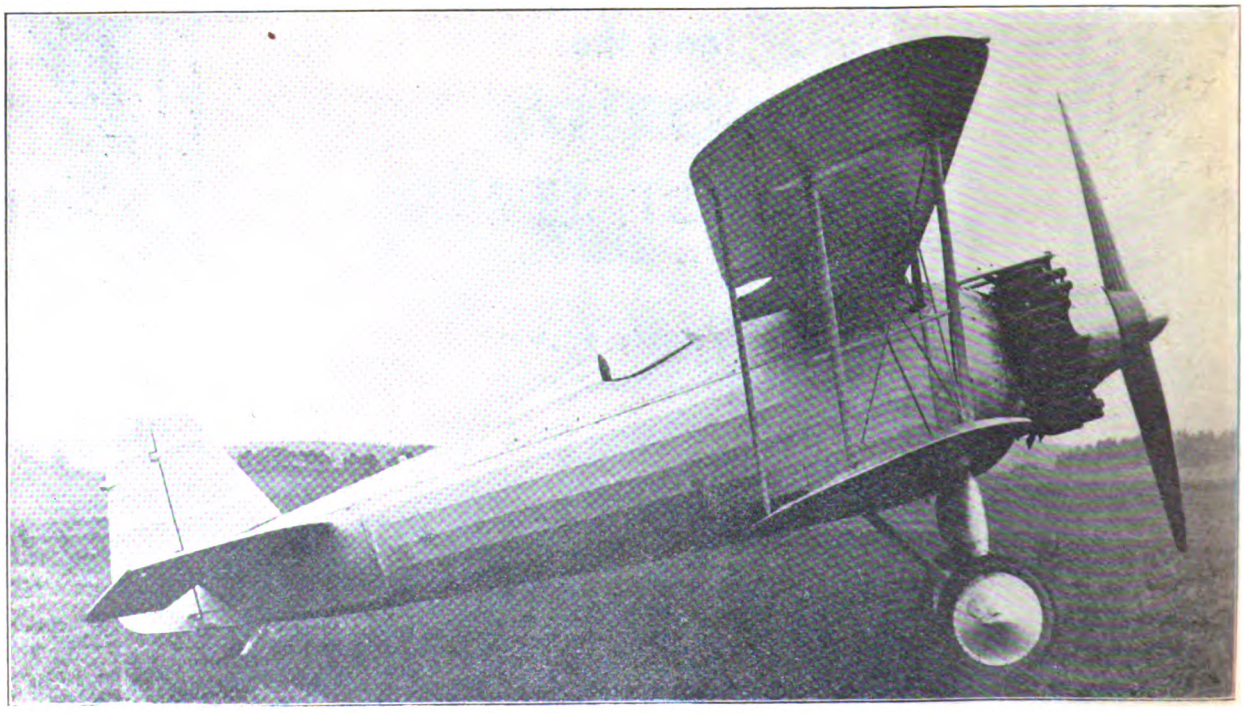
Through the courtesy of *L'Aéronautique*, the monthly French technical publication, further details of the new Clerget Diesel engine are now available.

As reported in THE AEROPLANE of Oct. 9, a Morane-Saulnier 120 with the new engine was demonstrated before M. Laurent-Eynac at Villacoublay on Sept. 30.

The new Diesel is a nine-cylinder air-cooled radial and outwardly resembles the famous rotary engines of the same name. A four-stroke constant volume cycle is employed. The cylinders are of steel with separate aluminium heads.

There are two valves per cylinder, one an air inlet and the other an exhaust valve. The injection mechanism is placed in the middle of the cylinder head. It comprises an atomising device. The pumps appear to be located at the back of the engine.

The weight per h.p. is stated to be about 2 kgs. (4½ lbs.).



THE SVENSKA JAKTFALK.—A side view of the single-seat fighter produced by the Svenska Aero A.B. of Stockholm.

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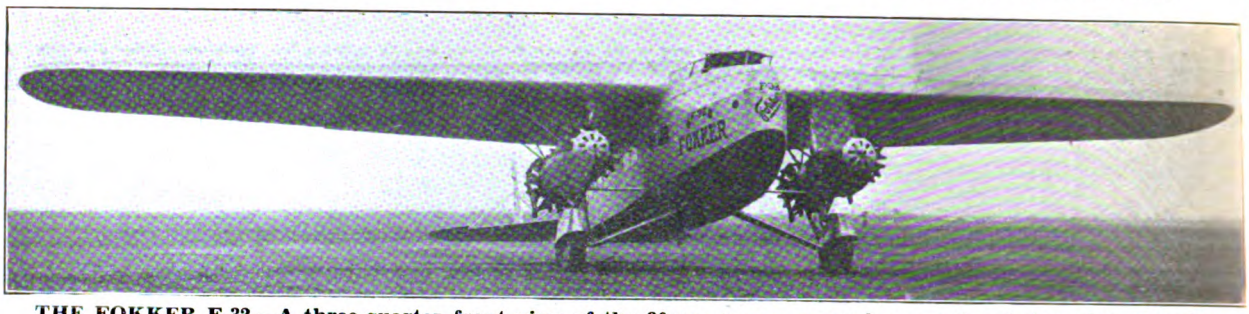
THE TWO LATEST AMERICAN FOKKER MONOPLANES.



THE FOKKER F-32.—A three-quarter front view of the 30-passenger monoplane produced by the American Fokker Company.

The Fokker Aircraft Corporation has recently produced two new types of aircraft, the F-32 four-engined thirty-two seat monoplane, and the F-14 single-engined mailplane.

The first F-32 has flown successfully, but this machine has been destroyed by fire after a crash during a test flight. A second machine is approaching completion, and preparations are being made to lay down five more to fill an order from Western Air Express. These are to be used on a service between San Francisco and Los Angeles.

It is further reported that five have been ordered by the Universal Aviation Corporation for use on its trans-Continental services.

The F-32 follows Fokker practice very largely, but the provision of four engines, together with their disposition in tandem pairs on either side of the fuselage below the wings, has produced new designs for engine mountings, undercarriage and tail unit. Nevertheless, even to the most unpractised eye, there could be no doubt about its ancestry.

The accommodation of the F-32 provides for the carriage of 30 passengers in four compartments, but it can also be supplied as a sleeper, for night-flying, with the cabin transformed into eight sections accommodating sixteen berths, eight upper and eight lower.

SPECIFICATION.

TYPE.—Four-engined commercial transport monoplane.

WING.—Cantilever monoplane tapering in chord and thickness mounted directly on top of the fuselage. Wing in two sections with joint on centre-line. Built-up of two tapered box-spars and plywood ribs, the whole covered with plywood. Maximum depth of spars at centre 44 in. "Frise" type ailerons.

FUSELAGE.—Rectangular welded mild carbon steel tube structure covered with fabric. Cabin floor, corrugated duralumin sheet and plywood, supported by rivetted aluminium transverse girders. Internal bracing of cabin section arranged to leave clear a central aisle.

TAIL UNIT.—Monoplane type with twin rudders mounted above tailplane. Frame, steel tube held by pyramidal bracing to fuselage. Balanced elevators and rudders.

UNDERCARRIAGE.—Divided type. Each unit on oleo leg attached to middle of side engine nacelle with built-up girder radius-rod running aft to nacelle at a point just ahead of rear engine.

Wheel axle of 4 in. tube, hinged to underside of fuselage at a point midway between the longeron and centre-line. Universal joints of inner end of axle and top end of radius rod are ball and socket type.

Bendix wheels and wheel brakes fitted. Tyres 58 in. by 14 in. Wheel brake drum size, 20 in. by 2 in. Wheels on Timken roller bearings.

Tail-wheel mounted on special welded steel tube fork with normal rotation of 30 degrees. An automatic release actuated by a sudden abnormal side-load permits complete rotation in emergency. A hand release is provided when complete rotation is desired for handling by ground crew.

Main wheels and tail wheel provided with fairings of corrugated duralumin carried on a light steel tube structure.

POWER PLANT.—Four 525 h.p. Pratt and Whitney Hornet air-cooled radial engines mounted in tandem pairs one on each side of fuselage below wing. Engine mountings of welded steel tube suspended from wing spars by triangulated system of steel tube. Main fuel tanks in wings above engine nacelles. Double oil tank between engines. Front engines have two-bladed and rear engines three-bladed Standard Steel airscrews. Electric inertia starter with engine-driven generator on each front engine.

ACCOMMODATION.—Enclosed pilot's cockpit seating two side-by-side with dual control in front of wing. Baggage compartment below and in front of pilot's cockpit with capacity of 100 cub. ft. Baggage compartment also below pilot's cockpit. Behind cockpit is forward passenger compartment 6 ft. long by 5 ft. 9 in. wide by 7 ft. 7 in. high. Second compartment 6 ft. 11 in. long by 8 ft. 1[illegible] in. wide by 7 ft. 5 in. high. Thereafter follow two pantries or galleys one on each side of a passage way, which connects with the third passenger compartment, which is 6 ft. 8 in. long by 8 ft. 7 in. wide by 8 ft. 1 in. high. The fourth compartment is 6 ft. 8 in. long by 8 ft. 3 in. wide by 7 ft. 8¼ in. high.

Behind this last compartment is the entrance lobby with two doors, one on either side of the fuselage. Behind this lobby are two lavatories.

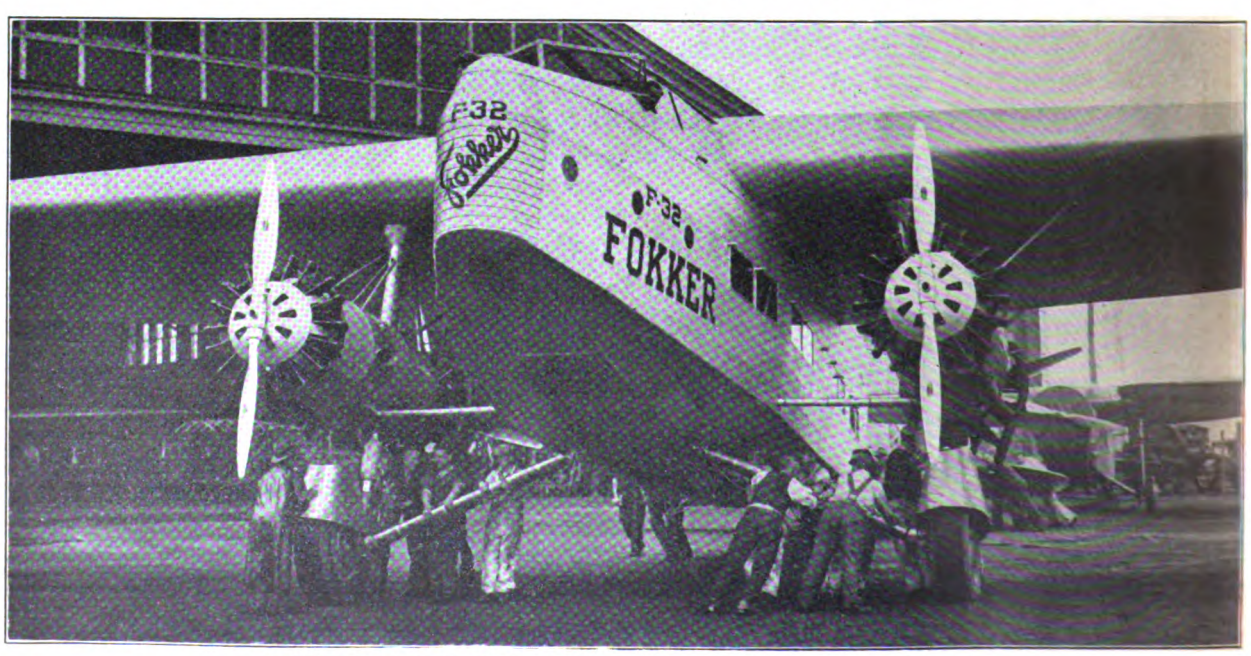
For day flying passengers are seated in pairs on each side of a central passage-way. Cabin heating from the exhaust, ventilation by special adjustable ventilators and cabin cockpit navigation and landing lighting are fitted. Pressure fire-extinguishers and landing flares can be installed.

DIMENSIONS.—Span 99 ft. (30.17 m.). Length 69 ft. 10 in. (21.28 m.). Height 16 ft. 6 in. (5.03 m.). Wing area 1,350 sq. ft. (125 sq. m.).

WEIGHTS AND LOADINGS.—Weight empty 14,200 lbs. (6,350 kgs.). Crew 340 lbs. (154 kgs.). Fuel and oil 2,700 lbs. (1,225 kgs.). Pay load 5,260 lbs. (2,380 kgs.). Weight loaded 22,500 lbs. (10,200 kgs.). Wing loading 17.92 lbs./sq. ft. (87.5 kgs./sq. m.). Power loading 10.73 lbs./h.p. (4.87 kgs./h.p.).

No official performance figures are yet available, but in test flights by Lieut. Johnson, of the U.S. Air Corps Test Branch, at Wright Field, Dayton, Ohio, it was claimed that a top speed of 157 m.p.h. (253 km.hr.), with a cruising speed of 120-125 m.p.h. (193-200 km.hr.) and a landing speed of 47 m.p.h. (75.6 km.hr.) was made. What load was carried is not known.

The F-32 was designed to have a top speed of 140 m.p.h. (225 km.hr.), a cruising speed of 120 m.p.h. (193 km.hr.), and a landing speed of 60 m.p.h. (96.6 km.hr.).



MOVING THE GIANT.—Man-handling the Fokker F-32 monoplane.

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THE FOKKER F-14.—The latest version of the Fokker Super-Universal (Pratt and Whitney Hornet engine).

Various claims, which have the air of being highly imaginative, have been made for this machine. One says that with two-thirds load it would hold its flying speed and even *climb* on *one* engine.

Out of respect for what appears to be a very fine product of a company which should be well versed in the requirements of commercial aviation all further claims as to its performance will be ignored until officially-observed figures are issued.

The Fokker F-14.

The Fokker F-14 has been produced as a high-speed mail-carrying monoplane and is a modification of the Fokker Super-Universal. It differs from that type in that the monoplane wing has been raised above the fuselage on short struts, the pilot's cockpit has been moved from the front to aft of the cabin and it may be fitted with either a 525 h.p. Pratt and Whitney Hornet or a Wright Cyclone.

An order for six F-14's has been received from Western Air Express, and a further order for ten has been received from Western Canada Airways.

Although designed primarily for mail transportation without seats, the cabin may be fitted with six comfortable seats. It has a maximum pay load of one ton. Preliminary tests show the F-14 to have a maximum speed of 140 m.p.h. (225 km.hr.), a cruising speed of 115 m.p.h. (185 km.hr.), and a landing speed of 55 m.p.h. (88.5 km.hr.). The initial rate of climb is 1,200 feet (about 350 m.) per min., the service ceiling is 18,000 ft. (about 5,500 m.), and the cruising range of 800 miles (about 1,300 km.).

THE LATEST PRATT AND WHITNEY ENGINE.

The Pratt and Whitney Aircraft Co. of Hartford, Connecticut, has produced a 300 h.p. nine-cylinder radial air-cooled engine to be known as the Wasp Junior.

The new engine incorporates all the features of the same company's Wasp and Hornet engines, and by standardisation of design 80 per cent. of the parts of the Wasp Junior are interchangeable with those of the Wasp and Hornet.

The Wasp Junior uses so many of the standard parts of an already well-tried engine, that none of the difficulties usually encountered with the production of a new engine type were experienced by the company, and extensive preliminary tests have been very satisfactory.

It is an interesting fact that the use of Wasp parts has not made the Junior unduly heavy for its performance. The standard Wasp rear crankcase section is used, so that either engine may be mounted on the same engine-bearers.

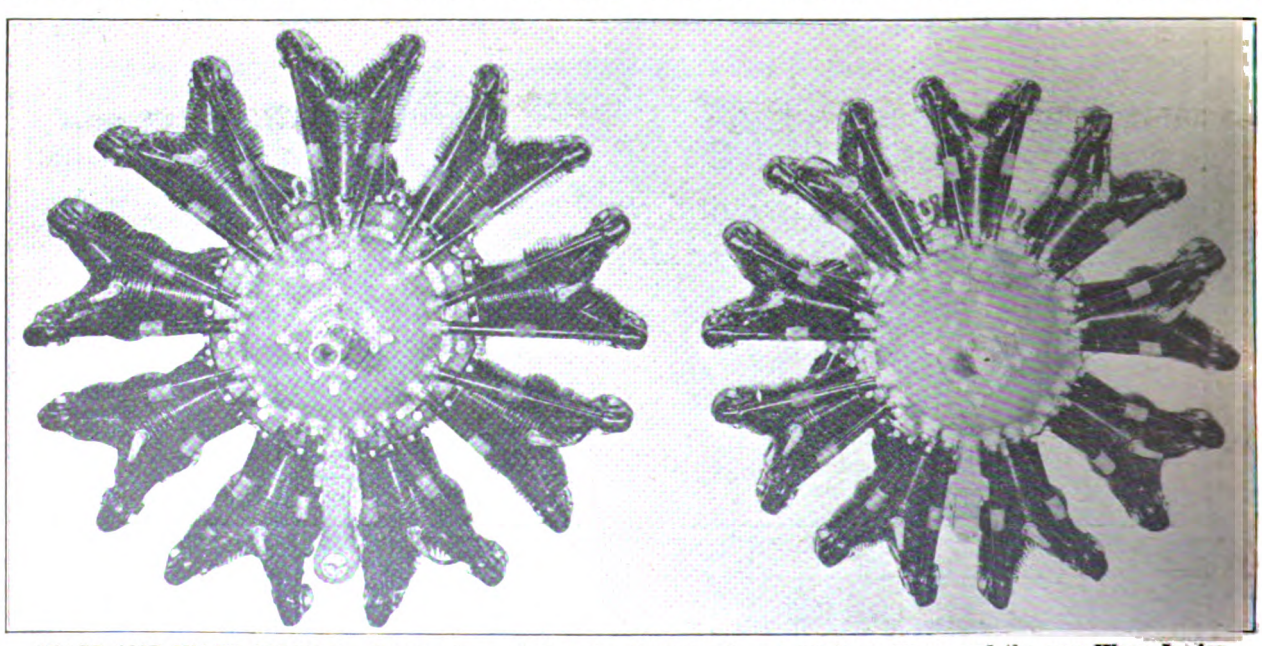
As with the Wasp and Hornet, the Wasp Junior may be supplied with or without an airscrew reduction gear.

In order to provide a comparison, the specifications of both the 450 h.p. Wasp Series "C" and the 300 h.p. Wasp Junior are given below:—

	WASP JUNIOR	WASP SERIES "C."
Bore	5 3/16 ins.	5 3/8 ins
Stroke:	5 3/16 ins.	5 3/8 ins.
Weight (direct drive):	550 lbs.	690 lbs.
Output:	300 H.P. at 2,000 r.p.m.	450 H.P. at 2,100 r.p.m.
Fuel consumption:	0.55 lbs. per H.P./hr.	0.55 lbs. per H.P./hr.
Oil consumption:	0.025 lbs. per H.P./hr.	0.035 lbs. per H.P./hr
Overall length:	41 3/32 ins.	42 9/16 ins.
Overall diameter:	45 3/4 ins.	51 1/2 ins
Weight per H.P.:	1.83 lbs.	1.53 lbs.

During 1929 the Pratt and Whitney Aircraft Company has produced an average of 200 Wasp and Hornet engines a month, as compared with 65 engines a month in 1928.

The total mileage of Pratt and Whitney engines flown daily on regularly operated transport lines carrying passengers, mail, and express, approximates 68,000 miles. This is an interesting figure when it is realised that only 91,000 miles are scheduled to be flown daily by regular operators.



WASP AND WASP JUNIOR.—Front views of the standard Pratt and Whitney Wasp and the new Wasp Junior. The Wasp has a commercial rating of 420 h.p. at 2,000 r.p.m. and weighs 775 lbs. The Wasp Junior has a commercial rating of 300 h.p. at 2,000 r.p.m. and weighs 550 lbs.

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THE ALBERT A.20.

One of the results of M. Laurent Eynac's reorganisation f the French Aircraft Industry has been the ordering of pecial multi-engined aircraft from various firms. These nachines are intended in the first place for service on air nail routes and also for passenger carrying.

One of the first of these to be produced is the twin-ngined Albert A.20 monoplane, which has been designed nd built by Avions Albert, Rue du Petit-Drancy, Drancy Seine). No performance figures are yet available, but re-orts in the French technical press state the trial flights ıave been very satisfactory.

YPE.—Twin-engined postal monoplane.

/ING.—High wing cantilever monoplane. The wing section is bicon-vex but not symmetrical. The wing tapers in chord and thickness to the wing tips. The decrease in thickness is all on the top of the wing, the underside remaining quite level. The wing has a multiple spar structure. These spars are of the box type with spruce flanges and plywood webs. The wing is entirely covered with plywood of varying thickness. The ailerons are of high aspect-ratio and unbalanced. They extend from the fuselage almost to the wing tips and are operated by push-pull tubes.

'USELAGE.—Square section with blunt nose and tapering to vertical edge at fin-post. Four longerons and usual struts, the whole covered with plywood. Specially strengthened frames at attachments for wing and undercarriage.

'AIL UNIT.—Normal monoplane type. Adjustable tail-plane let into the fuselage. The one-piece elevator passes across the end of the fuselage aft of the fin-post. Elevator controls of the rigid type. Vertical fin is fixed. Rudder controls are double cables. Neither the rudder or elevator are balanced. The whole tail unit is built of wood, including the covering.

JNDERCARRIAGE.—Divided type with wide track 3.18 m. (10 ft. 5½ in.). Each half consists of a Vee hinged to the lower fuselage longeron with a long spring strut to the upper longeron. The shock absorber is of the Messier oleo-pneumatic type. Wheel brakes are fitted. The tail-skid is a double leaf-spring.

POWER PLANT.—Two 60 h.p. Walter five-cylinder radial engines are mounted in nacelles projecting slightly below and forward of the wing, one on each side of the fuselage. Sufficient fuel for 900 kms. (560 miles) is carried in the wings. The oil tanks are behind the engines. The nacelles are covered with detachable aluminium panels. Each has starters and fire-extinguishers.

ACCOMMODATION.—Pilot's cockpit completely enclosed beneath leading edge of wing. Two side-by-side seats. The side panels of the wind-screen can be opened. Behind the pilot is a small cabin for freight or two passengers. Window on port side, door on starboard.

DIMENSIONS.—Span 15 m. (49 ft. 2½ in.), Maximum chord 2.10 m. (6 ft. 11 in.), Length 8.97 m. (29 ft. 5 in.), Height 2.90 m. (9 ft. 6½ in.), Wing area 25 sq. m. (269 sq. ft.).

WEIGHTS AND LOADINGS.—Weight empty 835 kgs. (1,844 lbs.), Disposable load 420 kgs. (926 lbs.), Weight loaded 1,255 kgs. (2,770 lbs.), Wing loading 50 kgs./sq. m. (10.25 lbs./sq. ft.), Power loading 10.45 kgs./h.p. (23.1 lbs./h.p.).

PERFORMANCE. (Estimated).—Speed, maximum, 175 km.hr. (109 m.p.h.), Speed, landing, 70 km.hr. (43.5 m.p.h.), Ceiling 5,000 m. (16,800 ft.), Range 900 kms. (560 miles).

IBIS AIRCRAFT.

For some time the fact that Sq. Ldr. Bert Hinkler, with the assistance of Mr. R. H. Bound, late of A. V. Roe and Co. Ltd. and the Hampshire Aeroplane Club, was building an aeroplane of his own conception and design somewhere in the purlieus of Southampton has been an open secret.

This little conspiracy is at present known as Ibis Aircraft of Hamble, Southampton.

The machine now being built will be a two-seat cabin amphibian to be known as the Ibis. An appropriate name, seeing that the Sacred Ibis is a bird which frequents water and that *ibis* means "thou goest."

It has been designed by Sq. Ldr. Hinkler from experience gained in his numerous big flights all over the World in light aeroplanes. And the Ibis is intended to overcome the limitations of the existing types of light landplane for variegated touring. The designers intend that it shall be able to go anywhere without causing the pilot any anxiety about the possibility of forced landings or of having to find an aerodrome at the end of a day's flying.

It will be a thick-wing cantilever monoplane the wing of which will incorporate the rigid internal bracing developed and patented by Mr. Basil Henderson of the Hendy Aircraft Co. Ltd. of Shoreham, Sussex. This construction was first described in THE AEROPLANE of Nov. 27.

The hull will have an enclosed cabin for two, with side-by-side seating ahead of the wing, which will give an unobstructed view in practically all directions. The cabin has been designed to provide the same comfort that one expects in the best saloon automobile, and it will be noteworthy for the absence of the usual control shafts and levers which complicate the existing type of cockpit.

No petrol will be carried in the hull, so the occupants may smoke with safety. And a remarkable amount of luggage space will be provided,—which will allow of really bulky baggage being stowed away with ease.

Two 40 h.p. Salmson AD-9 air-cooled radial engines in tandem will be fitted above the wing, and the arrangement of the power-plant ensures that the engines will run under ideal conditions.

The designers claim that the Ibis will fly on one engine, and with both engines running each will be well throttled down to minimise wear and tear, and, in addition, to enable them to function most economically.

The Ibis will have a span of 38 ft., the chord of the wing will vary from 6 ft. 3 in. at the root to 4 ft. ½ in. at the tip, and the total wing area will be 180 sq. ft.

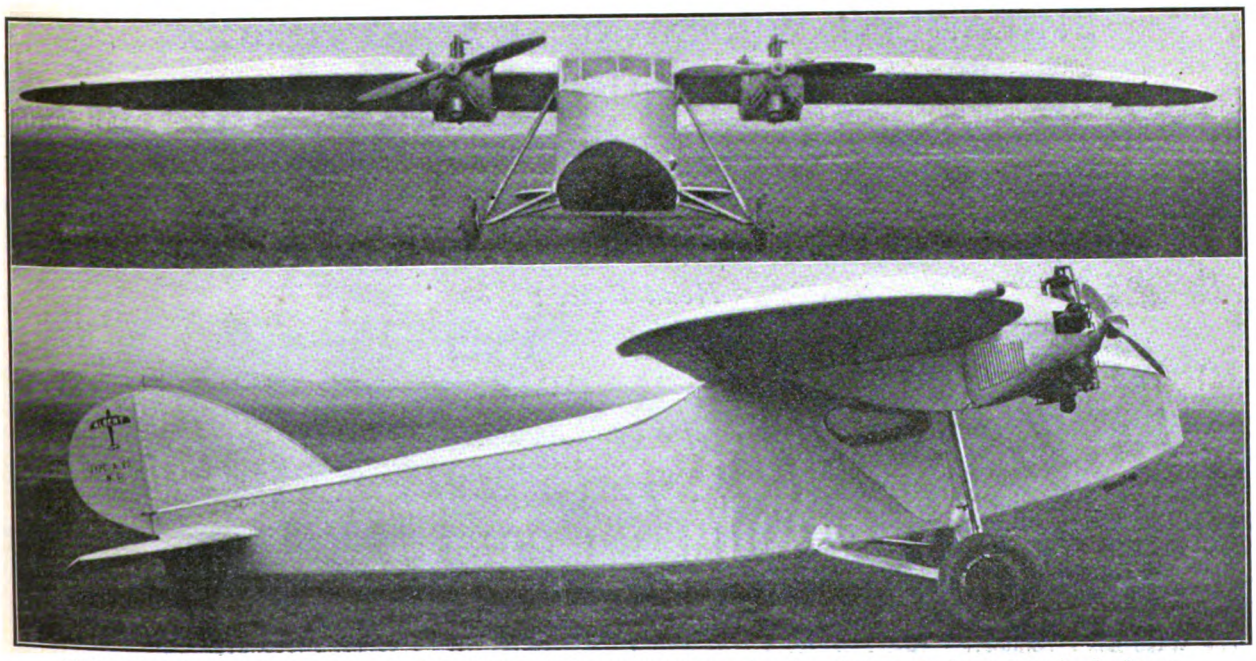
The total weight of the machine will be 1,355 lbs.

The appearance of the Ibis will be awaited with considerable interest.

Sq. Ldr. Hinkler has often expressed a desire to produce a machine to fulfil his own requirements for aerial touring. That the results of his last big flight to Australia, in which he demonstrated the capabilities of the existing type of light aeroplane for really serious long distance flying, should have enabled him to put his theories into practice is highly satisfactory.

A more practical pilot, who is capable of translating his own brilliant ideas into something concrete, would be hard to find anywhere in the World. Any standard type of machine flown by Sq. Ldr. Hinkler for any length of time has always come to be fitted with gadgets of his own conception. His Avian which he flew to Australia was a typical example of this.

Hitherto he has had to be content with the flying of standard type aircraft. But his work with these has given sufficient indication that a machine of his own design should be well worth the consideration of all who are interested in real aerial touring.—L. B.



THE ALBERT A-20.—Front and side views of the new twin-engined postal monoplane described above.

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THE LIGHT AEROPLANE
AND THE FLYING CLUBS.

FRENCH PRIVATE FLYING.

BY A. H. Y. ALI.

Frenchmen will tell you that there is no private flying in France:—"*L'Aviation de Tourisme? Ca n'existe pas.*" Which is nearly true. And the chief reason for this confronts one at the very airport of Paris; for the whole of one side of Le Bourget aerodrome is given over to a military flying depot, the frontage of whose buildings is as great as, if not greater than, that of the civil establishment opposite. What we may call the "Arc de Triomphe" complex, indeed, is hindering their progress in many other matters besides this one of private flying.

In spite of their large Civil Aviation Vote (the figures for 1928 were approximately £1,750,000 as compared with Great Britain's £415,000), they allocate none to the subsidising of Light Aeroplane Clubs, which in general are found to be unable to pay their way without some sort of assistance from the Government. So that, even were there a large demand for the services of such clubs, questions of finance would effectually prevent their flourishing.

But, owing to the conscription system and the *bourseries* for the *Armée de l'Air*, most of the youths who are keen to fly can learn to do so as part of their training, and after their period of service is over can put in a certain number of hours' flying a year at Government expense. Thus there is not the same demand for the light aeroplane and its works as there is amongst the youth of England.

True, in their very handsome "*Annuaire de l'Aéronautique*" one will find quite a long list of "flying clubs": but many of these are little more than an upper room over a barn. Even over here Clubs are not quite unknown where the activities of most of the members are limited to the wearing of a tie. In France the flying man is still regarded as something of a phenomenon: it is therefore regarded as rather *chic* to be one, or nearly one.

Again, the French, as they will all tell you, are not travellers. The idea apparently is that as they have made their country the world's playground it is rather pointless to leave it for any other.

These, then, are some of the reasons underlying the backwardness of France in private flying as compared with Germany and England. Her light aeroplane industry, as one would expect from what has been said before, is not yet out of the experimental stage. The firms that are producing light aeroplanes at all are each responsible for a bewildering number of distinct types, which rapidly give way to new ones.

This, of course, is the way of evolution in every field. It will not be until the public demand is more clearly defined that one will be able to look to each firm for the production of its own particular type of machine.

I visited the works of two of the leading light aeroplane manufacturers—those of Morane-Saulnier at Puteaux and of Caudron at Issy-les-Moulineaux.

The former had no real light aeroplanes in their shops, either completed or under construction. They are occupied practically entirely with military training machines (chiefly high-wing monoplanes of medium power) and single-seater fighters. If you wish to purchase one of their so-called *avions de tourisme* (type 147, high-wing monoplane, engine Salmson 120 h.p.), it will cost you the equivalent of over £1,000. [Since Mr. Ali was in France the Morane firm have undertaken the making of Moths.—ED.]

The Caudron activities are very much more interesting from the point of view of the private flyer. Considering the lack of encouragement for the light aeroplane, their progress and the low cost of their machines are surprising.

At present they make three general types of *avionette*, particulars of which are given below:—

Type C.109. High-wing monoplane.—C.109, Single-seater, 40 h.p. Salmson (approx.), £500; C.117, Two-seater, 65 h.p. Salmson, £570.

Type C.190. Low-wing monoplane.—C.192, Two-seater, 95 h.p. Salmson, £650; C.193, Two-seater, 80 h.p. Renault, £460.

Type C.161. Biplane, with folding wings.—C.161, Two-seater, 65 h.p. Salmson, £540.

The low-wing monoplane is a particularly neat-looking machine with very wide undercarriage, and somewhat reminiscent of the Klemm. It is covered throughout with three-ply: its maximum ground-speed is about 103 m.p.h. It will be interesting to see what success it achieves on the market.

RESPONSIBILITIES AND POSSIBILITIES.

About the only people to cross the Channel on Saturday, when all the steam-boat services and air-line services were cancelled seem to have been four aviators.

On Saturday morning Mr. and Mrs. Alan Butler, in Gipsy-Moth G-AACL, and Mr. and Mrs. Nigel Norman, in Gipsy-Moth, G-AAHI, took off from Lympne and landed at St. Inglevert. Mr. Butler and Mr. Norman had urgent appointments in Paris, and as there were no other means available they chose the way of the air. Presumably, Mrs. Butler and Mrs. Norman went because they were determined, in a very proper spirit, to share the success or disaster of their husbands.

This is one of those performances which leave the serious supporter of aviation mentally sunk. Here you have two men, each with great business responsibilities, taking what seem to be immense risks purely as a matter of sport. So what is one to say about them?

Mr. Butler is the Chairman of the De Havilland Company, and although he is a young man he has a peculiarly active and far-seeing mind. Undoubtedly the De Havilland Company would survive without him. But at the same time Mr. Butler certainly has been very largely responsible, quite apart from his financial backing of the company, for its enterprising and far-sighted policy,—so he could not lightly be spared.

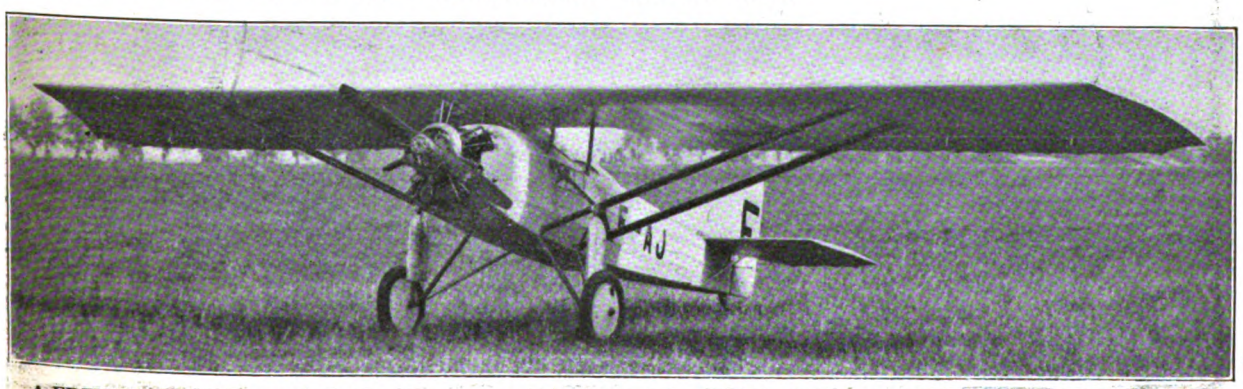
Similarly, Mr. Muntz would probably carry on the Heston Air Park quite ably without Mr. Norman. But Heston and Mr. Muntz without him would be rather like Swan without Edgar or Debenham without Freebody or perhaps Arding without Hobbs.

Therefore the question arises whether men who not only have great responsibilities, but who are brilliant and young and obviously have still greater possibilities, ought to take risks of such a sort no matter how great the results at issue. At any rate, neither of them would have been financially ruined if they had not crossed the Channel on Saturday.

On the other hand, there is no getting away from the fact that their combined flight was a magnificent sporting effort. Sport necessarily entails risk. If there is no risk there is no sport. And a gamble with human life is the greatest of all gambles.

Apart from that, the fact that they alone crossed the Channel on that day is in its way a wonderful advertisement for air transport as such.

Still, on the whole, one's personal feelings are best summed up in the old Cockney phrase, "they hadn't oughter done it."—C. G. G.



A FRENCH LIGHT AEROPLANE.—The Caudron C-117 two-seat monoplane (65 h.p. Salmson engine), which sells in France for £570.

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THE FLYING CLUBS.

In the House of Commons, on December 4, in reply to Mr. Everard, the Under-Secretary of State for Air supplied the following information regarding the subsidised flying clubs. The name of the Club is followed by the year and the amount paid in subsidy for the completed year:—

1. Hampshire, 1927, £3,020; 1928, £1,150; 1929, £2,000.
2. Lancashire, 1927, £1,220; 1928, £1,513 15s.; 1929, £1,655 10s.
3. London, 1927, £1,280; 1928, £1,844 11s.; 1929, £2,000.
4. Midland, 1927, £580; 1928, £955 3s. 6d.; 1929, £1,874 11s.
5. Newcastle-upon-Tyne, 1927, £1,150; 1928, £1,332 12s. 6d.; 1929, £1,273.
6. Yorkshire, 1927, £955; 1928, £814; 1929, £1,184 17s. 6d.
7. Bristol and Wessex, 1928, £916 17s. 6d.; 1929, £1,091 5s.
8. Norfolk and Norwich, 1928, £1,021 15s.; 1929, £788 7s. 6d.
9. Nottingham, 1928, £685 4s.; 1929, £557 5s.
10. Scottish, 1928, £1,587 2s. 6d.; 1929, £774 12s. 6d.
11. Cinque Ports, 1929, £797 12s. 6d..
12. Liverpool and District, 1929, £1,529 12s. 6d.
13. Suffolk and Eastern Counties, 1928, £500.

The Club year for the clubs numbered 1 to 6 ends on July 31, for those numbered 7 to 9 on Oct. 31, for number 10 on Nov. 30, for number 11 on Mar. 31, for number 12 on Aug. 31, and for number 13 on Dec. 31. The clubs numbered 7 to 10 have been in receipt of subsidy for two years only and those numbered 11 to 13 have completed only one year under the subsidy agreement.

Mr. Everard asked the Under-Secretary of State for Air the names of the light aeroplane clubs in existence in this country; and the number of machines in use by each club.

Mr. Montague gave the following list of the light aeroplane clubs and the number of aircraft owned by each club and said that in addition there were aircraft privately owned by members in use at the clubs, but he had no information in regard to their number:

Subsidised Clubs: London, 6; Midland, 3; Lancashire, 4; Yorkshire, 3; Newcastle-upon-Tyne, 3; Hampshire, 4; Bristol and Wessex, 4; Norfolk and Norwich, 3; Nottingham, 2; Scottish, 4; Suffolk and Eastern Counties, 5; Cinque Ports, 3; Liverpool and District, 4.

Unsubsidised Clubs: Northamptonshire, 3; Southern, 1; Leicestershire, 1; Berks, Bucks and Oxon, Nil; Household Brigade Flying Club, 1; Derby and District, Nil; Southport, Nil; Flying Club of Ulster, Nil.

Service Clubs: Halton, 2; Royal Aircraft Establishment (Farnborough), 2; Marine Aircraft Experimental Establishment (Felixstowe), Nil.

In addition, 27 aircraft are shown by the Air Ministry Register to be owned by National Flying Services Limited.

THROTTLE CONTROL.

In the last issue of THE AEROPLANE a reference to Mr. Tuckett's mishap at Alexandria appeared. The accident was ascribed "to some trouble with the throttle control."

So far as is known, nobody has ever had trouble with the throttle control of a Moth, at any rate while flying, for the control mechanism is simple, direct and robust. "Trouble with the throttle control" would not be so very funny in the air, and the average person may justifiably think that if the control can give trouble on the ground, it is equally likely to do so in the air, so this affair needs explaining.

In point of fact, a letter has been received by the De Havilland Co. from Mr. Tuckett explaining exactly what did happen. Mr. Tuckett himself was not concerned, except in an abortive effort to avert disaster. Apparently three mechanics together caused the trouble, each acting unbeknown to the other two. "A" opened the throttle wide and left it there, "B" removed the cap carrying the ignition switch earth-lead from one of the magneto contact-breakers, and "C" obligingly swung the prop. The engine, being a Gipsy, started.

Mr. Tuckett, who was some yards off, courageously leapt for the cockpit, got knocked over backwards onto his head and passed out for a quarter of an hour. After which, one hopes, he addressed the mechanics adequately. If this sort of thing is going to happen the Air Ministry will have to consider issuing a Grade B.F. Certificate for Ground Engineers.

MOTHS IN FRANCE

The French journal *Les Ailes* has been publishing in the form of interviews the experiences of various French private owners.

The last two interviews have been with M. Costa de Beauregard and M. André Jamain, both of whom are owners of Gipsy-Moths.

M. Costa de Beauregard bought a second-hand Cirrus-Moth in 1928 and in August of this year he sold it for very little less than he gave for it and bought a new Gipsy-Moth. He speaks highly of his two mounts, the upkeep of which have cost less than that of an automobile.

M. André Jamain has three aircraft, of which one is a new Gipsy-Moth. Speaking of this machine, M. Jamain said that "it was only necessary for me to buy a Gipsy-Moth in England to understand why that country is the only one that truly indulges in *le tourisme aérien*."

When he was asked whether the Moth fully pleased him, he replied:

"As it pleases everyone who tries it. A small hangar is all that is necessary; I am my own mechanic—if one can say that—as I have never touched anything."

"A spin of the airscrew and one is away. On return one folds the wings and that is all. The machine is ready for the next outing. 850 kilometres' range, 145 km.p.h. cruising speed with a consumption—at this speed—of 20 to 22 litres of petrol and a third of a litre of mineral oil; no mechanical anxiety; absolute cleanliness, an ideal pilotage—always. What a dream!"

A very gracious and unsolicited testimonial.

AUSTRALIAN CLUB ENTERPRISE.

Nine aero clubs have been formed in country districts in New South Wales under the ægis of the Aero Club of New South Wales, which has its headquarters in Sydney. The parent club, which is in a very flourishing condition and must be the biggest flying club in the British Empire, will control the flying activities of these subsidiary clubs.

These clubs are at Goulburn, Newcastle, Crookwell, Ballina, Lismore, Coff's District, Cessnock, Narromine, and Parkes.

The Goulburn Club was formed 18 months ago, has two Gipsy-Moths and 300 members. The president, Mr. F. W. Scholz, presented the first machine to the Club, and three Club-trained pilots have bought their own machines. The instructor is Mr. B. W. Duley, late R.A.F. The Club has its own aerodrome three or four miles from Goulburn, on which there is a shed and petrol supplies.

The Newcastle Club was formed 12 months ago but has been held up in its flying activities owing to the lack of an aerodrome. A landing ground is now being laid out and when it is ready a machine will be bought and instruction will begin.

The Crookwell Aero Club was formed fifteen months ago with the sole idea of maintaining a landing ground. This is now a regular calling place for aircraft passing through the district. The parent club holds a pageant there every year. The membership is between 150 and 200.

The Ballina Aero Club was formed six months ago to maintain the existing landing ground at that place. Arrangements are to be made for training pilots and the erection of a shed later on.

The Lismore Aero Club has a membership of from 100 to 150 and the efforts of the members has resulted in the

ENTERPRISE.—An Avro Avian in Mexico, where Flying Clubs are being formed by the Government.

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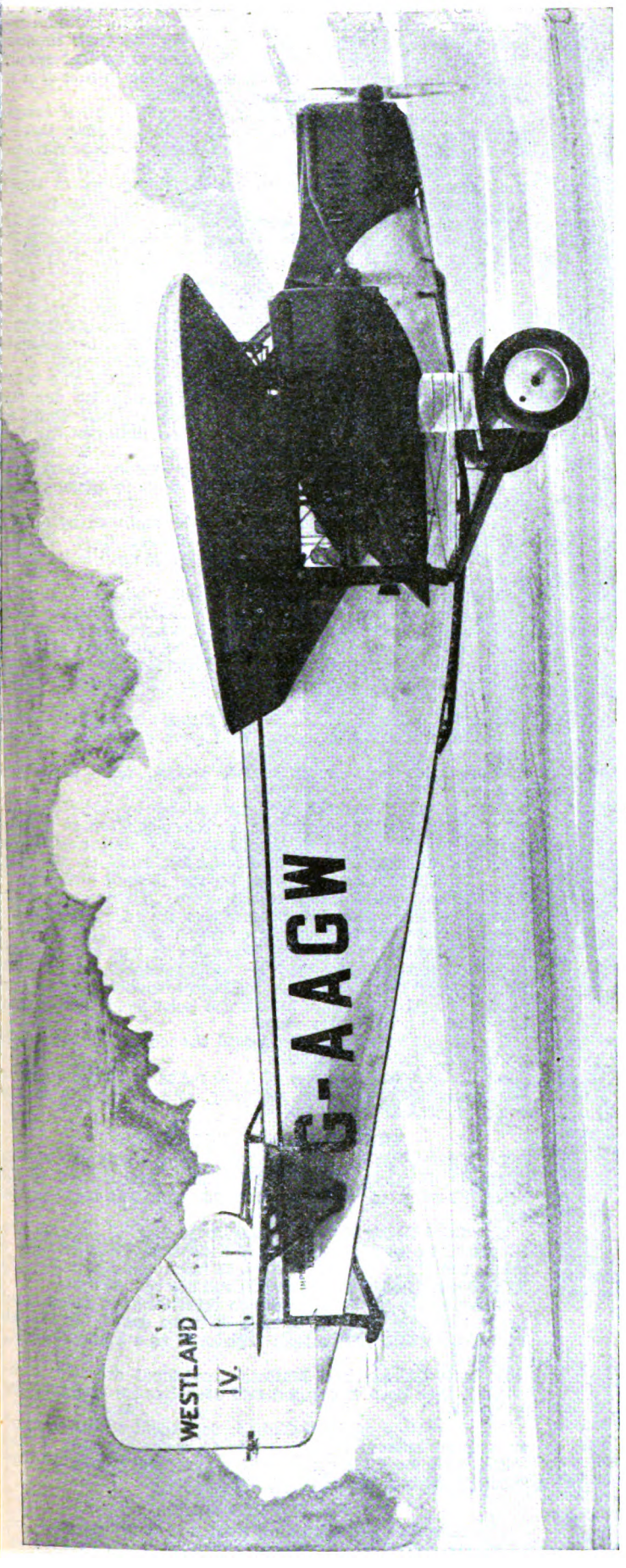

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local Council raising a special loan of £5,000 to buy an aerodrome. This is the first municipality to raise funds for this purpose in N.S.W.

The Coff's District Aero Club has been formed as the result of the parent club holding a pageant there last January, and the local Council has been persuaded to prepare a landing ground which is now nearing completion.

The Cessnock Aero Club was formed two months ago and it is negotiating for the purchase of 80 acres from the State Government to make a landing ground. If successful a shed will be built and training of pilots undertaken.

The Narromine Aero Club has been organised by Mr. H. Bowden Fletcher, late R.A.F., and is already in possession of a first-class landing ground. It is considering the formation of a flying section and nearly half of the present membership of 40 is on the waiting list for training.

The Central Western Aero Club at Parkes was formed 12 months ago and has a membership of from 150 to 200. It intends to take over the existing civil aerodrome and to erect a shed thereon. It will later undertake flying instruction.

THE ANNUAL DINNER OF THE HAMPSHIRE CLUB.

The fourth annual dinner of the Hampshire Light Aeroplane Club was held at the South-Western Hotel on Dec. 6. There were about 150 people to dinner.

Lord Apsley, D.S.O., M.C., who is a vice-president of the Club, was in the chair, and in the absence of Lady Apsley, the Lady Mayoress of Southampton received the guests.

Another vice-president of the Club, the Rev. Bruce Cornford, proposed the toast of "The Club."

He said that they had four machines—two Moths, an Avian, and a Spartan—which had already flown this year a total of over 1,600 hrs. as compared with the 1,568 hrs. of all last year.

The membership of the Club was 420 and over 100 held pilot's licences. 35 members had been trained this year and 80 were now under instruction.

Last July the Club completed its first year under the new Government subsidy scheme and received the maximum grant of £2,000. No other club had managed to do this in its first year.

Sq. Ldr. Bert Hinkler replied to this speech and said a number of nice things. He thought the Club would shortly be providing facilities for touring, which was the ideal way of spending a holiday.

Lt.-Col. Darby proposed "British Aviation," and referred to the pioneering efforts of Sir Alliott Verdon Roe (who was present) and to the fine flights of Mr. Stack who flew to India and back, of Sq. Ldr. Bert Hinkler, who flew to Australia, and of Lt. Bentley who had made a habit of flying to and from Africa.

Sir Sefton Brancker replied to the toast. He said the Hampshire Club had upset the Air Estimates, as £1,200 was calculated to be the most that the Air Ministry would have to pay to any club.

He found there was a general atmosphere of pessimism on the Civil side of Aviation. In civil aviation to-day, there was quality but not quantity. This was due to lack of money [No! It is due to lack of enterprise.—C. G. G.]

Britain was the first nation to create an Air Ministry and an Air Force, and was the first country to make an unbroken flight across the Atlantic, both in lighter-than-air or heavier-than-air machines.

We made the first and quickest flight to Australia. We won the last two Schneider Contests and broke the Speed Record on both occasions. We were the first country to establish a regular commercial air service.

We had produced the first heavy-oil-driven airship in the World. Above all we were the first people to build a really practical light aeroplane and to establish a system of light aeroplane clubs.

The Director of Civil Aviation urged the associated clubs to co-operate and produce a concrete scheme to enable them to carry on when financial help from the Air Ministry ceased.

Civil Aviation was costing the Taxpayer half-a-million this year and it was worth every penny of it. British Aviation was all right, and had pilots, designers, materials, everything except money—and even a little more of that might be forthcoming.

The Mayor of Southampton said that negotiations were proceeding for the acquisition of 100 acres of land at Swaythling for use as a municipal air-park. The site was quite close to the railway and had been approved by the Air Ministry.

Southampton hoped to have the aerodrome before the Club's next dinner. They also hoped that in time the airport would become the most important in the country as the seaport was. He thought that the shipping and aircraft companies would largely co-operate in their mutual interests.

After this there was a highly successful dance.

THE LONDON AEROPLANE CLUB PARTY.

Seldom can there have been a more successful party than the dinner and dance given by the London Aeroplane Club at the Park Lane Hotel on Dec. 4. There were between 350 and 400 people present, and if any one of them failed to enjoy him or herself it was certainly not the Club's fault.

The dinner was excellently done and the floor of the Park Lane ballroom is as good as the very best in London. The band was quite good, even if there are some better. By way of giving the more energetic dancers a rest there was a perfectly amazing conjuror and thought reader, quite the best man of his kind one has ever seen. Also, there was a cabaret show.

The only speech was made by Mr. Wills. It had nothing whatever to do with the proceedings, but was extraordinarily funny. When the band left, some time after 02.00 hours, everybody was sorry, which is the best evidence of the success of any party.—C. G. G.

A NOTION TO BE IMITATED.

The London Aeroplane Club have started a scheme which ought to be imitated at once by all other clubs and by flying schools as well. In future all pupils under instruction flying solo will carry streamers on the rudders of their machines. Thus other pilots in the air will be able to spot at once a machine flown by a novice and will be able to give it a wide berth in their own and the pupil's interest.

Nothing scares a pupil so much as having another machine flying anywhere near him when he is in the early stages of solo flying. Also, a solo pupil is likely to concentrate so intensely on getting his machine down into the aerodrome that he is quite likely not to see anything else in the air. Consequently another pilot, who expects him to give way according to the rule of the road, may find himself in a collision, or at any rate may have to save himself at the last moment after having shaken the pupil's nerves.

LONDON—NAIROBI.

On Sept. 21 Mr. F. A. Swoffer, late Instructor to the Hampshire Aeroplane Club, left London in a Gipsy-Moth VP-KAC, to fly to Nairobi, for duty with Wilson Airways Ltd., which company he has recently joined.

The delay in recording this flight is entirely due to Mr. Swoffer's reticence and dislike of publicity. His departure from England was unknown to all except a few friends, and the first reference of any length to the flight in the Press was made in East Africa after his arrival. Which is so unlike those people who are profusely photographed before starting, and never get anywhere, or who do nothing when they get somewhere.

On arrival at Paris his machine was rammed by another Moth, which delayed his progress for six days. He continued eventually to Lyons, Hyères and along the Riviera to Pisa and Rome.

From Rome he went by way of Naples (where he shed his passenger) to Catania and over the Mediterranean to Tunis.

From Tunis he continued to Gabes, where he was delayed owing to his arrival at "siesta" time, Tripoli, where he missed the aerodrome, which was half flooded by a neighbouring reservoir, and on to Benghazi, Sollum, and thence to Alexandria and Cairo.

Here he was met by the R.A.F. Reception Flight, who replaced a broken valve spring and gave him every possible attention.

From Cairo he flew to Assiut, Aswan, Wadi Halfa and Atbara.

His arrival at Atbara was unnoticed by anybody, and after waiting at the aerodrome for three-quarters of an hour he flew over the town in the hope of attracting attention. This was unsuccessful, so he taxied his Moth up the main street and succeeded in attracting the desired attention.

His Moth then took him to Khartum. Thence he went to Malakal, where the aerodrome was found to be big but mostly covered with grass six or seven feet high, and Mongalla. Between Malakal and Mongalla he was told to follow the telegraph line, but this was impracticable, as the posts were painted black and quite indistinguishable from the surrounding bush. In some places the poles were shorter than the grass in which they stood.

On Oct. 21 he flew to Jinja and thence to Nairobi, where he arrived just at nightfall.

He covered the distance of 6,000 miles in 78 flying hours. His equipment behaved perfectly, and except twice the weather was ideal.

THE INDIAN FLYING CLUBS.

During August the four Indian Flying Clubs at Calcutta (Bengal), Bombay, Delhi and Karachi, flew a total of 275 hours 34 mins. of which 185 hrs. 35 mins. was instructional flying.

The total flying time for 1929 up to Aug. 31, is 2,436 hrs. 50 mins., of which the Bengal Club has flown 677 hrs. 5 mins., the Bombay Club 475 hrs. 35 mins., the Delhi Club 374 hrs. 50 mins., and the Karachi Club 909 hrs. 20 mins.

Active steps are being taken to form Clubs in Lahore and Madras. The Club in Lahore is to be called the Punjab Flying Club and it has been registered as a limited liability company.

In both Lahore and Madras provisional executive committees have been appointed and each has enrolled over 100 members.

The formation of these Clubs is dependent on the grant of an annual subsidy and a grant to cover the cost of the initial equipment from the Government, and if granted, this subsidy will begin on April 1, 1930.

A.A. FLYING MAPS.

The Automobile Association desires to draw the attention of their members to a correction of the current 1 in. Ordnance Survey Civil Air Edition, Sheet 12. The position of the forbidden area at Chatham has recently been altered, and a new edition is in hand.

Members who desire to have their A.A. General Service Flying Maps brought up to date, are invited to send them to the Automobile Association.

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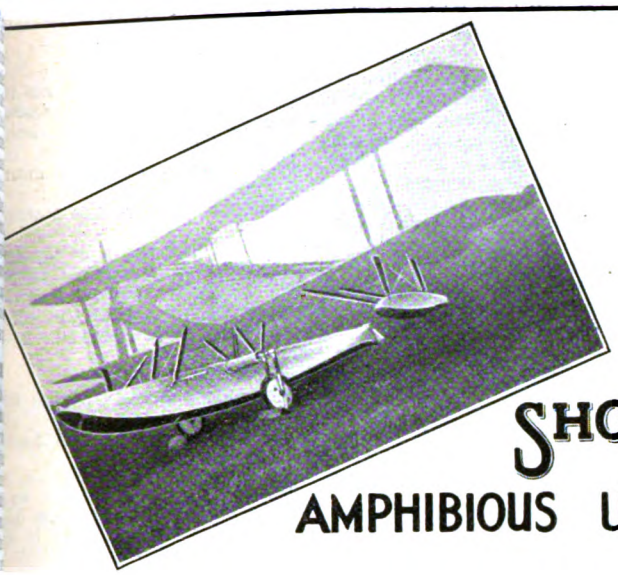

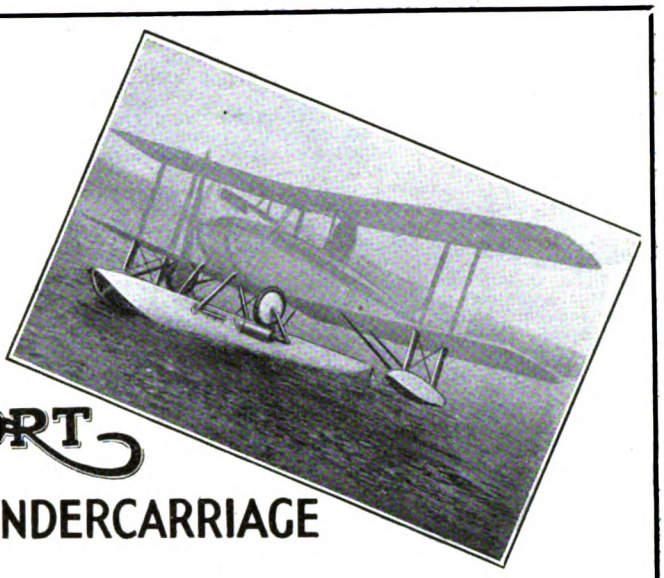

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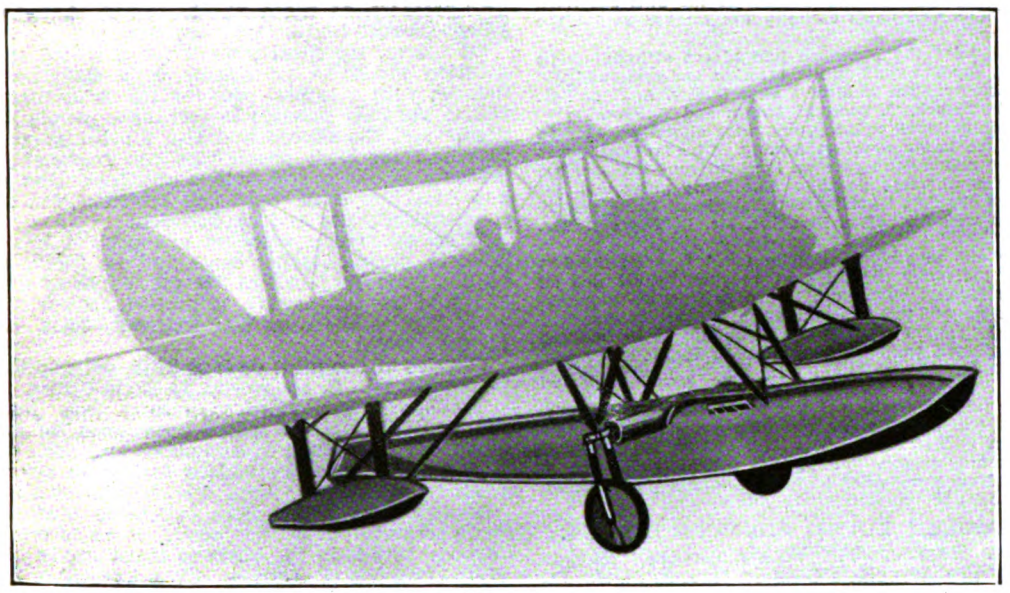

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THE AERIAL BEAGLES.

A feminine reader of THE AEROPLANE in Northampton, Miss Olney, has graciously sent the following graphic and amusing account of the meet at Sywell, which was illustrated last week:—

Saturday, Nov. 30, marked a new epoch in Flying and Hunting Circles, when Mr. Noel Lloyd, Master of the Pipewell Foot Beagles, and the Committee of the Northamptonshire Aero Club arranged the first Aerial Beagle Meet at Sywell.

Truly the Clerk of the Weather must be a good sportsman for Saturday was delightfully mild and fine, after days of almost torrential rain. The Meet was arranged for 2 o'clock, but visiting pilots were asked to arrive by 12.30, and an informal lunch was held in one of the hangars.

The flying visitors were:—Sir Sefton Brancker, piloted by Sq. Ldr. Leslie (the latter walked with a decided limp, the result of a recent hunting accident); Flt. Lt. T. Rose (of the Anglo-American Co.); Mr. Jackaman; Mr. Cazalet; Flt. Lt. and Mrs. Bentley (in their Moth "Dorys," of England—South Africa fame); Mr. McClure, of the A.A.; The Hon. R. and Mrs. Westenra (from Teignmouth in his and her own Moths, Mrs. Westenra's piloted by Mr. Parkhouse); three Avians from Norwich, piloted by Messrs. Brett, Cubitt and Surtees, the latter with Mr. Ford; Mr. Ruthrees, who flew a Brooklands School plane with Mr. Innes as passenger.

For some reason the Press took great interest in the venture, and reporters of various daily and weekly papers were much in evidence as well as film operators.

The beagles arrived about 1.15 and the camera people got busy posing the pack against a background of aeroplanes. In the meantime the Skywell Beagles arrived from the air.

Four planes suddenly appeared—from the leader dropped a toy hare suspended to a parachute, and from the others toy dogs chased the hare, also by parachute. The hare and most of the dogs fell right in front of the cameras, and much curiosity was aroused among the real Pipewell Beagles.

When the planes landed the huntsmen jumped out attired in true sky-beagling fashion, sky-blue coats, white breeches and caps, and ties of the Aero Club colours. The huntsmen were Messrs. A. J. and G. Linnell, B. Olney, P. Tysack, T. Rose, H. Brown and E. Kew.

The beagles first drew Sywell Spinney, and were almost at once in luck, for two or three hares were set moving. The first hare was soon killed, but hare number two gave an excellent run—choosing the wettest ploughed fields wherever possible. The heavy going and the hot pace soon caused the field to string out, but among those gamely following to the end were Sir Sefton Brancker, Mr. Bentley and Mrs. Westenra.

Others there were who with much difficulty trudged across the first ploughed field, and thereafter decided that beagling by air was an easier game. The stragglers were much helped by this, as the movements of the planes showed the direction taken by the beagles.

Most of the pilots stayed the night in Northampton. In the evening there was the usual dinner, when beside the usual speeches and toasts, Mr. Bentley and Flt. Lt. Rose sang the Club song—a new version of "John Peel."

The last verse of this song refers to the late Lieut. Rhodes Moorhouse, V.C., R.F.C., the first Northamptonshire private owner, who flew to Northampton and landed on the Race Course in 1912.

The end of the evening appears to have been quite as cheery as on former occasions and everyone voted the whole show a great success which they hoped might be repeated in the future.

THE BOURNEMOUTH YOUNG AIRMEN'S LEAGUE.

A party of the Bournemouth Young Airmen's League visited the Hampshire Aeroplane Club on Nov. 30 at the invitation of the Secretary, Mr. H. J. Harrington, and were given free flights in the Club aircraft.

The League has been formed by Mr. W. C. Longman, formerly of the R.A.F., and Mr. H. Weller, who was a mechanic in the R.F.C.

The Air Ministry has given the organisation the fuselage and wings of a Woodcock, and Sir B. G. Elliott has given them a 100 h.p. Anzani and a 160 h.p. Beardmore engine.

The members of the League learn how an aeroplane is built and how it can be handled on the ground.

MORE FOREIGN ORDERS.

The De Havilland Aircraft Co. Ltd. has received orders for Gipsy-Moths from Rumania, Norway and Denmark in the past month. The value of the orders is about £6,000.

Rumania and Norway are the two latest countries to employ Moths as training machines for military purposes. Denmark has already had a number of Moths for this purpose, so this is a repeat order.

The Roumanian Air Force is buying three wooden machines. The Norwegian Ministry of Defence is buying three metal machines, and the Royal Danish Air Force has bought two metal machines. All three orders are for landplanes.

CIVIL AIRCRAFT IN NEW ZEALAND.

The most recent register of Civil Aircraft in New Zealand shows that twenty-five aircraft have been allotted registration lettering.

All the twenty-five are light aircraft belonging largely to the Light Aeroplane Clubs.

Nineteen are D.H. Moths, three are Avro-Avians, two are Simmonds Spartans and one a Blackburn Bluebird. Of the two Spartans one was to have been flown from England to New Zealand by a Mr. H. F. Mase early this year, but it was crashed in France and got no further.

Of the civil aircraft actually operating in New Zealand therefore, approximately 80 per cent. are D.H. Moths.

THE LATEST TAUBE.

The first Etrich-Taube was flown in 1909 and during the early days of the War 1914-18 the name became well known.

Herr Igo Etrich, who is a linen manufacturer at Trautenau in Czechoslovakia, and who designed the old Taubes, has recently built a new Taube. It is a two-seat cabin monoplane of the braced high-wing type.

The wing is of the familiar Taube form and has a single bracing strut on each side.

The fuselage is very deep, with the two seats in tandem one behind the other. Large unglazed apertures cut in the sides take the place of windows. There is however a windscreen from the top of the fuselage to the top of the wing. This appears to be for upward rather than forward vision which is obtained from the side windows.

The tail unit is of the familiar Taube arrow shape.

The undercarriage is a one-piece axle passing through the fuselage and sprung by rubber rings.

The engine is a 40 h.p. Salmson with the two lower cylinders completely enclosed in the fuselage.

The machine has the following dimensions:—Span of 11 m. (36 ft. 1 in.), Length 6 m. (19 ft. 8 in.), Height 1.8 m. (5 ft. 11 in.), Wing Area 15 sq. m. (162 sq. ft.). The Weight loaded is 300 kgs. (660 lbs.) with a range of 800 kms. (497 miles). The maximum speed is 150 km./hr. (93 m.p.h.), and the landing speed is 50 km./hr. (32 m.p.h.).

CHRISTMAS PRESENTS.

There are still ten or eleven days in which to buy Christmas presents, so those who have not obeyed the behest to "Shop Early" had better start now.

Of course, the ideal present for a friend connected with aviation would be an Argosy or a Calcutta or a Supermarine, with a capital sum for its maintenance,—but such things are only possible to fortunate people like the Guinnesses and the Basses and the Worthingtons. There may also be some lucky people who can reasonably expect such presents as Moths and Avians and Desoutters and Spartans and Bluebirds from their rich relations, but even they are comparatively few and far between.

More reasonable presents are such things as aviators' helmets, gloves, leather coats and so forth, which can be bought from D. Lewis of 124 Gt. Portland Street, London, W.1, and from S. Lewis's, 19 and 27, Carburton Street, London, W.1, and from Wainwright's, 300-2, Euston Road, London, N.W.1.

Goggles of the most *de luxe* kind, with optical lenses, can be got from E. B. Meyrowitz, in Bond Street.

Those who can afford something even more expensive will find that various useful accessories for aircraft themselves, such as Hughes' compasses and such of Smiths' instruments as are not standard fittings in aircraft, are very much appreciated by their friends who own aircraft.

Another gift of the more expensive kind which will be much appreciated by any owner of an aircraft or even by anybody who is in the habit of travelling in aircraft is the Williamson Pistol Camera. Or a parachute from Russell's or Irving's would be gratefully received.

Coming down to lesser things, Skinner & Co., of 34, Old Bond Street, W.1, have a very fine assortment of jewellery, especially brooches, pins and so forth with R.A.F. badges and Squadron crests. And the cigarette box which the firm have recently put on the market with the striking picture of the Schneider Trophy winner on it is bound to be acceptable.

A great many people like aeroplane mascots for their cars and metal models of aeroplanes for desk ornaments and paper-weights. These are made with full knowledge of the craft by the Birmingham Medal Co. of Summerhill Terrace, Birmingham, and A. E. Lejeune Ltd., of 132 Great Portland Street, W.1.

Then there are the various books catalogued in the list which may be had post free from THE AEROPLANE BOOK DEPT., Cannon House, Pilgrim Street, E.C.4.—And these include "All the World's Aircraft of 1929"—price £2 2 0—which will be ready on Dec. 16.

Among all this lot everybody concerned with aviation ought to be able to find something to please his or her aeronautical friends.

SCOTS WHA HA'E!?

Is there really a brave man in Scotland who is still flying a Sopwith Camel as a peace machine? *The Sunday Pictorial* of Dec. 8, 1929, has quite a handsome picture under the heading, "Over the Lowlands whitened by early snow," and over the description "An aeroplane flight over the Lowlands of Scotland, on which can be seen a thin coating of early snow. Picture by Captain Alfred G. Buckham." The picture shows an unmistakable Camel over scenery which might certainly be in the Lowlands of Scotland. Perhaps the Scottish Flying Club will enlighten us. And after all, it may be the early snow of the Winter of 1918-19, or even earlier.

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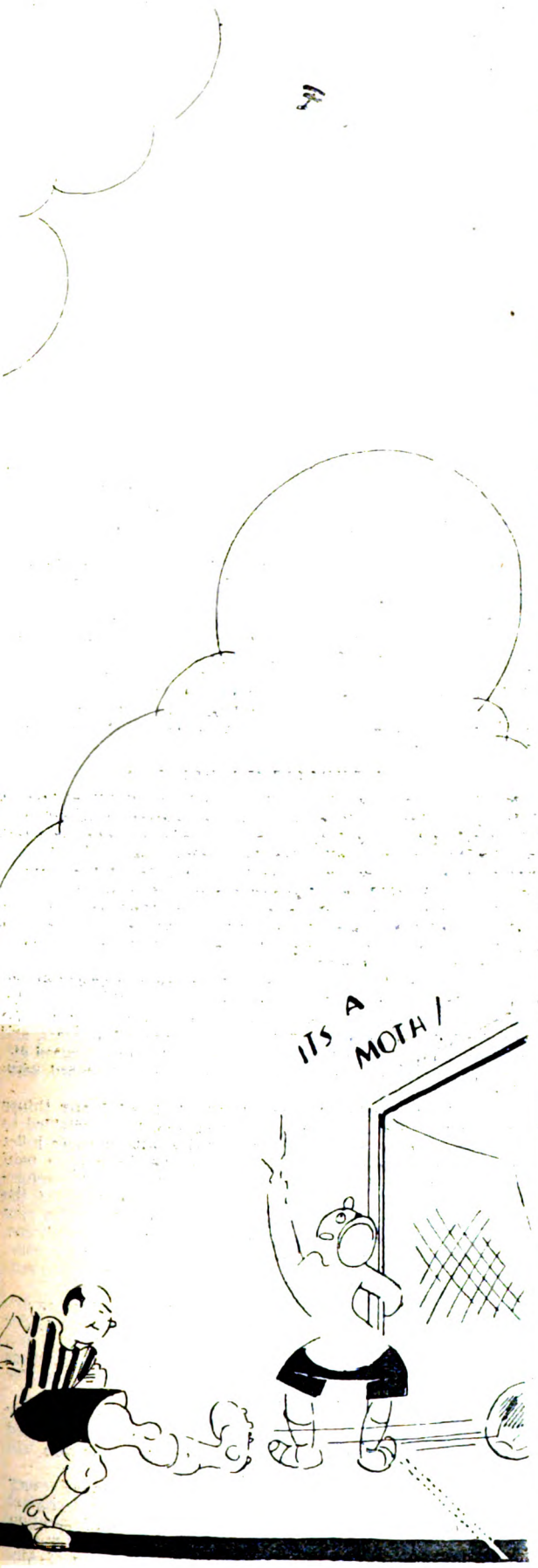

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THE GLIDING MOVEMENT.

THE GLIDING LUNCH.

The Gliding Lunch was held at the Comedy Restaurant, Panton Street, on Dec. 4. A measure of the enthusiasm for the movement may be gauged by the number of people, who managed, in the middle of the day in the middle of a working week, to devote two hours or more to a function of this kind. The organisers had more or less arranged for thirty people to turn up, and thought they were being optimistic. Actually about sixty sat down, and some were rather squashed.

Mr. Douglas Culver who originated the idea of the lunch was in the chair. Mr. Culver learned to fly at the Grahame-White School, at Hendon, in 1916, and later became an instructor there. In August, 1918, he was shot down behind the German Lines, and was taken prisoner, in which process he lost his arm. Having only one hand he says that he cannot handle a throttle-lever *and* a control-stick, so he opines that he will do best in a glider, with control-stick only.

After lunch Mr. Culver began the proceedings by saying what a surprise it was to see so many people. He originally had visualised about fifteen. Many of those present had come a long way and he thought this was all to the good, because his general scheme was that a Home Counties Gliding Group should be formed for London and the surrounding parts. Meanwhile other groups should be formed over the country, and after two or three months' experimental working these groups might send delegates who would confer with the Home Counties Group.

Mr. Dagnall of the R.F.D. Company then offered most generously to place part of his Works at the disposal of such a Club and to build one or two gliders free of cost. The members however must co-operate and supply the designs, for he could not do this. Later on Mr. Dagnall offered to buy a German Glider for the Club, if nobody in this country felt like designing one.

Col. the Master of Sempill complimented Mr. Culver on thinking of the lunch and getting all the people together, and The Aeroplane on the support it had given to Mr. Culver.

He said that he knew personally that considerable funds would be forthcoming to back such a movement, if those who began it showed energy and enthusiasm. He also knew that Mr. Wimperis, the Director of Scientific Research at the Air Ministry, was very interested in the movement and was anxious to help it.

The Royal Aeronautical Society had arranged for Dr. Georgii, Head of the Engineering Dept. of Darmstadt University, to give a lecture on Gliding before the Society on Feb. 20, 1930. With Dr. Georgii will be the Head of the Wasserkuppe Gliding School. The Society hope to arrange an informal lunch or dinner in connection with this lecture. He thought if those interested could find some likely sites before the lecture, Dr. Georgii could be taken to see them and could give an opinion on their suitability.

Col. Sempill suggested that a central organisation should be formed which other provincial clubs might copy later on. He pointed out that a certain amount of technical supervision had been found necessary in Germany as at the start there had been some bad accidents.

He said that the Royal Aeronautical Society were very anxious to do all they could to help the scientific side of the movement, but he reminded us that the Royal Aero Club was supreme in all matters of aerial sport.

Mr. Bramson asked whether towing gliders behind aeroplanes came within the scope of the proposed Club. He thought that as such flights could be made in still air such gliding would be valuable for scientific purposes.

Mr. Lowe Wylde explained that he had done a little gliding. He thought that there was enough technical skill in this country to design and build a glider without going to Germany. It would be a great thing to start right away so that when Dr. Georgii did come over we should have had some experience and could therefore get greater good from the lecture.

Mr. Blyth said that he did not know very much about gliding except that he had been to the Wasserkuppe and only an accident to the Darmstadt glider had prevented him from making a trip in it. He thought people would be disappointed in gliding as a sport unless they realised that team work was required and that the individual would be lucky if he got one flight a month.

Towing behind an aeroplane was only an adjunct to gliding. Hills at least 800 ft. high should be used if gliders were to reach the first cloud layer where cloud-soaring might be practised. The cotton-wool type of cloud seen on Summer days were the best sort of formation for cloud-soaring.

Mr. C. M. Newton, Chairman of the Northamptonshire Aero Club, said that a section of his Club were keen on gliding. There were those who wanted to glide and those whose wives would not let them fly and who thought that gliding might be the thin end of the wedge. His Committee was prepared to back such a movement.

Mr. Jeyes, who piloted an Aachen glider at the Itford Meeting in 1922, and is now a member of the Northamptonshire Aero Club, explained how the light aeroplane had been developed from the gliders of the Itford Meeting and how this development had stopped the development of the glider.

As team-work was essential, a club with committee and chairman must be formed. He thought that the aircraft firms might be prepared to subscribe towards such a club. This club must be formed right away so that all those present at the lunch should have a chance of keeping together.

Flt. Lt. C. Crawford, who built his own light aeroplane and its engine while stationed in 'Iraq, said that flying was his profession but that he looked upon gliding as a cheap form of sport. He also regarded it as a way of raising the enthusiasm of the younger generation for flying. The boys of the neighbourhood would form a very convenient source of labour to any club.

He thought that the Club should prepare good drawings of a simple form of glider, which would be available for all members,—who could then build their own glider. He had seen gliding done in Switzerland from a level plain and this was quite good enough for preliminary training. The Swiss Gliding Club were prepared to let him have drawings and specification of their glider. He was prepared to form a gliding club at Eastchurch.

Another speaker suggested that a provisional committee should be formed on which the provincial areas should be represented.

Mr. Whidborne suggested that The Aeroplane might put forward names for the Committee which might be approved at the next conference.

Mr. Grey said he thought that it would be better if those who would be prepared to serve on such a committee gave their names to Mr. Culver.

After a kind of general conversation, in which everybody just avoided talking together at once, a provisional committee slowly arose from primeval chaos and held its first meeting amid the wreckage of the feast.

The Committee consists of Mr. Culver (Chairman), Mr. Latimer Needham (Halton), Mr. Lowe Wylde (Kent), Mr. Lander (Northumberland), the Viscount Carlow (London), Mr. Whidborne (London), Mr. Wroughton (Croydon), and Mr. Ashwell-Cooke (Cinque Ports).

Mr. L. Howard Flanders is Honorary Secretary and the temporary address of the British Gliding Association is by courtesy of the Society, c/o The Royal Aeronautical Society, 7, Albemarle Street, London, W.1.

The Committee will shortly hold another meeting, after which the structure, subscriptions and so on of the new association will be announced. Meanwhile letters should be addressed to Mr. Flanders at the above address.—T. J.

[There is interest in noting that apparently gliding is beneath the notice of the Royal Aero Club, in these days of its affluence, for, although several of those present at the lunch were ordinary members of the Club, no personage of importance in the Governing Body of the Sport of Flying thought that the occasion was worthy of his august presence.—C. G. G.]

ON LEGALISING GLIDING.

Before the embryonic British National Gliding Association, or British Gliding Club, or whatever it is going to call itself, goes very far, those who are so sportingly concerning themselves with its formation ought to discover precisely what is going to be the attitude of the Government towards gliding. Apparently gliders come under the Air Navigation Act and have to be certified as airworthy. And presumably places from which gliding is to be done ought, on the same analogy, to be certified as aerodromes for the purposes of gliding.

If something of this sort is not done the young sportsman who builds his own glider may find himself liable for prosecution for using it more than three miles away from a recognised aerodrome, for flying an unlicensed aircraft, and for being an unlicensed pilot in charge of an unlicensed aircraft flying more than three miles from a licensed aerodrome.

As the Law stands at present all kinds of funny things may crop up. An aircraft which has not been certified as airworthy may be flown experimentally within three miles of a recognised aerodrome, and it may be flown by a man who has not qualified for his Pilot's Certificate. Therefore, a glider being an aeroplane within the meaning of the Act, an un-airworthy glider with an un-certified pilot may be towed over the ground from a recognised aerodrome, either by manual and pedal labour, or by an automobile, or even by another aeroplane, so long as it does not go outside the three-mile limit.

But you may have the position of a glider certified as airworthy flown by a fully certificated aviator, coming under the heavy hand of the Law because it is flown down a hillside which could never be certified as an aerodrome unless the Air Ministry is going to grant special certificates for gliding and soaring aerodromes.

The question must also be raised as to whether every glider in process of construction will have to be inspected by the Aeronautical Inspection Department. This also will have to be considered by the Air Ministry.

Strictly according to the Law the drawings of every glider ought to be inspected and passed by the technical experts at the Air Ministry, and the fee for such inspection and certification would probably be about £25. After that according to the Law, every succeeding Certificate of Airworthiness for other machines of the same type built according to those same drawings will cost £5 a time.

Some of us were discussing these points after the gliding lunch the other day when Mr. C. M. Newton, of Northamp-

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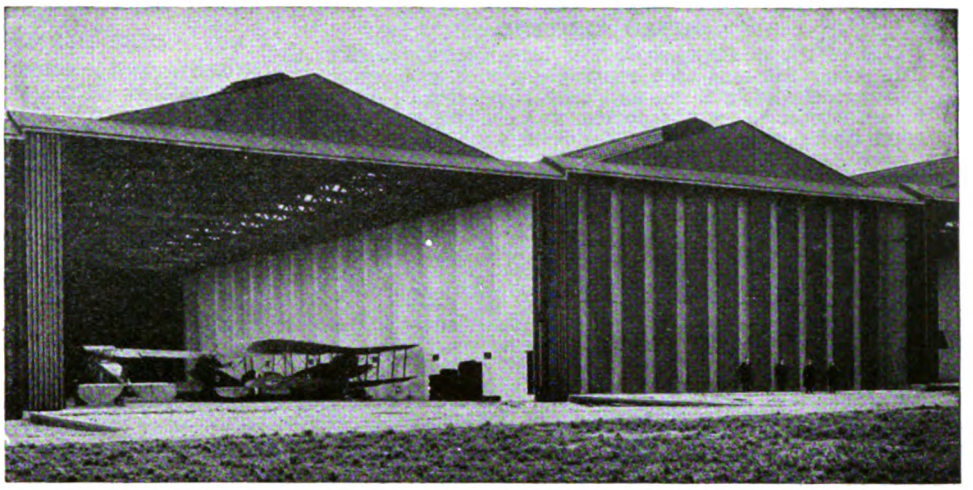

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ton, brightly remarked that he supposed that the A.I.D. would accept the force of gravity as motive power without it having to pass a type-test or to be certified as airworthy. Evidently Mr. Newton's mind throws back to his famous namesake, or perhaps ancestor, who is alleged to have invented gravity. But the question only shows how the strict letter of a Law may operate.

Sir Sefton Brancker and all the scientific people at the Air Ministry are sure to do everything they can to simplify the regulations governing gliding, but after all the Law is the Law and they are Government officials and must interpret the Law as it stands. So the sooner these points are cleared up the better.—C. G. G.

KITED GLIDING.

One of the gliding people who have recently written to THE AEROPLANE has been making progressive experiments with model gliders flown as kites. His letter is published below. His chief trouble appears to be a sudden change of wind direction while the glider is on the ground.

I am writing this in the hope that you will publish it for the sake of obtaining other glider enthusiasts' views as to the feasibility of the form of gliding which I advocate. Had I the time and the money I would put the matter to practical test forthwith.

Put shortly, my idea is this. The orthodox method of gliding (or for the matter of that soaring, and incidentally our word "soaring" seems perfectly adequate and most appropriate to describe what the Germans call "wind-sailing") is to drag the glider to the top of a suitable slope, take off and either, with luck, soar about (as described in your issue of the 6th, and as demonstrated at Itford and in Germany) or descend to the bottom again. In the latter event the time taken to get the machine back to the starting point is out of all proportion to the time spent in the air.

Now there is no earthly reason why, with a properly designed glider, one should not take off on perfectly level ground and rise to any desired height above the starting point within certain limits while the glider remains captive, in other words, while flying like a kite.

The obvious advantages of this method are that flying could be carried on almost continuously, so long as a stiff enough breeze was blowing, machines casting off the mooring cable when a good height had been reached and thereafter taking advantage if they could of whatever rising currents there happened to be, to remain aloft or climb higher. Under favourable conditions it would be possible to remain up a very considerable time. No time would be lost getting the machine to the top of a hill, and moreover, it would provide a means of gliding in flat country where no suitable hills are available.

The advantage of a hill lies solely in its power to produce up-currents, but up-currents are by no means confined to air over irregularities of surface contour, but (as you have pointed out in your issue of the 13th) may be produced by clouds. There is another factor (probably there are several in addition to this) which causes up-currents and that is the *colour* of the ground. Dark ground such as ploughed land absorbs more heat than, say, grass land. Therefore, over certain portions of a ploughed field there are likely to be rising currents particularly after the sun has been shining on the ground.

As to the mooring cable, steel stranded cable of sufficient strength to take the pull due to the head resistance of a normal glider weighs surprisingly little per 1,000 ft., for instance 5/32 in. cable weighs 5½ lbs. per 1,000 ft. and has a breaking strain of 370 lbs. Now, if we allow that the head resistance of a glider is about 1/6th of its loaded weight, and assuming a head resistance of 150 lbs., giving a factor of safety of about 2½ on the aforementioned cable, we could use it for a machine having a loaded weight of 900 lbs.

If the machine is a single-seater and 170 lbs. is allowed for the pilot, the machine itself should not weigh anything like the difference, i.e., 730 lbs. Something in the neighbourhood of 300 lbs. would be a more reasonable weight to assume for the machine, giving a loaded weight of 470 and a head resistance of 78 lbs. approximately, or a factor of safety on the above cable of about 4¾ which would be ample because if a spring balance were attached to the cable connector on the machine and placed where the pilot could read it, he could voluntarily control the tension at all times.

One thousand feet of cable would enable a vertical height of, say, 500 ft. to be attained at a very conservative estimate. As a matter of fact this only means an angle of 30 degs. between the mooring point and the machine. Actually, if the head resistance of the machine is only 1/6th of the loaded weight it ought to be theoretically possible to increase the angle to about 80 degs., which would mean a maximum height of 980 ft. with 1,000 ft. of cable, as a reference to a sine table will verify.

There is only one difficulty which my experiments with models has brought to light and that is that, since the wind tends to veer from moment to moment, when the machine is on the ground it is absolutely essential that it should have some adequate means of moving crab-wise so that it can always keep head to wind.

Naturally, the further the machine from the mooring point the greater the arc which is swept in this veering process, therefore it seems that it is preferable to pay out the cable as the machine rises rather than have a great length of it laid out flat on the ground before the machine takes off.

Whether a full-size machine would tend to drift in this way as much as a model is doubtful because it is reasonable to suppose that the variations in direction of the main body of the wind is less than the variations in directions in internal eddies and therefore the larger the span of the machine the less the latter variations will affect it.

It seems that for this particular method of taking off, that is to say without an initial run but simply waiting for a strong enough gust to raise the machine from the ground, what is required is a special form of undercarriage. Castor wheels are not a satisfactory solution but my most recent experiments have been directed to finding some satisfactory alternative. The moment is scarcely ripe to disclose designs but I believe that I am on the right track.

It may interest you to know that I have got models onto and off the ground without mishap and without any aid other than the wind, ascent and descent being, of course in an arc of radius equal to the length of the mooring cable, that is, to all intents and purposes vertical when near the ground, and there is something extremely fascinating and graceful in the sight as the machine lightly lifts off and is soaring up, and as lightly floats down to earth again as the wind drops.

My models all have non-lifting tails, a good dihedral and aspect ratio, with the centre of gravity kept pretty low down so that they have a considerable amount of inherent stability.

No doubt a machine with a pilot in it could be kept even steadier than these models manage to keep themselves without any external control, but they have convinced me that, given a suitable undercarriage the method is quite practicable.

HOW GLIDING IS DONE IN AMERICA.

The Wright Aeronautical Corporation, who are famous as the builders of the Wright Whirlwind engine, have taken a founder's membership in the National Glider Association (of America). The Wright Corporation is offering for three consecutive years $1,000 (over £200) for prizes in gliding.

MORE FIREWORKS.

On Oct. 22, at Düsseldorf, further experiments were made with a rocket-propelled glider.

Herr Espenlaub, who is well known as a designer of gliders and for his successful demonstrations of tow-gliding behind aeroplanes, was the pilot. The glider was towed into the air, and the towing-rope dropped. The first rocket was fired, and is said, rather ambiguously, to have thrown the glider upwards into the air.

The glider caught fire, and Herr Espenlaub, being an Elijah, brought his fiery chariot to the ground—instead of continuing his celestial journey. He was unhurt, and will repeat the venture.

THE BLERIOT FILM.

On December 4 a select party of guests were invited by Mr. Alexander Duckham to the little Edi-Bell Cinema Theatre to see the film of M. Blériot's Twenty-Five Years of Aviation. The film deals entirely with M. Blériot's individual activities, but as M. Blériot is one of the World's great pioneers, and has made an immense amount of aeronautical history and is still in the forefront of the World's aircraft constructors while still himself an active pilot, no other individual, except perhaps Mr. Henry Farman, or Mr. Glenn Curtiss, could be the subject of such a film.

The pictures begin with M. Bleriot's first experiments with a towed glider, cover his early experiments in France, his flight, for the first time in History, across the Channel, the first looping of the loop by M. Pégoud, the first launching from and alighting on a wire without touching the ground, also by Pégoud, the various Blériot war products and the latest Blériot activities.

This film has been shown once before in England at the Royal Society of Arts, when M. Blériot was here celebrating the twentieth anniversary of his crossing the Channel. One hopes most sincerely that other opportunities will be given for other people to see the film on this side of the Channel.

One does not know whether the film shown is the only copy in existence. If it is it should certainly be copied so that it can be exhibited in places which are primarily concerned with aviation, such as R.A.F. Establishments and our public schools. It is most valuable history.

Mr. Alexander Duckham is a very old friend of M. Blériot, hence his being able to get the loan of such a precious film.

Mr. Duckham's connection with aviation began with his pioneer work in connection with lubricating oil, and that pioneer work has been followed up to such good effect that to-day the Air Ministry approve the methods in the Duckham Works to such an extent that the firm is allowed to despatch oil to R.A.F. Stations without the usual prior inspection by the Air Ministry.

When you consider that not only the life of the engine but the life of the crew of an aeroplane may depend on the quality of oil used, the importance of this trust may be realised.

The story of the oil and how it is produced, and the way to use oil intelligently in an engine, is told in a little book called "Technical Talks," which can be had post free from Alexander Duckham and Co. Ltd., at 6, Broad Street Place, E.C.2. The book is illustrated by Mr. Heath Robinson, most irreverently, considering the status and importance of the firm and the quality of its products, but more funnily than anything he has done for a long time.—C. G. G.

WANTED FOR CANADA.

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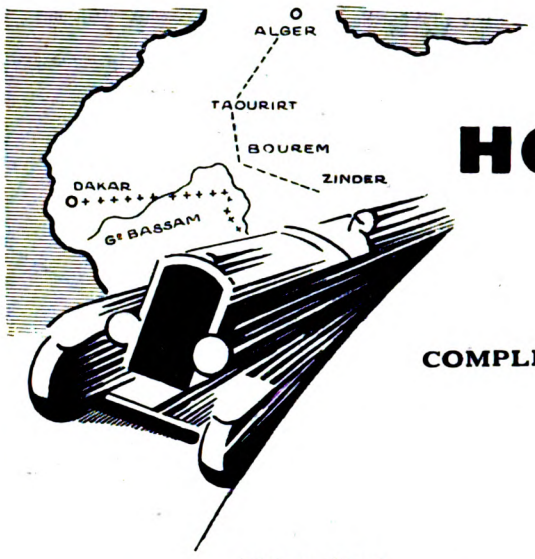

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1 km.	avge.	372	k.478	?	1 ml.	avge. 372	k.340 ?
5 km.	avge.	347	k.691	?	5 mls.	avge. 340	k.359 ?
10 km.	avge.	225	k.776	?	10 mls.	avge. 217	k.791 ?

Dead Start.

1 km.	avge.	139	k.860	?	1 ml.	avge.	162	k.173 ?
50 km.	avge.	211	k.084	?	50 mls.	avge.	208	k.667 ?
100 km.	avge.	205	k.353	YACCO	100 mls.	avge.	206	k.880 YACCO
200 km.	avge.	194	k.601	?	200 mls.	avge.	186	k.619 ?
500 km.	avge.	188	k.903	YACCO	500 mls.	avge.	189	k.451 YACCO
1000 km.	avge.	186	k.980	YACCO	1000 mls.	avge.	180	k.795 YACCO
2000 km.	avge.	180	k.662	YACCO	2000 mls.	avge.	181	k.651 YACCO
3000 km.	avge.	181	k.870	YACCO	3000 mls.	avge.	182	k.075 YACCO
4000 km.	avge.	181	k.960	YACCO	4000 mls.	avge.	147	k.816 YACCO
5000 km.	avge.	181	k.744	YACCO	5000 mls.	avge.	146	k.728 YACCO
10000 km.	avge.	147	k.117	YACCO	10000 mls.	avge.	158	k.161 YACCO
15000 km.	avge.	141	k.677	YACCO	15000 mls.	avge.	157	k.600 YACCO
20000 km	avge.	136	k.937	YACCO	20000 mls.	avge.	138	k.151 YACCO
25000 km.	avge.	137	k.912	YACCO	25000 mls.	avge.	110	k.191 ?
30000 km.	avge.	133	k.531	YACCO	30000 mls.	avge.	110	k.014 ?
35000 km.	avge.	110	k.245	?				
40000 km.	avge.	110	k.189	?				
45000 km.	avge.	109	k.894	?				

Endurance Tests.

1 hr.	avge.	206	k.558	YACCO	168 hrs.	avge.	138	k.302 YACCO
3 hrs.	avge.	189	k.558	YACCO	192 hrs.	avge.	134	k.616 YACCO
6 hrs.	avge.	186	k.761	YACCO	216 hrs.	avge.	133	k.305 YACCO
12 hrs.	avge.	181	k.576	YACCO	240 hrs.	avge.	133	k.187 YACCO
24 hrs.	avge.	182	k.660	YACCO	264 hrs.	avge.	109	k.125 ?
48 hrs.	avge.	146	k.604	YACCO	288 hrs.	avge.	108	k.256 ?
72 hrs.	avge.	142	k.485	YACCO	312 hrs.	avge.	106	k.910 ?
96 hrs.	avge.	143	k.789	YACCO	336 hrs.	avge.	106	k.439 ?
120 hrs.	avge.	138	k.125	YACCO	360 hrs.	avge.	106	k.598 ?
144 hrs.	avge.	136	k.796	YACCO	384 hrs.	avge.	106	k.057 ?

THE STABILISED MOTOR OIL

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COMMERCIAL AERONAUTICS.

AMERICAN AIRPORTS.

By An American Pilot.

The Aeroplane published lately a picture of the Chicago airport. I have had considerable experience operating on this airport.

While the run-ways shown are long and quite wide, they are absolutely the only place you can taxi an airplane, and if the wind happens to be on a run-way running say parallel to the hangars shown in the pictures, it is necessary to taxi out and back on the cross-wind run-way. This is no easy job in a single-engined airplane in a good strong cross wind. Even with the use of brakes it results in the wearing out of one brake very rapidly, trying to hold the machine on a straight course.

Also, even though these runways are good and wide, there is not too much room for two ships to pass each other. This is even more true in the case of taxying out on a runway that is to be used for landing. If runways are to be used, some system must be worked out whereby there are separate runways for taxying and landing.

In regard to night operations. Several weeks ago I flew to Chicago at night. The entire route is lit by beacons which are about twenty miles apart. I started out with about a thousand foot ceiling slightly overcast. About half-way it started to sleet and snow, and I was down to about seven-hundred feet. At this altitude and under these conditions the beacons were entirely too far apart, particularly as all the lights in the ship went out and I had quite a little difficulty in keeping the course from one beacon to another before I could see it.

Then, when I arrived at Chicago, I spent three-quarters of an hour over the city trying to find the airport.

There were beacons in all directions. Everybody that builds a new hotel or an extra high apartment house puts a beacon on top of it for advertising purposes. I knew there was a large gas-tank by the Chicago Airport and hoped to locate it by this tank. I found three gas-tanks all lit up like Christmas-trees, all with beacons beside them but no airport. Finally I found a fourth tank, which was not lit as much as the other three.

There was a beacon fairly near it; and after flying around for about ten minutes I decided that what looked like a maze of streets underneath was undoubtedly the run-ways of the Chicago Airport. I had been led to believe it was completely lit for night flying.

The run-ways were all outlined in white lights, and once I landed it was impossible to see where the cross run-way began that was to take me to the hangars. The result was that I got off the runway and got stuck in a ditch, without any damage to the ship, but it necessitated my walking about a mile in the pouring rain to get help, as nobody seemed to pay any attention to the landing. I admit I had no lights at all, and probably nobody ever saw me.

On inquiring about the flood-lights which I had thought the airport was equipped with, I found out that they are not used on rainy nights because they result in the pilot levelling off at about thirty feet owing to a kind of ground mist that is always present in a rainstorm. As a result, they stated that they turned on the lights when they heard a plane overhead or saw its lights to give the pilot the location of the airport; and when he came in to land they turned them off again.

The night I arrived nobody saw me at all.

There is a new system that is just being tried out over here, where lights are imbedded in the ground down the middle of the runway under a heavy glass which is practically unbreakable. These lights are of a green colour and are apparently very easy to land by. They are connected by an electrical connection to a wind-tee, so that the lights are always shown on the run-way that is into the wind. There is an arrow-point at the end showing the direction one should come in.

These lights are to be placed exactly twenty feet apart, so that a pilot coming into a strange airport by counting the lights will be able to find out how long the runway is. The system sounds very good, but so far has only been placed at one airport,—which apparently is not used much.

I am afraid that over here the title "airport engineer" has been rather misused. There are literally hundreds of concerns who claim to specialise in the building of airports, and in most instances know nothing whatsoever about it.

While on the subject, another fault with runways is that in nine cases out of ten they seem to be a little off the wind direction. It may be true that the prevailing wind in England is from the West, but it certainly is not true of the Eastern United States. During about three months of the year, December, January, and February, and part of March, as a rule the prevailing wind is from the West, but the rest of the time it is liable to be anywhere and changes very suddenly and frequently. Many times on a two-hundred mile flight I have had the wind change at right angles two or three times.

Major Cordes, of the Handley Page Company, who is over here with their Guggenheim entry, was remarking on this the other day, as just fooling around one's own airport one always has to keep one's eye on the wind sock. I have seen many near accidents due to pilots who had only taken off fifteen or twenty minutes before, coming in the same way they had taken off, and nearly crashing into someone who was coming in correctly on the wind.

It is going to be very hard, as flying becomes more common, to get private owners, in particular, to obey rules which must necessarily be obeyed. The Department of Commerce has some very excellent rules over here, but there is very seldom much attention paid to them. And I must say that in order to work the subject out properly, a great deal of thought must yet be given to it.

If two ships are coming into a properly regulated airport close to each other, but do not see each other, as is very possible, how on earth is the man in the signal tower, who is supposed to signal them in, going to convey his signal to the proper one?

The only hope that I can see is that in general people seem to be fairly intelligent. And in the course of time the second or third generation of pilots will acquire a sort of sixth sense, and in that way many accidents will be avoided that there is really no way of regulating against.

Unfortunately, I know of a good many private owner pilots who have had very little cross-country experience, who take great pleasure in going over bad country in bad weather that pilots with more experience would never think of going over. These are the kind of pilots who are going to cause trouble to regular air lines who, because of the pilot's knowledge of conditions and terrain, and also because of good radio communication, will be coming through such weather and will naturally not expect to meet other than their own ships running in the other direction on the line, or at least machines properly equipped with radio.

Another thing that is sadly lacking here in America is the proper marking of towns. Most of the larger air-ports, of course, have their name marked on the building, but in many instances the airport is so hidden by smoke that one has to be directly over it and only about a thousand feet high to see it at all.

If one knows just where one is, it is possible, by the Department of Commerce maps which show the location of various airports in relation to rivers, railroads, etc., to find them. But if a pilot is lost and goes over a fairly large city and wonders where the airport is and what the name of the city is, his chances of finding it are not so very good.

NOTES FROM KENYA.

Sq. Ldr. the Rt. Hon. F. E. Guest, accompanied by Miss Spooner, Flt. Lt. R. Preston, Flg. Off. E. G. Hordern and Mr. H. E. Hamblen, a ground engineer, arrived some weeks ago in East Africa with three D.H. Moths.

In an interview with *The East African Standard* he said that the object of his visit is, in part, "to re-establish confidence in flying in East Africa which has been damaged by amateur pilots."

Sq. Ldr. Guest's definition of an amateur pilot in view of the above statement seems a trifle obscure.

Lord Carbery and Commander Robinson, late R.N., both Moth owners and therefore apparently amateur pilots, have done much excellent pioneer flying in Kenya. A number of other "amateur" pilots such as the Hon. Lady Bailey, Flt. Lt. Bentley and Flg. Off. Murdoch have passed through Kenya on their various journeys to and from the Cape and London,—and have made excellent impressions.

The fact that the residents of Nairobi have seen these pilots passing through without fuss and have heard of their successful arrivals at their distant destinations can have done nothing else but inspire confidence among all those sufficiently interested to follow their wanderings.

More recently Sir Piers Mostyn has become an enthusiastic Moth owner and has flown all over Kenya. At the present there are three "B" licence pilots, Lord Carbery, Mr. F. A. Swoffer and Mr. Campbell Black in Kenya, none of whom have, so far as one knows in England, done anything that should shake the confidence of the population in Kenya.

Flights to the Cape and back by Sir Alan Cobham and Mr. Van Lear Black and the annual R.A.F. Cairo—Cape—

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Cairo exercises must all have helped to impress on the inhabitants of Kenya, through which all these flights have passed, the extreme mobility and reliability of aircraft.

Sq. Ldr. Guest announced to the Press that his aim was to provide in East Africa from the Zambesi to the Nile an internal air service which will augment the existing system of communications, connect the territories by a rapid and regular aerial link and assist progress by the usual aids of aviation.

Other than incurring the displeasure of those few experienced pilots in East Africa who are trying to aid the cause of aviation by hard work under adverse conditions the expedition has so far had little time to get its schemes under way.

Capt. Guest seems disappointed that the Kenya Colony Government has taken little heed of Capt. Tymm's surveys for aerodromes and landing grounds. This at any rate should provide him with ample material for pioneering aviation in that territory.

SUBSIDY FOR THE CAPE—CAIRO ROUTE.

A report from Johannesburg says that the South African Government is granting Imperial Airways a subsidy of £400,000, spread over a period of five years. This subsidy is for the forthcoming Cape—Cairo air route.

The South African Government will also provide landing-grounds and wireless stations for the portion of the route from Salisbury (Rhodesia) to the Cape.

THE FIRST PAN-AMERICAN AIR MAIL.

A report from the United States says that the first southward-bound and the first northward-bound Pan-American air mails have each reached their respective goals on schedule time.

The termini are Miami (Florida) and Buenos Aires. The distance is 7,000 miles and lies over 12 countries.

The time of nine days required by the air mail cuts the steamer mail by a half.

THE SHELL PARTY.

On Wednesday, Dec. 4, the Directors of Shell-Mex Ltd. gave a party at the May Fair Hotel to "a few of their special friends" in the Motor Trade and the Aircraft Trade. Roughly there were about 1,000 of them,—which may be taken as an indication of the popularity of the firm. The guests were received by Mr. Samuel Samuel, the Chairman of Directors of the firm.

The party, as good parties should, began at 23.00 hours and ended with the first delivery of milk next morning. Personally one went home early, but the morning papers were already on sale. Somewhere about 01.30, after an excellent supper, there was a motor-car race round the ball-room, which was really quite funny. Also, there was a cabaret show, half of which was extremely good.

All enjoyed themselves heartily and were sorry to go home. So one can safely tender the thanks of all the guests to Mr. Samuel and his co-directors.

SEAPLANE TESTING.

The first meeting of the 1929-30 Session of the Hull and Leeds Branch of the Royal Aeronautical Society was held in the Aviation Club, Brough, on Dec. 6. About 120 members and friends were present. Mr. E. Hudson, Secretary and Director of the Blackburn Aeroplane and Motor Co. Ltd., was in the Chair, and a lecture on "The Testing of Flying-boats and Seaplanes" was delivered by Mr. L. P. Coombes, B.Sc., A.C.G.I., of the Marine Aircraft Experimental Establishment, Felixstowe.

Mr. Coombes gave an account of the various standard tests applied to a flying-boat or seaplane after it had been delivered by the Contractor to the Station at Felixstowe. These tests include determination of weight and centre of gravity, time and distance of take-off, stability tests, and air performance trials.

The methods of testing and apparatus employed were clearly described, and in addition to standard tests many special tests, such as the determination of static thrust, and research work on the efficiency of water rudders, were explained. The lecture was illustrated by interesting lantern slides.

The next meeting of the Branch will be held in the Hull University College on Jan. 3, when Mr. V. J. Johnston, Wh.Ex., A.F.R.Ae.S., Assistant Designer of Boulton and Paul, Ltd., will deliver a lecture on "Metal Construction of Aircraft."

BRITISH PARACHUTES.

Mr. J. Tranum, the well-known parachutist, who handles the British Russell Parachute so well, writes:—

We note with interest the remarks made by Squadron Leader Pr[illegible] D.S.O., about parachutes during his lecture to the R.Ae.S. on Nov. [illegible] We suggest that he could not have had experience with the R[illegible] "Lobe" type.

This parachute is stated by users to be extremely comfortable, owi[illegible] to the seat and back cushion provided. The self-adjusting propert[illegible] of the harness also materially help in obtaining general comfort.

We think we should bring this point to your notice as we obser[illegible] Sq. Ldr. Probyn makes favourable mention of a foreign parachut[illegible]

SAFE HEIGHT FOR CHANNEL CROSSINGS.

Air Ministry Notice to Airmen No. 70 of the year 192[illegible] gives a scale of heights to be flown by cross-Channel aircraft.

The notice says:—

1. Aircraft not specially adapted for landing on water, when cr[illegible] the English Channel, should, subject to suitable weather condit[illegible] be flown at such a height that land can be reached in the even[illegible] the complete failure of one engine.

[Incidentally.—How does one *land* on *water*?—ED.]

2. In this connection pilots should inform themselves regard[illegible] the best combinations of air speed and angle of glide for the[illegible] aircraft under the above conditions, and hence ascertain the mi[illegible]mum safe height for the overseas route they intend to use.

3. The following information is added for general guidance. Th[illegible] heights quoted are to be regarded as approximate indications o[illegible] and not final in any individual case.

Overseas Route.	Max. distance fr m land in miles.	Suggested Minimum safe Flyin[illegible] Height.		
		Single-engined aircraft.	Twin-engined aircraft.	3-engine[illegible] aircraft.
		ft.	ft.	ft.
Dover to Calais	11	5,000 to 7,500	3,000	2,000
Folkestone to Cap Gris Nez.				
Hythe to Boulogne ...	13	6,000 to 8,500	3,500	2,000
Dover to Dunkirk ...				
Dymchurch to Boulogne	14	6,500 to 9,000	4,000	2,000
Dungeness to Etaples ...	15	7,000 to 10,000	4,000	2,000

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 6; Monday, 9; Tuesday, 13; Wednesday 16; Thursday, 11; Friday, 21; Saturday, 0.

IMPERIAL AIRWAYS LTD.:
London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich: London—Ostend—Brussels—Cologne and return: Machines 22, passengers 98, freight 10½ tons. India Route: Inward, passengers 4, mail 540 lbs.; outward, passengers 0, mail 0 lbs.

AIR UNION:
Paris—London: Machines 20, passengers 37, freight 10½ tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 10, passengers 32, freight 3¼ tons.

SABENA:
Brussels—London: Machines 10, passengers 18, freight 2½ tons.

DEUTSCHE LUFT HANSA A.G.:
Amsterdam—London: Machines 10, passengers 1, freight 2 tons.

MISCELLANEOUS:
British machines 4, passengers 1.
Foreign machines 0, passengers 0.
Total number of trips by British machines, 26, carrying 99 passengers. Foreign machines, 50, carrying 104 passengers.

COMPARATIVE FIGURES.

Week ending Dec. 7:
Machines, 76; Passengers, 203; Crews, 201; Total personnel, 404.
Corresponding week, 1928:
Machines, 85; Passengers, 322; Crews, 168; Total personnel, 490.
Corresponding week, 1927:
Machines, 47; Passengers, 159; Crews, 81; Total personnel, 240.
Corresponding week, 1926:
Machines, 40; Passengers, 123; Crews, 47; Total personnel, 170.
Corresponding week, 1925:
Machines, 63; Passengers, 147; Crews, 71; Total personnel, 218.
Corresponding week, 1924:
Machines, 31; Passengers, 83; Crews, 37; Total personnel, 120.
Corresponding week, 1923:
Machines, 43; Passengers, 45; Crews, 73; Total personnel, 118.
Corresponding week, 1922:
Machines, 36; Passengers, 123; Crews, 70; Total personnel, 193.
Corresponding week, 1921:
Machines, 11; Passengers, 20; Crews, 19; Total personnel, 39.
Corresponding week, 1920:
Machines, 11; Passengers, 14; Crews, 12; Total personnel, 26.

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CROYDON NOTES.

On Thursday last there was a cap-full, or what might perhaps be more truly described as a bowler hat and a couple of trilbys, full of wind. Many air services were operated as usual, in spite of it, though on some routes the weather was unfavourable and some services were cancelled.

One newspaper, which had apparently arranged a "Great Gale" story in advance, took umbrage at this flying and announced on Friday morning that "Aeroplanes were unable to leave Croydon yesterday."

Far be it from us to annoy Fleet Street by flying on days when the Yarmouth Bloater Fleet has to run before the gale to the shelter of Wigan Harbour, and when Wapping Coal Barges are driven backwards up the Thames and wrecked on the desolate shores of Tagg's Island. If they will inform us in advance of any Great Gale they may be arranging in future, we will see what can be done for them.

As a matter of fact, most of us have hesitated to operate many services since Thursday last, and this may or may not have been due to our respect for the Penny Press.

On Friday most of us operated as usual. But Saturday was impossible flying weather and no services were operated.

Some adventurous Moth appeared in the teeth of the gale, however, on Saturday, flying more like a tumbler pigeon than an aeroplane. It landed safely at Croydon, after a series of miracles which would have set the pilot up for life as a Saint in mediæval times.

On Sunday there was no flying, and most services were cancelled on Monday. But on that day an early morning Air Union Goliath reached Croydon from Paris, and a Sabena 3-engined Fokker, piloted by M. Sobry, flew from Croydon to Brussels in 2 hours 17 minutes. Air Union operated outward to Paris from Lympne, and Imperial Airways inward from Paris to Lympne.

M. Cocquyt, Chief Pilot of the Sabena Company, was recently made Chevalier de la Coronne, a Belgian Order corresponding to the French Legion of Honour.—SPRY.

BY ERROR.—I.

In the list of people in the Trade who took the trouble to attend Sq. Ldr. Probyn's lecture, which was reported in THE AEROPLANE dated Dec. 4, Mr. O. E. Simmonds was described as being of the British Spartan Aircraft Co. Ltd. The companies with which Mr. O. E. Simmonds is connected, and of which he is a Director, are in fact Simmonds Aircraft Ltd., and the Simmonds Interchangeable Wing Co. Ltd.,—which names appear on Page 1276 of the same issue.

The inaccuracy of epithet was due to the fact that people habitually talk of "The Spartan Company," or "The Spartan people." And, referring to the firm colloquially, the adjective "British" was prefixed because there happens to be an American Spartan firm which is not connected with Simmonds Aircraft Ltd.

BY ERROR.—II.

Owing to an error in transcription in the report of the lecture of Mr. P. E. Hall, of Bendix-Perrot Brakes Ltd., to the Westland branch of the Royal Aeronautical Society recently, he was made to say that the Bendix airplane brake is made of steel and is then cadmium plated. As a matter of fact this brake is made of aluminium alloy. The error cropped up, presumably, because Mr. Hall described the construction of the automobile brakes which are made of steel pressings and then cadmium plated.

NEW COMPANIES.

SANDERSON STREAM LINING COMPANY LTD.—Private company. Registered Dec. 7. Capital, £100 in 10s. shares. Objects: To acquire any invention relating to the stream lining of steamships, motor-boats, water and air craft, motor-cars, and other vehicles, and to adopt an agreement with H. Sanderson. The directors are: H. Sanderson, 74, Malford Grove, Snaresbrook, E.18, consulting engineer (director of Henry Sanderson and Co. Ltd.). W. Adamson, 5, Fordington Road, Highgate, N. (director and manager of Walles Dove Bitumastic Ltd.).

CARTER INVENTIONS LTD.—Private company. Registered Dec. 3. Capital, £100 in £1 shares. Objects: To adopt an agreement with B. C. Carter, D. H. Kennedy, X. A. Stephens, J. R. Knowles, K. J. Thomson, and the President of the Air Council, to acquire patents, rights, brevets d'invention, licences and concessions, to carry on business as advisers, experts, consultants, engineers, metallurgists, technologists, contractors, etc.

The permanent directors are: Major D. H. Kennedy, Sweethorpe Cottage, Penn, Bucks. J. R. Knowles, Orpington Crescent, N.21, gentleman. A. Stephens (chairman), address not stated. Solicitors: Kenneth Brown, Baker, Baker, Essex House, Essex Street, W.C.2.

PERSONAL NOTICES.

DEATH.

FORBES.—On Dec. 3, at Henlow, Bedfordshire, as the result of a flying accident, Harold Vernon Forbes, Flg. Off., R.A.F.

Mr. Forbes entered the R.A.F. with a short service commission in July, 1926. After a course of flying training at No. 4 Flying Training School, Abu Sueir, Egypt, he was posted to No. 30 (Bomber) Squadron at Hinaidi, 'Iraq. He was promoted to Flying Officer in January, 1928. In August, 1929, he was posted to Henlow for the Engineering Course.

FORTHCOMING MARRIAGES.

HARE—FISHER.—The engagement is announced between Flt. Lt. B. W. T. Hare, R.A.F., elder son of the late Mr. B. F. T. Hare and Mrs. Hare, of Curtisknowle, South Brent, Devon, and Violet Fisher, elder daughter of Mrs. C. G. Bull, of 40, Bramham Gardens, S.W.5. The marriage will take place in India in February.

PELLY—SPENCER.—A marriage has been arranged, and will shortly take place, between Claude Bernard Raymond Pelly, R.A.F., eldest son of the Rev. D. R. Pelly, D.S.O., and Mrs. Pelly, of Woolbeding Rectory, Midhurst, and Margaret Ogilvie Spencer, daughter of Mr. and the late Mrs. E. J. Spencer, of 3, Grand Avenue, Hove.

WALKER—DANIELS.—The engagement is announced between Flt. Lt. Henry Walker, M.C., D.F.C., only son of the late Dr. Maurice Walker and Mrs. J. J. Roberts, of Buenos Aires, and Eleanor Louise, only daughter of Mr. and Mrs. Clark E. Daniels, of Madison, Wisconsin, U.S.A.

BIRTHS.

AIREY.—On Nov. 24, at The Barn, Easterton, Wilts, to Kathleen (*née* Spearing), wife of Flt. Lt. James L. Airey, R.A.F.—a daughter.

BARLOW.—On Dec. 1, to Rosamund (*née* Anderton), wife of Richard Hugh Barlow, R.A.F.—a son.

CAMPBELL.—On Dec. 6, at Farnham, Surrey, to Mollie, wife of Flg. Off. J. H. McNeill Campbell, R.A.F.—a daughter.

CORYTON.—On Dec. 5, at Castle Malwood, New Forest, to Philippa, the wife of Sq. Ldr. W. A. Coryton, M.V.O., D.F.C.—a daughter.

WHYTE.—On Dec. 6, at a nursing home at Uxbridge, to Sibyl, wife of Sq. Ldr. R. Whyte, R.A.F.—a daughter.

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All Advertisements for this column should arrive at this office by first post Monday, to ensure insertion.

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ON GETTING OVER OBSTACLES.

Troubles never come singly. Now that British craft manufacturers are beginning to realise what e market wants in our Overseas Dominions and eign countries, apparently they are finding that real obstacle to the export of British aircraft is a rrier erected by the Air Ministry. This is not a legal rrier nor a technical barrier but a plain physical barrier. No Aircraft Manufacturer can export aircraft without a rtificate of Airworthiness, under conditions laid down the Air Ministry. They can in fact build aircraft which e not certified as airworthy but as the British Airworthiss Certificate is a kind of hall-mark of excellence all e World over, nobody is going to buy British aircraft hich have not been certified as airworthy. And even if e British manufacturer agreed with some foreign buyer buy British aeroplanes without certificates, he would t be able to demonstrate those aeroplanes in cross-untry flights over the British Isles but would only be lowed to fly them within three miles of a recognised aeroome. Consequently, for practical purposes the Air Minisy's Certificate of Airworthiness is necessary to anybody ho wants to sell aeroplanes overseas.

Now these Certificates of Airworthiness are given for carrying certain definite loads. This load is not the weight which a given aircraft can carry without stalling, nor is it the load beyond which the aeroplane becomes dangerous to fly in case of meeting with bad atmospheric disturbances. Nor is it the load with which it can be made to perform aerobatics without fear of breakages. Such loads could in fact be calculated with something approaching scientific accuracy by simple arithmetic without any very deep mathematics, and under such circumstances nobody would object to them as a definite limit. The trouble in this case arises from the fact that the load allowed under the Certificate of Airworthiness is the weight which a given machine has proved that it can lift over a barrier of a certain height set up on an aerodrome, with a certain length of run.

ARBITRARY FIGURES.

Now the length of the run and the height of the barrier are two perfectly arbitrary figures, fixed by some officials or other of the Air Ministry entirely by their own judgment. Presumably they are intended to represent the length of an average English field and the height of an

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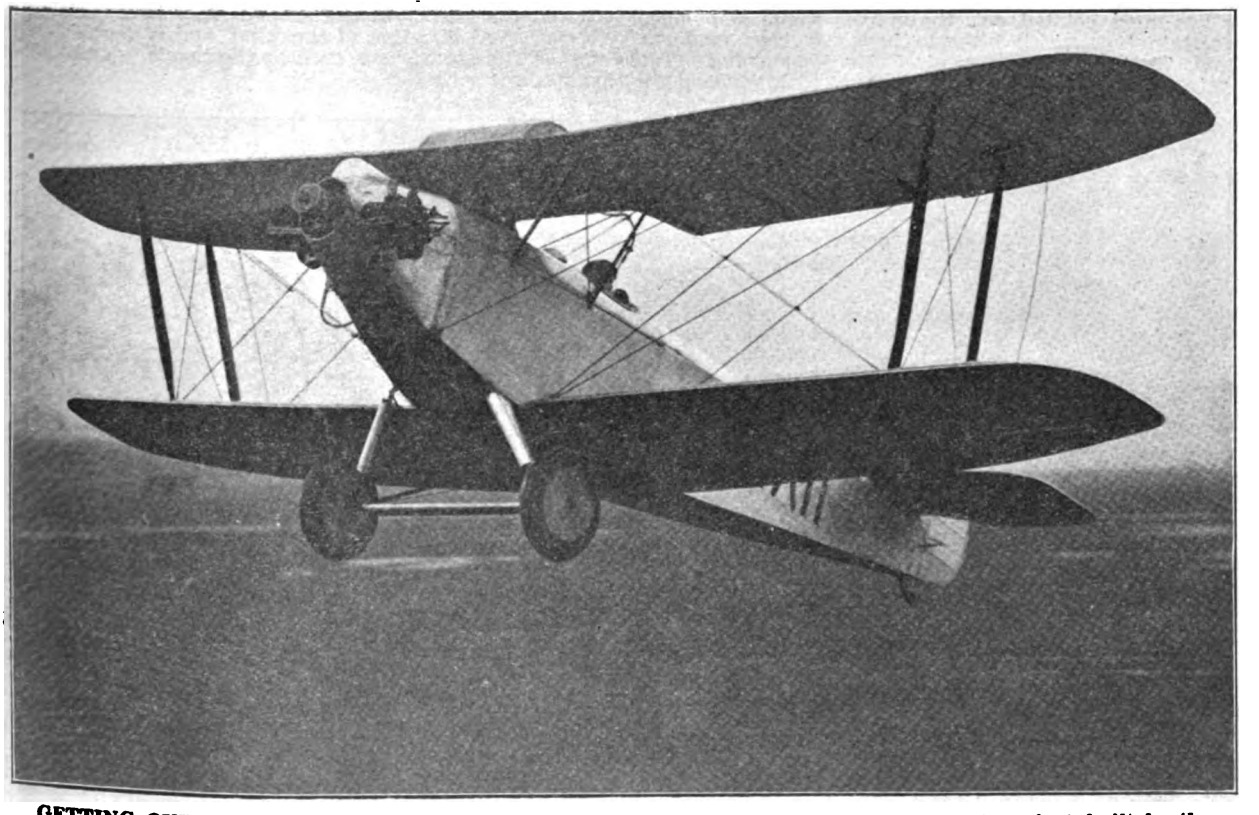

GETTING OVER OBSTACLES.—The Martlet (75 h.p. A.B.C. Hornet 4-cylinder horizontal engine) built by the Southern Aircraft Co. Ltd. of Shoreham. This machine has a remarkable take-off and climb.

—(*"Aeroplane" photograph.*)

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average English tree. As compared with definite measurements such as those on which such certificates should be granted, these are about as reasonable as saying that a thing is as large as a lump of chalk and as long as a piece of string.

A length of run which might seem long in this country would seem absolutely negligible on the open prairie in Canada or on the plains of Australia, or on the veldt in Africa. And the height of a tree which might seem to be a reasonable obstacle in this country would seem absurdly high in 'Iraq, where you only see one bush in miles. And at the other extreme it would be equally absurdly low in certain parts of California where the trees are so high that they say that two men and a boy are needed to see to the top of one of them.

Consequently any purely arbitrary figure fixed by a collection of Government officials amounts in effect to something like a conspiracy in restraint of trade.

A MATTER OF RIGHT.

This is a point which has in fact only just arisen in the British Aircraft Industry. The majority of the firms which compose the British Aircraft Industry are concerned with building war machines and not commercial machines. As the war machines are built entirely to Government requirements, naturally the Government has a perfect right to insist on those machines putting up a definite performance.

If the Government wants a heavy bomber to jump over a tree of a certain height, out of a field of a certain size, then it has a perfect right to lay down whatever figures it likes for that height and length. But it has no right to do so with a commercial aeroplane.

The length of run and the height to be cleared is a matter which can only be decided by the owner, or user, or pilot of the aeroplane itself. So long as the Air Ministry is prepared to certify that an aeroplane is fit to fly safely with a certain load without any danger of its breaking in the air through any shock it is likely to meet in the air itself, all that the Government has any right to demand is that its strength shall be up to that requirement.

The Government does not insist on a certain top speed, or a certain landing speed, or even a certain ratio between the two, which would be reasonable. Nor does it insist on a certain stalling speed or sinking speed, or a certain degree of visibility from the pilot's point of view, which would be still more reasonable. So it certainly has no right to insist on a certain length of get-off or initial angle of climb.

INTERNATIONAL COMPARISON.

The way this arbitrary rule works is as follows: As this paper has often pointed out, the market wants aeroplanes of a certain type which hitherto have not been made in England. That is to say it wants Cabin Monoplanes or at any rate cabin machines of some sort. And hitherto practically all machines of this sort which are doing any business have been built either in America or Holland. They are now built successfully in France, as those two remarkable voyages to Madagascar show. And now we are beginning to make them in England.

According to quite reliable information, none of the American machines of this type, such as those which are so popular in Canada, would have any chance of clearing the official Air Ministry obstacle with anything like the load which they commonly carry in Canada and the United States. And the American Department of Commerce which issues licences analogous to those issued by our Air Ministry, does not insist on any such tests of length and height in getting off or of landing.

In effect practically all these American aeroplanes are very much faster than ours, and are therefore definitely much better for air transport. But they take a much longer run in getting off. They land very much faster than ours do, but they are all fitted with wheel brakes, and consequently they actually stop in a shorter distance away from any trees or other barriers over which they have been compelled to land.

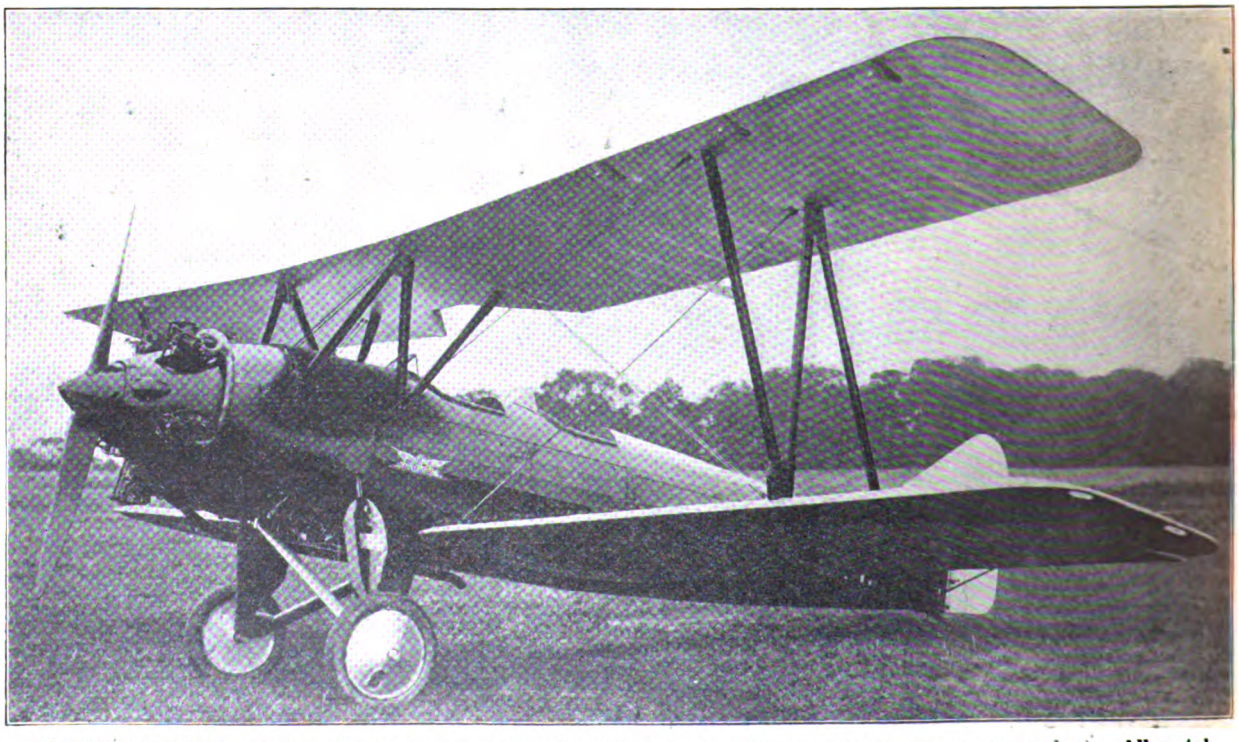
All the American Government does is to guarantee that the machines are properly designed and properly constructed so that they are not liable to break in the air. After that the buyer pleases himself whether he will use his machine with a long run and get off with a big load or whether he will have a short run and only lift a light load. That is quite reasonable and proper.

If such air transport machines as have been built in this country were judged only by the American standard, they could be certified as airworthy to carry hundreds of pounds more load than do the American machines, in or about the same category. But because our Government insists on this arbitrary test of height and length in getting off and only issues an airworthiness certificate for the load with which the machine has passed that test, then our machine can only be sold as airworthy at that load. And the buyer overseas or in a foreign country who is thinking of buying a British aeroplane considers that load certificate against an American load certificate which entails no obligation in getting off or in landing at all.

UNFAIR CONDITIONS.

Quite apart from our arbitrary standard, our method of passing a machine for its certificate is absolutely unfair because, even if we admit that the arbitrary figures are reasonable, aircraft may endeavour to pass the test under such varying conditions that the figures really mean nothing at all.

The length of get-off depends on the relative softness or hardness, or dryness or wetness, of the ground, and also on the quality of the ground. Also it depends on the strength and direction of the wind, and it depends on the state of the atmosphere, such as the humidity and the temperature.



KEEPING AHEAD.—The new Avro training machine (135 h.p. Armstrong Siddeley Mongoose engine). All-metal structure. New oleo undercarriage. Slotted wings. Hand-grip-holes in the lower wing-tips, to make handling on the ground surer. All points to show that the World's most popular training aeroplane is still keeping ahead of the times.

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1923 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed 192.4 m.p.h.

1926 The first non-stop crossing of South Atlantic Ocean carried out by Commandante Franco flying a Dornier flying-boat with two Napier engines.

1927 Schneider Trophy won by a Napier-engined Supermarine-Napier seaplane flown by Flight-Lieut. S. N. Webster, A.F.C. Speed 281.669 m.p.h.

1928 Capt. H. S. Broad, flying D.H. Hound, fitted with Napier engine, secured three World's speed records whilst carrying loads of 500 and 1,000 kilogrammes.

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1929 The first non-stop flight from England to India was carried out with a Fairey monoplane fitted with Napier engine. 4,130 miles in 50 hrs. 38 mins.

Land—1929 The highest speed ever attained on land was made by Major Sir Henry Segrave when he drove his Irving-Napier car over one mile at the amazing speed of 231.36 m.p.h.
Capt. Malcolm Campbell set up world's land speed records at Verneuk Pan with his Napier Arrol-Aster as follows :—over 5 miles, speed 211 m.p.h.; over 5 kilometres, speed 216.53 m.p.h. They both used Napier engines

Water—1929 The world's motor-boat speed championship was won at Miami by Major Sir Henry Segrave, driving Sir Charles Wakefield's Napier-engined "Miss England."
Sir Henry Segrave at the Lido with the same boat made six runs over the measured mile, averaging a speed of 92.8 m.p.h.
At this meeting, competing against the best from Italy and America, Sir Henry Segrave won all trophies, including the Duke of Piedmont's cup and Count Volpi's cup.

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In the calculations everything is done to reduce the actual existing conditions to that terrible thing which scientists call "standard air." But although they may reduce the figures to standard air, they have not yet invented such a thing as "standard ground," and that affects the get-off even more than anything else. All of which shows that the test is merely silly. But worse than that it is definitely damaging to the possibility of sales of British Aircraft abroad.

A Silly Regulation.

This regulation is all the sillier because when the buyer has the machine in his own possession he can use it exactly as he jolly well pleases. If he has good clear ground and a good wind to help him off, he can overload the machine quite considerably. The Authorities cannot maintain an Inspector of the Aeronautical Inspection Department at every aerodrome to see that every machine goes off with a proper load or less. And the Insurance Companies cannot maintain such an official either. Consequently a freight machine or a privately owned machine can be taken off with just whatever load the pilot likes to carry. Regular air-line machines have to weigh-in their passengers and freight before starting, but there is no such check on charter-planes or private aircraft.

The real trouble about all this is that American machines work all right in Canada, where the air is good even in quite hot weather. Moreover, in Canada a very large number of machines are used fitted with floats, and have plenty of room from which to get off lakes and large rivers. And when they are not being used on floats, these machines are generally used on skis and have as much run as they like over open snow. Consequently the Canadian pilots do not have to worry themselves about small fields and high trees.

The curious thing is that when the Canadians want really handy nippy machines for their forest patrols and so forth,—machines which will get into and out of small spaces, either on land or on water,—they then use Moths or Avians, mere British-built light aeroplanes, in preference to American cabin machines with very much higher power. Yet the fact remains that for passenger transport or goods transport and high speed over long distances, the Canadians do use these American machines,—almost entirely because there is not a machine of that type built in England to meet their needs. And apparently, so long as this Government barrier exists, no English manufacturer is likely to find the building of such machines worth his while.

One is labouring this point somewhat, for the benefit of our fellow-subjects in Australia and South Africa and, for the matter of that in India and New Zealand, where before very long the American Aircraft Industry will start trying to dump aeroplanes of the types which are so popular in Canada.

The Effect of the Slump.

One had not expected the dumping of American aeroplanes into the British Dominions to begin for another three or four years. Judging by the way aviation was developing in the States there seemed no probability that the demand for aeroplanes in the United States themselves would be filled by the American Aircraft Industry for that time at least. But now, because of the financial slump in the States, the American Aircraft Industry finds itself with thousands of aeroplanes on its hands and nobody to buy them or use them.

The latest news from America says that the American Aircraft firms have at least five thousand aeroplanes in stock. The Ford Company instead of building three of their tri-motor machines a week and being months behind with deliveries, now have about twenty of these machines actually in stock. And there does not seem to be any prospect of their selling them in America.

Air transport in the United States is suffering from the general slump and from various other causes. Because of the slump, people who would have gone joy riding cannot afford to do so. People who would cheerfully have spent the extra price of air transport on necessary journeys over long distance are now content to travel by train,—if in fact they have enough business to justify their making a journey at all.

Also there have been many bad crashes in the United States lately with air-line machines and with their scenic-airway craft, as they call them. These crashes have choked off a number of passengers who would otherwise have become air travellers.

Added to that the Winter is now coming on and the holiday season is over. And so the Americans, so far as air traffic is concerned, are suffering from a financial slump and a seasonal slump and a moral slump all at once.

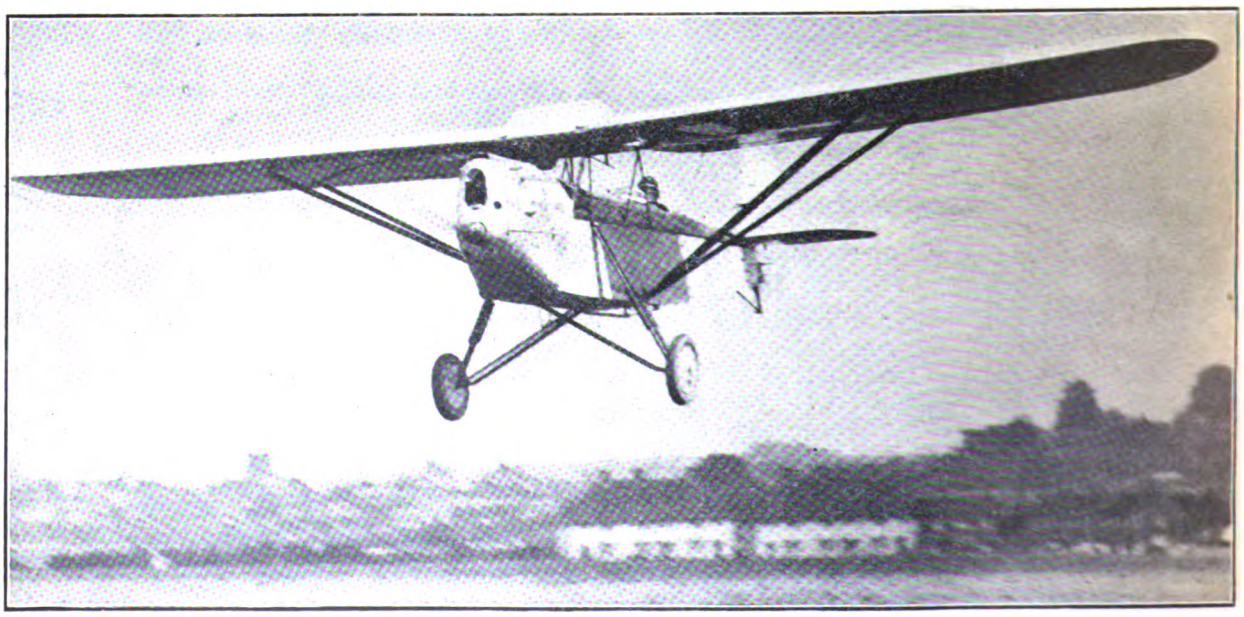
What then could be more natural than that the Americans should try to plant all their excess aircraft on the British Dominions? And everything seems to be open for them to do so.

In the Wide Open Spaces.

By agreement with the Canadian Government any aeroplane carrying an American Department of Commerce certificate is automatically regarded as airworthy in Canada. And when an aeroplane carries a Canadian Airworthiness Certificate, how can the Australian Government, or the South African Government, or any of our Central and East African Governments refuse to admit that machine into their territory?

If they do refuse, then the local agent for some American motor car or American agricultural implement who has been lured into becoming the local agent for an American aircraft firm is going to raise a terrific row with the local government.

The position is just a little bit like the trouble which South Africa constantly has with the Indian Government because our coloured fellow-subjects from India, all the way from coolies up to merchants of quite high standing, claim that because they are British subjects they have therefore a prescriptive right to go and work or trade in South Africa. The South African Government has quite



STILL PROGRESSING.—The all-metal Westland Widgeon (105-115 h.p. Cirrus Hermes). The Widgeon was the first British high-wing monoplane, among light aeroplanes, and with the Hermes it is still one of the handsomest of light aeroplanes and has a very high performance.

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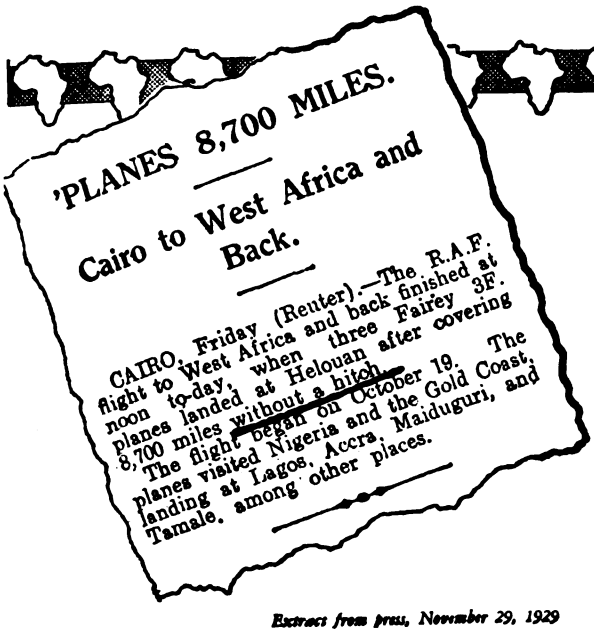
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Cairo to West Africa and Back.

CAIRO, Friday (Reuter).—The R.A.F. flight to West Africa and back finished at noon to-day, when three Fairey 3F. planes landed at Helouan after covering 8,700 miles without a hitch. The flight began on October 19. The planes visited Nigeria and the Gold Coast, landing at Lagos, Accra, Maiduguri, and Tamale, among other places.

Extract from press, November 29, 1929

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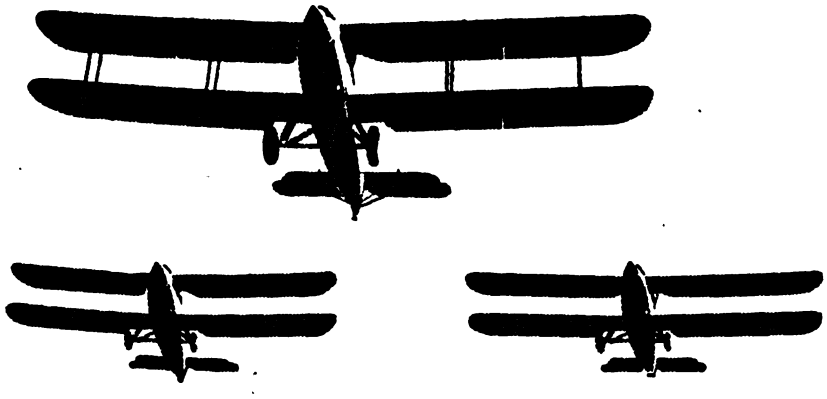

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enough trouble of its own with coloured labour, without importing more coloured labour backed by coloured merchants from India.

So one can quite see the Australian Government and the South African Government and our other Dominion Governments having quite a nice argument with the Canadian Government as to whether they have the right to refuse entry of an American machine with a Canadian Airworthiness Certificate.

If they do admit these American machines they may be sorry later on. Aircraft which would get off all right in the United States or Canada, over prairies or deserts or snow-clad plains, will be found quite a different proposition in Australia and Africa.

The machine that gets off lake level quite well in Canada will probably not get off the ground at all in Queensland, where,—when the boiling air is calculated down to what the scientists call "standard air,"—the sea-level aerodromes are actually under conditions which represent a height of 5,000 ft. in this country. And in Rhodesia and Kenya the aeroplanes start by being definitely at a height of 5,000 ft. or thereabouts, without allowing for the heat at all,—which probably puts them up to a standard air representing 8,000 ft. or 9,000 ft.

Experienced pilots who have flown out from England say that machines which can get off perfectly easily anywhere in Europe take a tremendous run in the East African highlands, and machines which can be floated onto the ground anywhere you like in Europe, simply fall out of your hand if you try to put them down in the same sort of way in Africa.

Our pilots in Queensland are so used to flying under these appalling conditions of heat that they have never worried to say anything special on the subject, but one does know from English pilots who have flown in Queensland that the same difficulties are found there about getting British aeroplanes onto the ground comfortably.

If all this difficulty is found with our aeroplanes which can be squashed down quite comfortably from a height of several feet and touch the ground gently, what sort of hope is there for those American cabin monoplanes, and open machines too, for the matter of that, which, as a Canadian correspondent said the other day, "land like a gliding paving-stone."

CONDITIONS IN AMERICA.

A member of the British Aircraft Industry who recently returned from the United States described air transport there as being in much the same state as it was with us in 1921. Everybody started by being frightfully optimistic, a lot of money was spent, machines of the wrong type were used for the wrong job, and then came the slump.

We discovered that we could not run air lines without subsidies and now, according to this particular report, they are finding the same thing in the States. At any rate, Pan-American Airways, who are running the Mail route down the West coast of South America to Chile, are drawing a subsidy of two dollars per pound per mile flown, or alternatively, if enough weight is not carried, they are paid by the American Government for space available for mail,—just in the same way as our Trans-Atlantic and other Mail Steamships are paid by the Government.

One has heard all this kind of thing before about finance, slumps and industrial slumps in America. The result always is that America's over-production is dumped in the British Dominions, and in countries where we have got a certain amount of trade, and our trade is promptly scooped by the low price of American dumped products.

We always use the same argument that American products are so inferior to English products. But the Overseas Buyer, if he can buy an American thing which is half as good as an English thing, and can buy it for a quarter of the price, reckons that he is making a profit of 100 per cent. on his outlay. Consequently the American gets away with the market while we are wondering what to do about it. And as usual history will repeat itself. And the American will get away with it if we are not quick to move.

THE REMEDY.

The obvious remedy for all this trouble is simply for our manufacturers to make what the market wants, and for the Air Ministry to remove the barrier which at present prevents us from competing in that market on equal terms.

So far as one knows, this matter of the Government barrier to export trade has never hitherto been raised. One feels sure that when our Director of Civil Aviation and our Director of Technical Development have their attention drawn to it, they will be all in favour of removing that barrier.

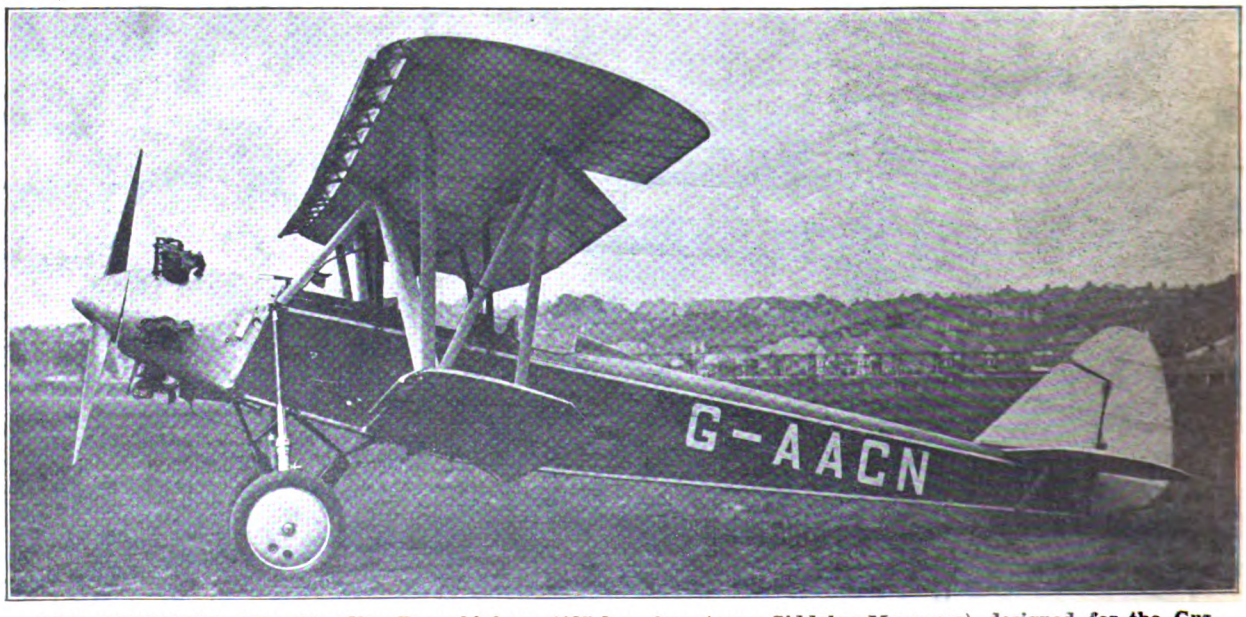
Their trouble will only begin when they try to get the barrier removed and have to deal with their own swarms of subordinates in minor offices, whose job consists chiefly in delaying the work of their superiors. Quite a number of reforms have been approved by senior officials and have then been held up for months or even years by their various scientific advisors and technical experts, each in his own little water-tight cubby-hole down inside the Air Ministry raising objections or causing delay.

This is a matter which might very well be taken up by the Secretary of State for Air and the Under-Secretary of State for Air themselves and pushed through with the weight of the Cabinet behind them. Our Government is all out to decrease Unemployment, and one of the best ways of decreasing unemployment is to increase export trade. Here is a very simple way of doing it.

One of the worst troubles is that so few firms in the British Aircraft Industry are at all interested in this class of business. At any rate there are not enough interested in it to produce anything in the nature of concerted action. But action of some sort is of vital importance to those people who do want to do trade overseas in commercial aircraft.

In fact one very much doubts whether the firms in the British Aircraft Industry who are chiefly concerned in making war machines even know that this particular barrier to overseas trade in commercial aircraft exists at all. When they do learn about it, they will probably be sympathetically indignant, but that is all, because it does not immediately affect them individually.

Though one does profess to know most of the things which hinder our foreign trade, especially the obstinacy of the British Aircraft Industry themselves, one has only just heard of this particular obstacle, and so one feels a bit



THE GUGNUNC.—The Handley Page biplane (135 h.p. Armstrong Siddeley Mongoose) designed for the Guggenheim Safe Aircraft Competition, with automatic slots (lately nicknamed "climbing irons") all along the leading edges of the planes, and flaps along the trailing edges to increase the camber of the wings. Thus the whole machine is designed to get over obstacles.

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105/115 H.P.

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"HERMES"

OIL CONSUMPTION:

1 PINT PER HOUR.

PETROL CONSUMPTION:

6 GALLONS PER HOUR.

AT CRUISING SPEED, 110 Miles per Hour, 1,900 R.P.M.)

This is one of the many reasons why "Hermes" engines are fitted in the following aircraft:

WESTLAND Triple-engined LIMOUSINE
SAUNDERS-ROE twin-engined CUTTY SARK
DESOUTTER 3-Seater TAXIPLANE
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and
many different types of Foreign Aircraft.

CIRRUS AERO ENGINES, Ltd.,

Regent House,
89, KINGSWAY, LONDON, W.C.2.

Telephone: HOLBORN 4076.

Telegrams: OCIRRUSO, LONDON.

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like the famous sailor-man who, on coming out of a Mission House down by the Docks, met a Jew and murderously assaulted him,—on the grounds that he himself had only just heard of the Crucifixion for the first time.

In a general way one can claim that for quite a long time one has been one of the chief champions of the Air Ministry against the complaints of all and sundry. In this particular instance one feels that one may revert to one's old part of chief assailant of the Air Ministry. Quite possibly some Aircraft Manufacturers themselves, now that they have become so accustomed to the rules and regulations set by the Air Ministry, may be glad to have somebody to do the attacking which, if they did it themselves, might bring upon them reprisals from Air Ministry officials.

Do It Now.

At any rate, to sum up the whole position, if we do not go all out for the trade in air transport vehicles in our Overseas Dominions and in foreign countries within the next few months, then those countries are somehow or another going to be flooded with dumped American machines.

Even if the brightest of our Aircraft Manufacturers set to work at once and build sensible air transport machines they cannot very well start delivery before March, say, and probably not before June. By that time probably, there will be ship-loads of American aircraft on the high and free seas on their way to our Dominions. If we rush out some good sample machines which entirely out-perform the American machines under local conditions, we may have a chance of staving off the buying of those American machines until we can build enough to fill the local demand. But before anybody finds it worth his while to build such machines, the Government must remove that barrier.

In a certain measure the position is a little like [illegible] which caused us to lose the overseas trade in motor [illegible] That again was primarily due to the fact that the Br[illegible] Manufacturer was too stupid or too self-satisfied to [illegible] what the market wanted. But a Government regu[illegible] contributed very largely to the fact that we never had [illegible] motor cars suitable for the Colonial market.

The British Government started taxing motor cars [illegible] the bore of their cylinders. The British Motor Manufacturer proceeded to build small engines with a very [illegible] bore and a long stroke and enormously high revolu[illegible] which stood up pretty well on English roads but cost [illegible] enormous amount for repairs, and were, and still are, [illegible] useless on Colonial roads, or where there were no r[illegible] at all, as in most of our Dominions.

The Americans, with whom their Government did [illegible] interfere in the least, made cars which suited their [illegible] demands and incidentally happened to suit the dem[illegible] of our Dominions. And so the American motor-car [illegible] got the whole market.

Here again we have a Government Department, in [illegible] case the Air Ministry, imposing regulations on a Br[illegible] transport vehicle, to wit, the aeroplane, with the inten[illegible] of making it safer, or at any rate more suitable for Br[illegible] conditions. This is an entirely praiseworthy intention [illegible] the most unkind thing that one can say of anybody is th[illegible] they "mean well," and in this case our poor dear Air Mi[illegible]try distinctly means well. All we can do is to hope th[illegible] in the interest of British Trade overseas and in the inter[illegible] of decreasing unemployment in this country, they will ce[illegible] to mean well but will do well by removing that barrier.—C. G. G.

INTERNATIONAL OBSTRUCTION.

In the debate on Foreign Affairs in the Second Chamber at The Hague during November Herr Knottenbelt suggested that the British Authorities in England and India were placing difficulties in the way of the Holland—East Indies air service.

He said that the Dutch services were working well while the British services overseas were still defective. He suggested that—as a British Imperial air line to and from Australia was impossible without the co-operation of the Dutch Indies—the application of the principle of reciprocity might affect the British Government's attitude.

Herr Knottenbelt's speech refers to a statement that Dutch aircraft operating a regular line from Holland to the Dutch East Indies will not be permitted to fly across India after Jan. 1, 1930. This objection is advanced primarily by the Indian Government.

Hitherto the Dutch have made a number of experimental flights to the East Indies and permission to use the landing grounds en route has been readily granted. India now considers that the landing grounds are not fully enough prepared to permit their use for a regular service.

The Dutch company has said that it would be prepared to take the risk of continuing to use the landing grounds as they are, but permission is still withheld.

In 1928 and 1929 a number of experimental flights were made between Holland and the Indies. A large proportion of this year's flights met with trouble owing to weather conditions and bad landing grounds.

While everyone will sympathise with this set-back to Holland's courageous attempt to develop long-distance air transport, a certain amount of reasonable consideration should be given to both sides of the argument.

The backwardness of the Indian Government in laying down chains of landing grounds is due to lack of adequate appropriations of money. When money is forthcoming India will naturally expend money on aerodromes on routes that are to benefit Indian conditions first, which, after all, is only natural. There is no doubt that a Calcutta—Karachi route will be one of the first to receive attention.

The regulations of the Indian Government, which call for a large proportion of Indian capital and personnel in the constitution of Indian air transport companies, leaves Great Britain in an almost as hopeless position as is Holland in expecting rapid progress in Indian Civil Aviation. Imperial Airways, as it is constituted, is no more free to fly regularly across India than is the K.L.M.

The Indian Government is justified in restraining the passage of an air line carrying passengers, mail and freight, no matter of what nationality, over its vast territory, while conditions are such that serious accidents may happen through natural conditions for which the Government would innocently be held responsible.

Herr Knottenbelt's statement that the Dutch services are working well while the British services overseas are still defective is one of those political innuendoes that make certain parliamentary utterances so futile, or spiteful.

His references to British services overseas obviously refer to the misfortunes of the England—India service, a service which has been operated in the face of difficulties of kind similar to those which are preventing the operation of the Holland—East Indies Service.

At any rate, our good friends in Holland may rest assured that they cannot be more irritated by the futility and fatuity of the Indian Government than are those people in this country who have the misfortune to have dealings with it. And one fears that we may all look forward to a still worse state of affairs when India gets self-government—which state is likely to continue till the natives get themselves into such a mess that they have to call us in again to straighten things out for them.

MR. SPOONER'S COMING OF AGE.

Early in the New Year the oldest aeronautical newspaper in the English language, our valued contemporary *Flight* will complete twenty-one years of publication. On behalf of all aeronautical people we of The Aeroplane extend to its editor, Mr. Stanley Spooner, the heartiest congratulations.

Flight was in fact started as an offshoot of *The Automotor Journal*, later known as *The Auto*, very much as some six months later I had the honour of starting *The Aero* in June, 1909, for Iliffe and Sons Ltd., of Coventry, as an offshoot of *The Autocar*. But whereas I was pitch-forked purely accidentally into reporting the first aero show in the World, in Paris at Christmas-time, 1908, my old friend Stanley Spooner had long been interesting himself in aeronautical affairs, and was one of the very earliest members of the Aero Club, long before it became the Royal Aero Club.

Very properly, to commemorate Mr. Spooner's long association with aeronautical affairs, Colonel the Master of Sempill is organising a dinner in his honour, which dinner will be held somewhere about Jan. 3. And naturally the function will have the support of the Royal Aeronautical Society, the Royal Aero Club, the Air League, the Society of British Aircraft Constructors, and, one hopes, the Guild of Air Pilots and Navigators, all of whom owe much to the efforts of Mr. Spooner.

The original idea was to have a more or less personal gathering of the older friends of Mr. Spooner who are associated with the various organisations above-mentioned. But there may be, and there certainly ought to be, a feeling among other people not necessarily holding official positions in those organisations that they also would like to show their esteem and regard for Mr. Spooner.

If that be so, as one hopes it is, all who would like to attend this gathering are advised to write as soon as ever they can, to Colonel Sempill at the Royal Aeronautical Society, at 7, Albemarle Street, London, W.1, expressing their wish to be present. If many people wish to go to the dinner the date will probably have to be postponed so as to make suitable arrangements.—C. G. G.

THE ROYAL AERO CLUB CHRISTMAS CLOSING.

The Club will be entirely closed from 07.00 hrs. on Tuesday, Dec. 24, to 08.00 hrs. on Friday, Dec. 27.

The Club will also be closed on Saturday, Dec. 28, from 15.00 hrs. till 24.00 hrs. for the Club Staff Christmas Party

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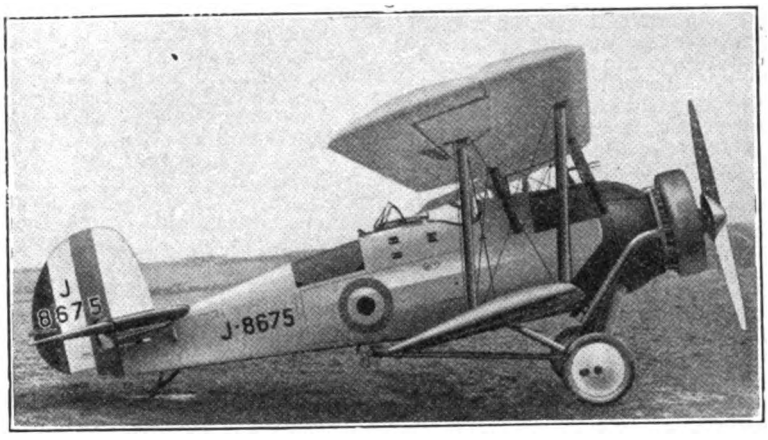
ARMSTRONG WHITWORTH
AIRCRAFT



THE ALL STEEL ATLAS
(ON WHEELS, FLOATS OR SKIS)

THE all-steel Atlas is the best aircraft for land or sea reconnaissance.

It is the standard Army Co-operation two-seater of the Royal Air Force.

Its steel construction accounts for its unrivalled durability and ease of maintenance. Fitted with the world-famous Armstrong Siddeley Jaguar engine (plain or geared type), its speed, climb and ceiling fulfil the severest Service requirements. It is produced on the grand scale by the best equipped aircraft works in Europe.

PERFORMANCE FIGURES

ATLAS WITH JAGUAR ENGINE AND TOWNEND RING

Fuel, 75 gallons (337 litres). Oil, 7 gallons (32 litres). Military Load, 880 lbs. (400 kgs.)

	Plain Engine.	Geared Engine.
Approx. total weight	4000 lbs.	4115 lbs.
	1820 kgs.	1870 kgs.
Speed at ground level	143.5 m.p.h.	149 m.p.h.
	231 km.p.h.	240 km.p.h.
" " 5000 ft.	139.5 m.p.h.	145 m.p.h.
" " 10000 ft.	134 m.p.h.	140 m.p.h.
" " 15000 ft.	125 m.p.h.	131 m.p.h.
" " 1000 metres	226 km.p.h.	236 km.p.h.
" " 3000 metres	216 km.p.h.	225 km.p.h.
" " 5000 metres	193 km.p.h.	204 km.p.h.

	Plain Engine.	Geared Engine.
Time to 5000 ft.	5.25 minutes	4.25 minutes
" " 10000 ft.	12.5 "	10.5 "
" " 15000 ft.	26 "	21.75 "
" " 1000 mtrs.	3.5 "	2.5 "
" " 3000 "	12.5 "	10.25 "
" " 5000 "	34 "	27.5 "
Absolute Ceiling	19000 ft.	19100 ft.
	5800 metres	5830 metres
Service Ceiling	17300 ft.	17700 ft.
	5280 metres	5400 metres

Maximum allowable R.P.M. 2200. Normal R.P.M. 2000

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A NEW RECORD BY M. COSTES.

M. Costes began on Dec. 15 an attempt to beat the World's Record for distance in a closed circuit, at present standing in the names of Capt. Ferrarin and the late Major del Prete with 7,666 km. (4,760 miles).

The machine is the "?" used by Costes for his recent successful attack on the long-distance record. M. Codos, the well-known Air Union pilot, is the second member of the crew.

At the moment of going to press news came that they had landed after covering 4,916 miles.

They used a Hispano-Suiza engine of 600 h.p.

A COSMOPOLITAN ATTACK ON THE DISTANCE RECORD.

A Bréguet with Captain Challe (France) and Colonel Larre Borges (Uruguay) left Seville at 12.30 p.m. on Dec. 15 in an attempt to break the World's long-distance record for a non-stop flight recently captured by Costes and Bellonte.

The Bréguet took off with 4,150 litres (913 Imperial gallons) of fuel on board. Five hours and twenty minutes after taking off the Bréguet flew over Rio de Oro (West Africa).

Some hours later it was sighted some 600 miles south-west of Cape Verde by a Spanish steamer during the early afternoon of Dec. 16.

A wireless message was received at 5.40 p.m. (G.M.T.) asking for a report of weather conditions along the Brazilian coast.

At 13.00 hrs. G.M.T. on Dec. 17 Capt. Challe's machine passed Maceio, about 120 miles south of Pernambuco, Brazil.

They landed and crashed in the State of Rio Grande del Norte, about 50 miles from the coast.

Like MM. Costes and Codos they used a Hispano-Suiza engine of 600 h.p.

MADAGASCAR—REUNION.

MM. Goulette, Marchesseau and Bourgeois, who recently flew from Paris to Madagascar in a Farman F-190 cabin monoplane (230 h.p. Salmson engine), had been held up at Antananarivo owing to the severe illness of M. Goulette. On Nov. 16, three weeks after their arrival and after the recovery of M. Goulette, they left Antananarivo and flew a complete circuit of Madagascar, stopping at Maevatahana and Majunga.

On Nov. 20 they flew to Antsirabe and back.

On Nov. 24 they flew to Tamatave, but in landing one wheel sank into some soft sand and the machine stood on its nose. The airscrew suffered the only damage and this was bent straight by a local mechanic.

On Nov. 26 they left Tamatave and flew to the island of Réunion over 380 miles of sea, and their arrival at Saint-Denis was made the occasion of great enthusiasm. Their Farman-Salmson was the first aeroplane to be seen in this distant French Colony. The crew suffered four days of entertainment during which time the various notabilities of the island, including the Governor, were given their *baptêmes de l'air*. On Dec. 2 they left Saint-Denis for Tamatave, carrying a quantity of special mail for Madagascar and France.

On their way back from Antananarivo to Mozambique they were lost, and after some time the assumption was that they were dead.

They were rescued from Juan de Nova Island by the s.s. *Gallieni*. The three aviators are well and the mail they were carrying is intact.

The three pilots of this flight must not be confused with MM. Bailly, Reginensi and Marsot who also flew from France to Madagascar in a Farman F-190 monoplane, but with a Gnôme-Rhône Titan engine. These three last-mentioned pilots have since returned to France from Madagascar in eight days.

A new attempt to fly to Madagascar in a Farman 190 (240 h.p. Lorraine radial air-cooled engine) is to be made by MM. Roux, Caillol, and Dodement,—the first as pilot, the second as navigator, and the third as mechanic.

The flight will be made in the longest possible hops. This is of interest because the object of these flights is to organise air *mail* lines, and The Aeroplane has always said that fast single-engined machines making long hops are the best for this job.

A BREGUET TRI-MOTOR?

There is some talk in France of a forthcoming attempt by M. Costes to fly to Australia, presumably by long stages. The machine will be a new Bréguet tri-motor, which is reported to be under construction in the Bréguet works. This will be the first three-engined aircraft built by the Bréguet firm.

A NEW FRENCH FLIGHT TO SAIGON.

On Dec. 14 MM. Rébard, Lassale, and Faltot left Paris in a Nieuport 641 cabin monoplane with a 230 h.p. Lorraine air-cooled radial engine on a flight to Saigon, Indo-China.

The first stage to Tunis was completed non-stop in twelve hours.

AN ITALIAN ATTEMPT ON THE ENDURANCE RECORD.

After flying for 44 hours 30 minutes in the Savoia 55 monoplane Major Maddalena and Lt. Cecconi were forced to land by violent wind squalls which increased the petrol consumption and ruined the chances of breaking the existing record of over 65 hours. The attempt was made at the Montecelio Aerodrome near Rome.

GLIDING.

THE BRITISH GLIDING ASSOCIATION.

One gathers that the British Gliding Association is forging ahead. Various important authorities are very amicably disposed towards the new movement.

At the General Meeting shortly to be held, enthusiasts will find that a skeleton organisation has been built up. This organisation will allow the enthusiasts to form local groups and start in right away, either to build their own machines or to fly bought gliders from selected sites.

A good idea seems to be for the Association to have a Central Committee which will be able to confer, and transact business, with the various people with whom such an organisation must come in contact.

This Central Committee could also be responsible for airworthiness, the selection of sites for gliding, and the general good behaviour of the local groups who will otherwise run their own shows.

One would say as a personal view that the sooner these groups get going the better so that possible sites may be discovered and tested before the lecture by Dr. George.

All those interested are invited to write to Mr. L. Howard Flanders, c/o The Royal Aeronautical Society, 7, Albemarle Street, W.1.

LEARNING TO GLIDE AT GEELONG.

The Aeroplane of Nov. 20 reported the formation of a Gliding Club at Geelong in Australia and gave a short account of their first public demonstration.

A letter to this office from Mr. Pratt of the Aircraft Manufacturing and Supply Co. of Australia, Pty., Ltd., who built the Club's glider, contains some interesting facts.

The glider (of the Zœgling type) costs about £100. The craft is very stable, and will almost parachute to earth. When about 25 feet off the ground the glider is put into a glide and it lands between 10 and 15 m.p.h.

A system of lessons on the ground has been evolved and tried out, after which the pupil is given a short glide from a catapult start. As the pupils gain confidence and skill they are launched from successively higher places on the hill until they can be launched from the top.

The pupils have no dual control lessons whatever, and so far no damage has been done to the glider.

These notes are of obvious interest to gliding enthusiasts because the Geelong Club shows how an interested group of people can start gliding and evolve a training system.

After this glider had been built various aeroplane pilots, like Mr. Pratt, flew it. So soon as they had found how it differed from power-driven machines they started in to teach the novices.

LEARNING FROM GLIDING EXPERIENCE.

One of the German Gliding Clubs has enclosed the pilot's seat on their Zoegling type glider. This has had the effect of improving the gliding angle from 1 in 8 to 1 in 12 and giving the glider improved rudder control. The pilot has a greater sense of security, but owing to the small dimensions the rudder bar has had to be made unpleasantly short.

The nacelle has been built of 2 mm. and 1½ mm. plywood to a streamline section (Gœttingen 410) with the greatest breadth just forward of the pilot's seat.

SOARING FLIGHT.

[*Der Segelflug*. By Walther Kleffel. VIII plus 178 pages. 83 pictures. 10s. net. Can be got to order from The Aeroplane Book Dept., Cannon House, Pilgrim Street, E.C.4.]

Those who are interested in gliding and are able to read German will find much to interest them in *Der Segelflug* recently written by Herr Walther Kleffel. This book deals with the flight of birds, gliding and soaring, a review of the Rhoen gliding, the work of the latest soarers, and in a general way with everything to do with soaring flight except the actual design and construction of gliders.

Herr Kleffel is one of the most energetic journalists in Germany. Whether he is dealing with the politics of aviation or with the design and construction of aircraft and airships, he is always entertaining. He was a passenger in the *Graf Zeppelin* on its recent trans-Atlantic flights. And he has an all-round useful knowledge of aeronautics. Our old friend Herr Oskar Ursinus of *Flugsport* describes the book as a literary history of the Rhoen gliding.

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WORLD'S RECORD WITH A GENET ENGINE

2655.464 km. (1,660 miles) in a straight line by Pilot Zimberly on a Barling N.B.3 fitted with an 80-88 h.p. Armstrong Siddeley Genet, at Brownsville, United States. (Light Aircraft Class 3.)

ARMSTRONG SIDDELEY

MOTORS LIMITED,

COVENTRY, ENGLAND, and 10, Old Bond Street, London, W.1.

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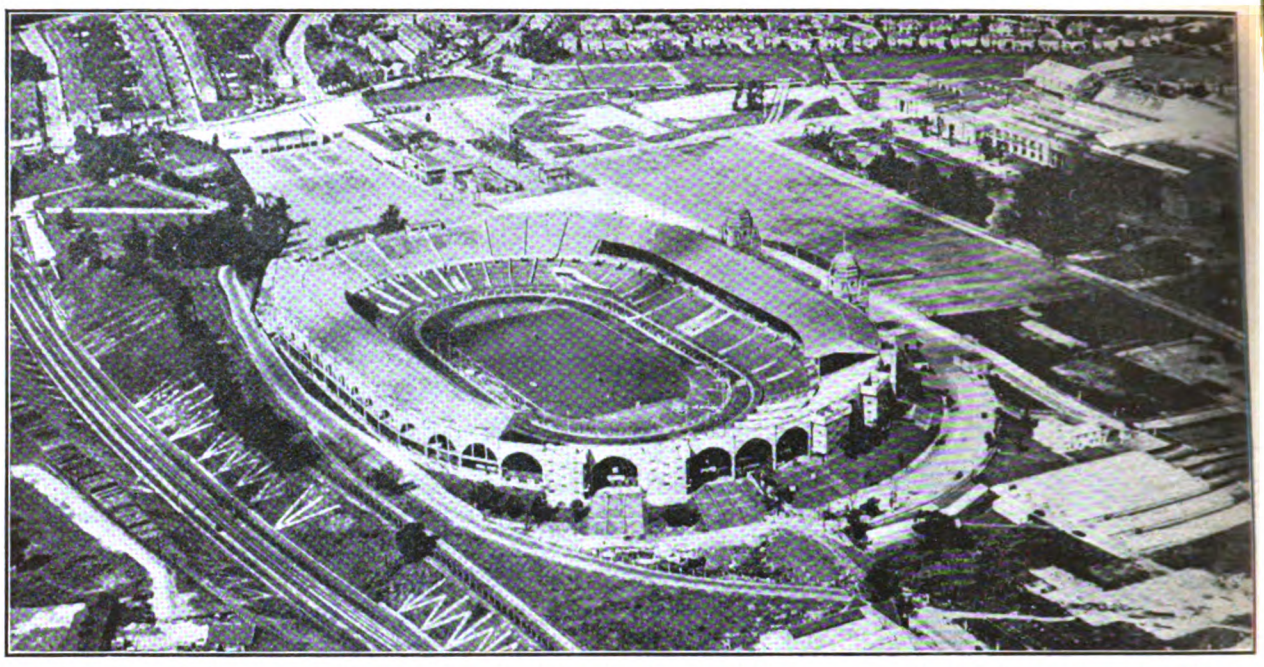

A PISTOL-SHOT.—The Stadium at Wembley taken by Mr. Nigel Norman (seen in the picture below) with a Williamson pistol camera. (This picture is twice the width of the original print.)

THE ROUND-EUROPE COMPETITION.

The organisation of the 1930 Coupe Challenge Internationale de Tourisme will be in the hands of the German Aero Club by virtue of the 1929 contest having been won by Herr Morzik, on a B.F.W. M.23 monoplane.

A commission has been formed which includes representatives of the Ministry of Communications, the Aerial Police, the *Deutsche Luft Verband* and various other societies. And a smaller specialised Committee is studying the question of rules,—which will later be submitted to the Commission.

The contest will include a tour of Europe which will begin and end at the Tempelhof aerodrome, Berlin, and all technical tests will take place at Staaken after the tour of Europe. The rules which existed for the 1929 Contest will be substantially modified.

In addition to the countries which supported the Competition last year it is rumoured that Great Britain, Rumania, Poland and the United States are showing interest and may be considered as likely participants next year.

All will hope that England will compete next year, for this is the one great international event of the year, and the winning of it is as good an advertisement for a light aeroplane as is the Schneider Trophy for a seaplane. In fact it is a better advertisement, because the winner proves his superiority over so many competitors, whereas in the Schneider Contest, there is always the argument that dozens of designers might have beaten the actual competitors if somebody had found the money to build their machines.

THE WILLIAMSON PISTOL CAMERA.

The Williamson Manufacturing Co. Ltd., the manufacturers of the famous "Eagle" aircraft camera, have produced a small camera of light weight and comparative cheapness suitable for the use of the amateur air-minded photographer.

This camera is known as the Williamson "Pistol" Aircraft Camera. It consists of a main body and a pistol hand-grip made of duralumin, with a stainless steel trigger release.

The standard lense is a Ross Xpres of 5 ins. focus, with an aperture of F 4/5, large enough for fully-exposed photographs to be taken at the maximum speed of the shutter (1/100th of a second) either with or without a light-filter.

The shutter, of the sector type, is fitted between the lense combination and is adjustable for speed and aperture. A focussing mount and scale can be supplied if necessary.

The back of the camera will take either plate holders, film-pack adapter or a focussing screen with hood. A brilliant view-finder is fitted in a rigid tunnel on top of the camera.

The size of picture taken is 3¼ in. x 2¼ in. (9 cm. x 6 cm.) and the total weight of the camera is 3 lbs. 5 ozs.

The light weight and the pistol grip enable the camera to be used with ease in the air. If the pilot wants to do the photography, or should the passenger have additional duties to perform, a special mounting is supplied which can be clamped on the side of the fuselage. This mounting has a variety of movements, and the camera may be used with the view-finder either on top or underneath, whichever is nearer the eye level.

Full particulars of this camera will be gladly supplied by the Williamson Manufacturing Co. Ltd., of Litchfield Gardens, Willesden Green, London, N.W.10.

ROYAL AERO CLUB MEMBERSHIP.

The Committee of the Royal Aero Club has decided that members of Associated Light Aeroplane Clubs, holding current "A" or "B" Licences, shall, subject to election, be admitted to membership of the Royal Aero Club at a reduced subscription of £3 3s. with no entrance fee. This only applies to full flying members of the Associated Light Aeroplane Clubs.

THE LONDON CLUB RAFFLE.

The London Aeroplane Club will raffle an entirely-new latest-type Metal Gipsy-Moth, fitted with Slots, Compass, Telephone, etc., painted in any colours desired by the Winner. The number of tickets is limited to 1,500. Tickets 10s. each may be had from the London Aeroplane Club, 3, Clifford Street, London, W.1, or Stag Lane Aerodrome, Edgware.

JUPITERS IN DENMARK.

The Danish Government after long tests with various types of aero-engines has placed an order for a number of 450 h.p. Bristol Jupiter engines.

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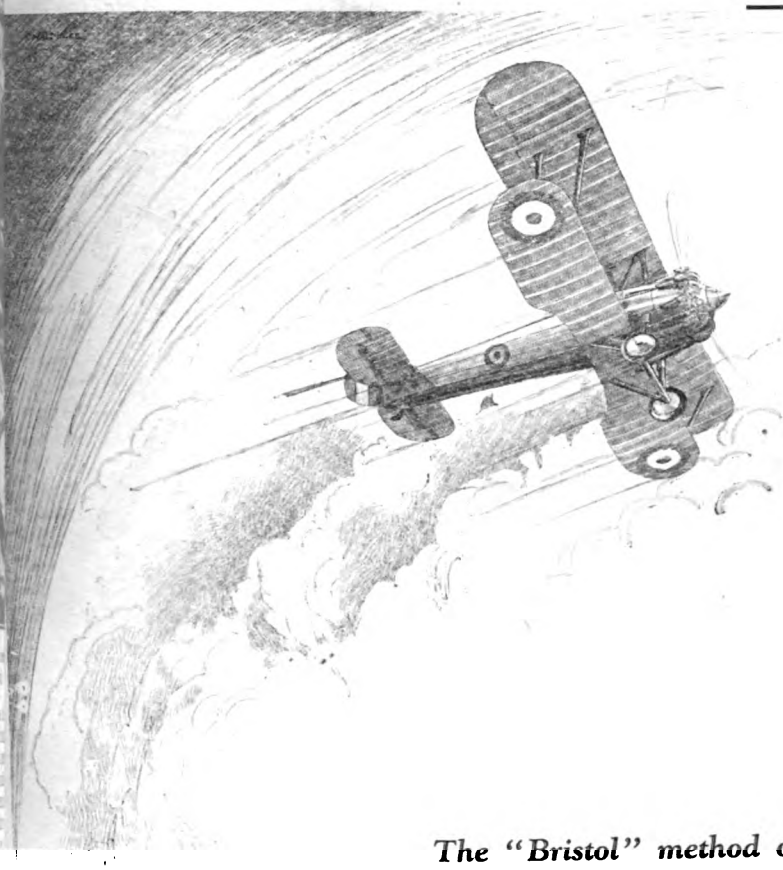

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RUMANIAN AIR FORCE

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THE ROYAL AIR FORCE.

The London Gazette.

Air Ministry, December 10.

ROYAL AIR FORCE.

:ENERAL DUTIES BRANCH.—Lt. J. H. F. Burroughs, R.N., is reattached the R.A.F. as a Flg. Off. with effect from Dec. 5, 1929, and with iority of June 16, 1924.

lt. Off. R. C. I. Pearse is promoted to the rank of Flg. Off. (Nov.

q. Ldr. F. Fowler, D.S.C., A.F.C., is placed on the half-pay list, le A (Dec. 10).

he following Flt. Lts. are placed on the retired list at their own uest:—A. T. Laing (Oct. 20); W. V. Simons (Dec. 11). The follow- are transferred to the Reserve, Class A:—Flt. Lt. A. J. R. Moss, . Off. B. C. Mason (Dec. 9); Flg. Off. A. L. Mortimer (Dec. 11).

:HAPLAINS BRANCH.—The Rev. R. M. Bankes-Jones, M.A., is pro- ted to the relative rank of Wing Cdr. (Dec. 3).

RESERVE OF AIR FORCE OFFICERS.

:ENERAL DUTIES BRANCH.—D. C. Beauchamp is granted a comn. in the pcial Reserve as a Plt. Off. on probation (Oct. 14). Plt. Off. E. W. ckay is promoted to the rank of Flg. Off. (Dec. 7). The following . Offs. are transferred from Class A to Class C:—R. S. Walter v. 24); W. F. Warner (Aug. 24); E. M. S. Spence (Nov. 17).

Flg. Off. J. de la P. B. Preston is removed from the service (Nov. 28).

AUXILIARY AIR FORCE.

GENERAL DUTIES BRANCH.—No. 600 CITY OF LONDON (BOMBER) UADRON.—Flt. Lt. C. G. Jenyns resigns his comn. (Nov. 19). No. COUNTY OF LONDON (BOMBER) SQUADRON.—The following to be Plt. :—R. Y. Sanders (Aug. 8). No. 605 COUNTY OF WARWICK (BOMBER) UADRON.—The following to be Plt. Off.:—B. P. A. Vallance (Oct. 12).

Appointments.

Week ending December 16.

GENERAL DUTIES BRANCH.—Group Captain I. G. V. Fowler, A.F.C., to A.F. Depot, Uxbridge, to command, 1/12.

Wing Commanders R. M. Bayley, D.F.C., to R.A.F. Depot, Uxbridge, nding course at Imperial Defence College, 2/11. V. Gaskell-Blackburn, S.C., A.F.C., to School of Balloon Training, Larkhill, to command, /11. D. G. Donald, D.F.C., A.F.C., to School of Naval Co-operation, e-on-Solent, to command, 30/11.

Squadron Leaders J. L. Vachell, M.C., to No. 8 Sqdn., Aden, 14/11. J. Maclean, M.C., to No. 1 School of T.T. (Apprentices), Halton, /11. B. E. Baker, D.S.O., M.C., A.F.C., to No. 32 Sqdn., Kenley, /11. R. B. Mansell, O.B.E., to Air Ministry (A.M.S.R.), 19/12. P. G. cott, to No. 29 Sqdn., North Weald, 25/11. F. O. Soden, D.F.C., No. 14 Sqdn., Palestine, 22/11. L. G. le B. Croke, to R.A.F. Depot, xbridge, 27/11.

Flight Lieutenants G. A. Simons, to No. 1 Sqdn., Tangmere, 1/12. B. Barrett, to Armoured Car Wing, 'Iraq, 23/11. C. D. Pyne, to No. Sqdn., Hawkinge, 19/11. W. C. P. Bullock and H. M. Mellor, to A.F. Depot, Uxbridge, 27/11. T. O. Clogstoun, to No. 1 Air Defence roup H.Q., 29/11. E. J. Protheroe, to R.A.F. Depot, Uxbridge, 22/9. Martin, to School of Naval Co-operation, Lee-on-Solent, 2/12. E. Horrex, A.F.C., to No. 58 Sqdn., Worthy Down, 9/11. C. A. ouchier, D.F.C., to R.A.F. Depot, Uxbridge, 9/11.

Flying Officers C. A. Pearson, to R.A.F. Depot, Uxbridge, 11/11. L. Truman, to No. 31 Sqdn., India, 6/11. W. Anderson, to R.A.F. ase, Calshot, 18/11. T. H. Moon, to A.A.E.E., Martlesham Heath, 2/12. C. Greenhalgh, to No. 99 Sqdn., Upper Heyford, 27/11. J. E. W. owles, J. A. T. Ryde, H. W. Charnock, R. J. A. Ford and R. J. rummond, to R.A.F. Depot, Uxbridge, 27/11.

Pilot Officers C. B. Field, to No. 14 Sqdn., Palestine, 19/11. N. R. G. Hunter, to No. 45 Sqdn., Middle East, 18/11. A. H. Abbott, to No. 8 Sqdn., Aden, 14/11. R. W. Wallace, to No. 216 Sqdn., Middle East, 14/11. W. H. E. Tew, to No. 216 Sqdn., Middle East, 14/11. K. W. Niblett, to No. 36 Sqdn., Donibristle, 25/11. I. B. Newbigging, to No. 36 Sqdn., Donibristle, 25/11. W. S. C. Adams, to R.A.F. Depot, Uxbridge, 15/11.

MEDICAL BRANCH.—Squadron Leaders T. C. St. C. Morton, M.D., M.R.C.P., D.P.H., D.T.M. and H., to R.A.F. General Hospital, 'Iraq, 30/10. R. H. Bebb, O.B.E. (Dental), to R.A.F. General Hospital, 'Iraq, 30/10.

Flight Lieutenants T. J. D. Atteridge, to H.Q., R.A.F., Middle East, 29/11. R. E. Edwards (Dental), to H.Q., R.A.F., Middle East, 29/11. J. E. Foran, M.B., to M.A.E.E., Felixstowe, 22/12. R. Boog-Watson, M.B., D.P.H., to H.Q., 'Iraq Command, 22/11. D. A. Wilson, to H.Q., 'Iraq Command, 22/11. J. C. Neely, B.A., to H.Q., 'Iraq Command, 22/11. J. Parry-Evans, to Palestine General Hospital, 4/11. H. Penman, M.B., to No. 6 Sqdn., Middle East, 1/11. E. P. Carroll, to No. 4 F.T.S., Middle East, 1/11. W. Gamblen (Quartermaster), to R.A.F. General Hospital, 'Iraq, 30/10. C. W. Coffey, to R.A.F. Base, Calshot, 6/12. R. Thorpe, to No. 1 School of T.T. (Apprentices), Halton, 9/12. W. Heron, M.B., to Station H.Q., North Weald, 6/12.

Flying Officers G. O. Williams, B.Sc., to Station H.Q., Upper Heyford, 9/12. D. D. Watson, M.B., to No. 5 F.T.S., Sealand, 9/12. W. J. Cotter, M.B., to Princess Mary's R.A.F. Hospital, Halton, 26/11. P. J. McNally, M.B., to H.Q., 'Iraq Command, 22/11. C. Crowley, M.B., to No. 14 Sqdn., Palestine, 29/10. J. Kemp, M.B., to R.A.F. General Hospital, 'Iraq, 30/10.

ACCOUNTANT BRANCH.—Flight Lieutenant E. W. Horncastle, to R.A.F. Depot, Uxbridge, 13/11. L. de L. Leder, to No. 4 F.T.S., Middle East, 19/11.

Flying Officer J. P. Cave, to No. 14 Sqdn., Palestine, 14/11.

The Cranwell Passing Out Inspection.

Air Vice-Marshal C. L. Lambe, C.B., C.M.G., D.S.O., Air Officer Commanding the Coastal Area, R.A.F., inspected the Royal Air Force Cadets at the Royal Air Force College, Cranwell, on Dec. 13 on the occasion of the Passing Out.

In the course of his Report, the Commandant, Air Vice-Marshal F. C. Halahan, C.M.G., C.B.E., D.S.O., M.V.O., said that there were 104 Flight Cadets under training. With the exception of one case of disobedience of Flying Orders, discipline had been very good.

FLYING TRAINING.

The total time flown by the Cadets during the last term had been 2,052 hours. The term now passing out consisted of 19 Cadets who had averaged 106 flying hours per head. This was the first time a term passing out had averaged over 100 hours' flying per head. This term had also produced the largest percentage of Fighter Pilots yet recorded, a total of 12 out of 19 Cadets.

GROUND TRAINING.

In English Literature and General History the term had left a record of uniform industry and progress over two years. This had been in part due to the example of its senior cadets who had shown that it was possible to achieve success simultaneously in flying, work and games.

The Cadets in all terms were working well and satisfactorily in Aeronautical Science but emphasis must again be laid on the importance of making full use of the time available for private study.

The Cadets had shown keenness and interest in Aeronautical Engineering. A visit had been paid by the Fourth Term to the Armstrong Whitworth Aircraft Works at Coventry, and this, thanks to the arrangements made by the firm, had proved both interesting and instructive.

THE SALUTE.—Air Vice-Marshal C. L. Lambe, C.B., C.M.G., D.S.O.—A.O.C. Coastal Area—taking the salute at the march-past of the Cadets of the R.A.F. College, Cranwell. On the left is Air Vice-Marshal F. C. Halahan, C.M.G., C.B.E., D.S.O., M.V.O., whose retirement from the Service at the end of this year is so much regretted by all those who have served with him, and by those past and present Cadets of the R.A.F. College whose Commandant he has been for three years.

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In Armament the work on the whole had been good. The Cadets had shown keenness and attention to detail. For the first time the Rifle Association had given permission for the Fight Cadets to shoot in the Nobel Challenge Cup Competition and two teams would be entered.

The new Signals syllabus laid down by the Air Ministry would be in force next term.

Work in Air Pilotage had been satisfactory and the standard of cross-country flying had improved.

PARACHUTES.

Cadets of the Fouth Term had been instructed in parachute inspection, packing, method of jumping, and control when descending. No practice jumps had been made. A personal issue of parachutes had now been made to each Cadet and they hoped that Cadets would acquire the habit of taking proper care of their parachutes.

PHYSICAL TRAINING.

Thirty-three Cadets had been admitted to Hospital during the period under review compared with thirty-six between January and July. The interest in physical training had been keener and although the standard was good it could still be improved.

The foundations of the new College building were now nearly completed.

SPORTS.

Only one boxing contest had taken place during the term, against a team of R.A.F. Officers. The Cadets had lost by four fights to five. The high Rugby Football standard of the previous season had been maintained and the match against the R.M.A. had been drawn and that against the R.M.C. lost by a narrow margin. Of the twelve matches played eight had been won, three lost and one drawn.

The standard of skill-at-arms had been satisfactory in all weapons.

Seventeen Soccer matches had been played, of which seven had been won, nine lost and one drawn.

The College Beagles had provided consistently good sport.

In the inter-Squadron competitions, "B" Squadron had won the Rugger, the Soccer, and the Skill-at-arms.

AWARDS.

The Sword of Honour, presented to the best all-round Flight Cadet in the senior term, had been awarded to Flt. Cadet Under-Officer George Reginald Alexander Elsmie.

The R.M. Groves Memorial Prize for the best all-round pilot in the senior term had been awarded to Flt. Cadet Under-Officer G. R. A. Elsmie.

The Abdy Gerrard Fellowes Memorial Prize, for the Flight Cadet of the senior term obtaining the highest total marks in mathematics and science, had been awarded to Flt. Cadet Under-Officer G. R. A. Elsmie.

The Prize awarded to the Flight Cadet in the senior term obtaining the highest marks in Humanistic subjects had been won by Flt. Cadet Serjeant Richard Lindsay Wallace.

The Prize awarded to the Flight Cadet in the Senior term obtaining the highest marks in Aeronautical Engineering had been won by Flt. Cadet Corporal Alfred Earle.

The Air Estimates Programme.

In the House of Commons on Dec. 11 Capt. Bullock asked the Under-Secretary of State for Air whether this year's programme of seven new Squadrons for the Air Force was being carried out, and, if so, whether these seven squadrons were being properly equipped.

Mr. Montague said that the provision of two new flights for the Fleet Air Arm, which formed part of the programme, was being re-examined, but otherwise no change had been made in the programme, either as regards the formation of new units or the scale of their equipment.

[The Estimates in 1929 made provision for the addition during the financial year of one Regular Squadron, one Cadre Squadron, three Auxiliary Squadrons, two Flights for the Fleet Air Arm and one Unit of flying-boats. According to the current Air Force List, the additional units provided to date are one Cadre Squadron, one Fleet Fighter Flight, one Coast Defence co-operation Flight, and one Flying-Boat Squadron.—C. M. MCA.]

The West African Flight.

The annual Service Flight to West Africa from Egypt and back, which began at Helwan on Oct. 19, was successfully concluded when the Flight returned to Helwan on Nov. 29.

The flight was made by three Fairy IIIF machines (Napier Lion engine) of No. 45 (Bomber) Squadron under the command of Sq. Ldr. F. J. Vincent, D.F.C. The other personnel of the Flight were Flt. Lt. T. B. Prickman, Flg. Lt. R. C. Wilson, Sjt. Spillard, Sjt. Humphrey, and L/AC. W...

The Flight reached the following places on the dates mentioned:—

Khartum, Oct. 20; El Fasher, Oct. 22; Fort Lamy, Oct. ..; Kano, Oct. 24; Karsina, Oct. 28; Sokoto, Oct. 30; Kano, Nov. 1; Illorin, Nov. 5; Lagos, Nov. 6; Accra, Nov. 7; Tam.., Nov. 9; Accra, Nov. 11; Lagos, Nov. 13; Jos, Nov. 15; Ka.., Nov. 17; Yola, Nov. 20; El Fasher, Nov. 26; El Obeid and Khartum, Nov. 27; Atbara and Assuan, Nov. 28; Helw.., Nov. 29.

The High Speed Flight, R.A.F.

THE AEROPLANE learns from a reliable source that Officers Commanding Fighter Squadrons have been asked to recommend officers to fill three vacancies which will occur this year in the High Speed Flight, R.A.F.

The presumption is that the High Speed Flight, or to be perfectly accurate, the High Speed Flying Section of the Marine Aircraft Experimental Establishment, R.A.F., will be re-formed in 1930 at Felixstowe for the purpose of experimental work with high speed aircraft and, in the event of a change of attitude on the part of the Government towards the Schneider Trophy Contest, of forming the Unit to defend the Trophy.

The Singapore Base.

In the House of Commons on Dec. 11, in reply to Major Glyn, the Under-Secretary of State for Air said that the amount of money expended to date on the Air Base at Singapore was approximately £270,000, and the sum required for its completion £300,000. The facilities which were being provided would serve not only for local defence but also for the maintenance of British air communications in the Far East, and for the shore training and repair of equipment of air units allocated to naval forces in those waters.

The strength of the air forces which would be normally maintained at Singapore, as at present contemplated, was one Squadron of land machines and one Squadron of flying boats. These numbers were exclusive of any Fleet Air units which might from time to time be disembarked there.

No change in this part of the programme had been made as a result of the decision of the Admiralty to suspend further work on the Naval Base.

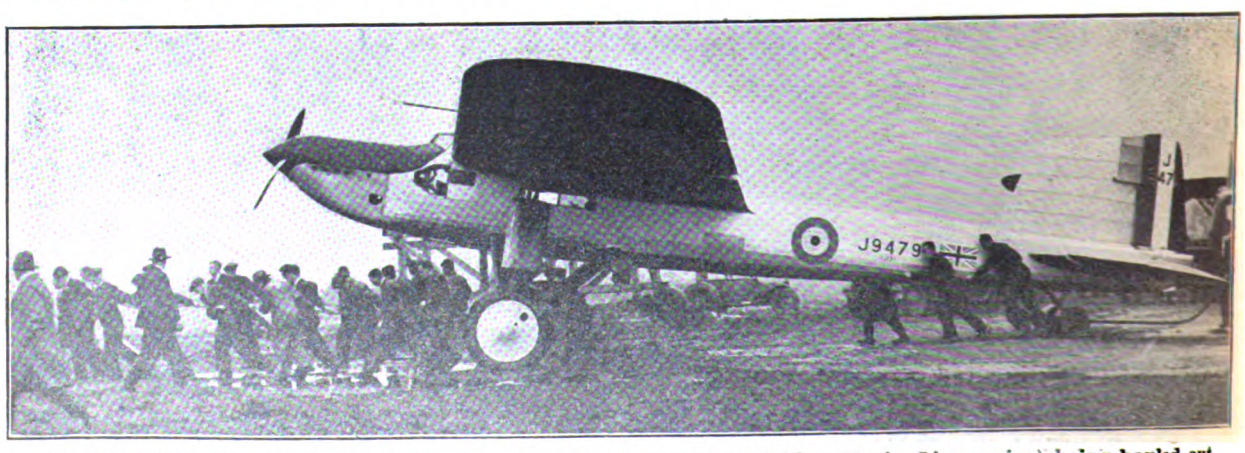
Parachutes for Sea-Going Aircraft.

In the House of Commons on Dec. 11, in reply to Capt. MacDonald (for Capt. Balfour), the Under-Secretary of State for Air said that parachutes were not yet adapted for use in sea-going aircraft and flying-boats, nor were they compulsory equipment for pilots and crews of such craft. A good deal of difficulty had been experienced in devising a form of quick-release gear which would enable the wearer to free himself from the parachute harness if he fell into the water and would also comply with the other special requirements for sea-going aircraft. A new form of such gear was under trial at present and he hoped that it would prove satisfactory.

The New Auxiliary Squadrons.

The three new Squadrons of the Auxiliary Air Force which will be formed before the end of the current financial year will be named and numbered as follows:—

No. 604 (County of Middlesex) Squadron; No. 607 (County of Yorkshire) Squadron; No. 608 (County of Durham) Squadron.



LEAVING HOME.—The R.A.F. Fairey Long Distance Monoplane (530 h.p. Napier Lion engine) being hauled out of its shed at Northolt to get ready for the attempt on the World's Long Distance Record.
—("Aeroplane" photograph)

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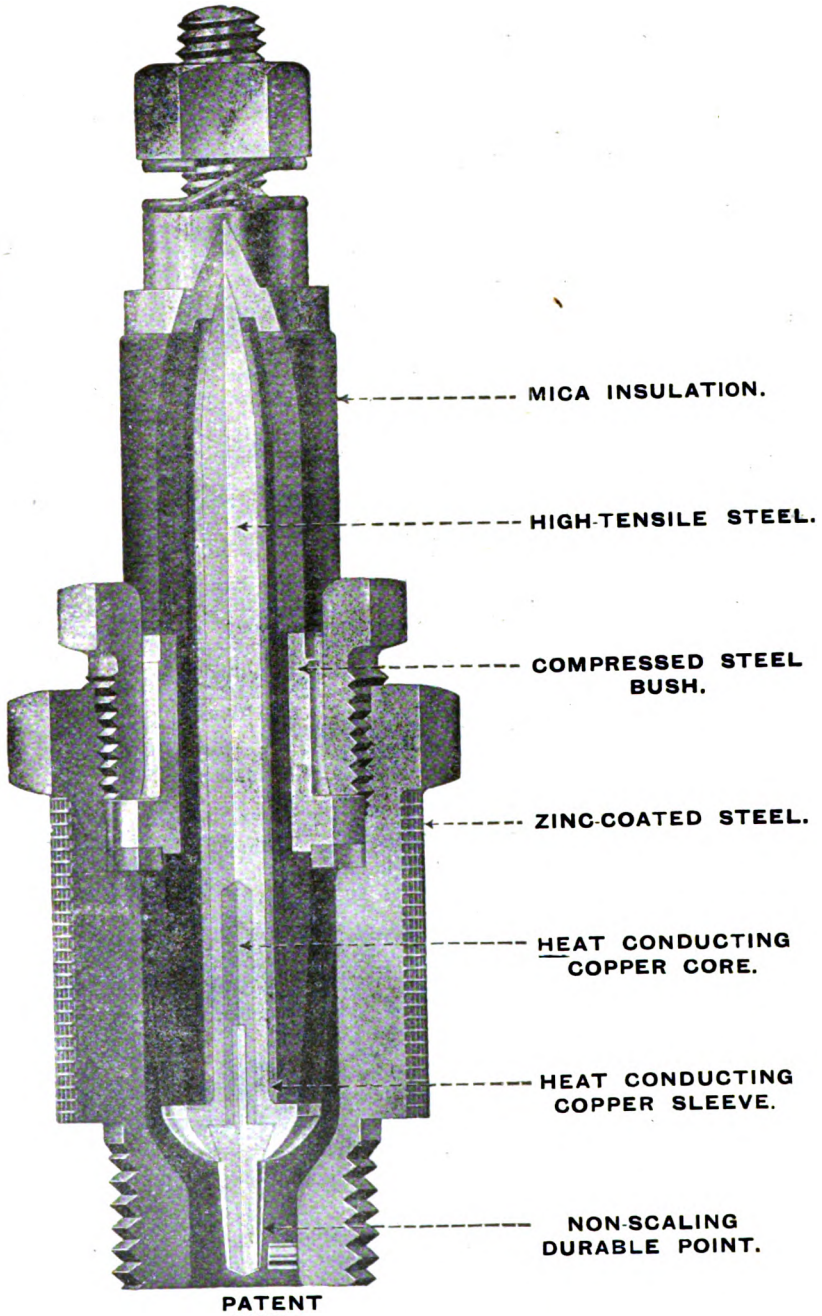

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The Long Distance Attempt.

The R.A.F. Fairey Long Range Monoplane (Napier Lion engine) left Cranwell, Lincolnshire, at 07.58 hours on Dec. 17, piloted by Sq. Ldr. A. G. Jones-Williams, M.C., with Flt. Lt. H. N. Jenkins, O.B.E., D.F.C., D.S.M., as second pilot, in an attempt to fly non-stop to Cape Town and to break the present World's Long Distance Record of 4,912 miles, made by Costes and Bellonte in their voyage to Manchuria.

The route of the flight crosses France to Marseilles and goes thence to a point on the North African coast near Tunis. It crosses the Sahara and then runs parallel with the West African coast inland.

In order to beat the existing record under the F.A.I. regulations, the machine must fly at least 100 kilometres (62.14 miles) more than the present figures, so that the British pilots must fly a minimum of 4,975 miles, measured on a great circle course, to secure the record for Britain. This means that they must reach a point in South West Africa, about 30 miles south of the Cunene River and about half way between Benguella and Walfisch Bay.

The range of the Fairey monoplane with full load is thought to be about 5,500 miles.

The aircraft has been thoroughly overhauled since the India flight but the only structural alteration of importance to the machine has been to fit a new fin and rudder to give greater stability in bumpy weather.

Various modifications have been made in the cabin. The pilot's seat has been altered so that it can be raised or lowered about 6 in. and the back is hinged so that the angle of the upright portion can be moved to ensure the greatest comfort for the pilot.

The rudder bar has now been fitted with whole footplates, lined with sorbo, in place of the pedals previously installed.

The pneumatic bed has been taken out and replaced by a deck lounge chair, with padded neck and knee rests, which the second pilot can use for sleeping or for working at navigation or other duties.

The aircraft is fitted for this flight with a short-wave wireless transmitting set, and will transmit routine reports giving its position every four hours—at 08.00 (G.M.T.), 12.00 (G.M.T.), and so on throughout the period of the flight. The call sign is GEZAA. It will transmit on 33.71 metres. It is not equipped to receive messages during flight; private wireless stations are therefore asked to refrain from transmitting on this wavelength as they are liable to cause jamming and may thus prevent the reception of an urgent message.

The Air Ministry has arranged for the wireless stations at Malta, Ismailia, Aden and other stations to the South to keep special watch for signals from the aircraft, but it will be glad to have authentic reports passed to it which may be picked up by private stations abroad.

The machine took off the prepared runway at Cranwell with full load, approximately 17,000 lbs.

The machine passed Nevers in France at 12.00 hours on Dec. 17.

The High Commissioner for 'Iraq.

Sir Francis Humphreys, the new British High Commissioner for 'Iraq, accompanied by his wife and daughter, flew in a Royal Air Force troop-carrying machine from Palestine to Baghdad on Dec. 10. The machine was escorted during part of the journey by a Squadron of the R.A.F.

Sir Francis Humphreys, who was British Minister in Kabul during the evacuations by air last December and January, served in the R.A.F. during the War 1914-18.

THE PILOTS.—Sq. Ldr. A. G. Jones-Williams, M.C., R.A.F. (right), the first pilot of the Fairey Long Range Monoplane, and Flt. Lt. H. N. Jenkins, O.B.E., D.F.C., D.S.M., R.A.F. (left), the second pilot, who left Cranwell on Dec. 17 in an attempt to beat the World's Long Distance Record.—(*"Aeroplane" photograph.*)

The Elliot Memorial Prize.

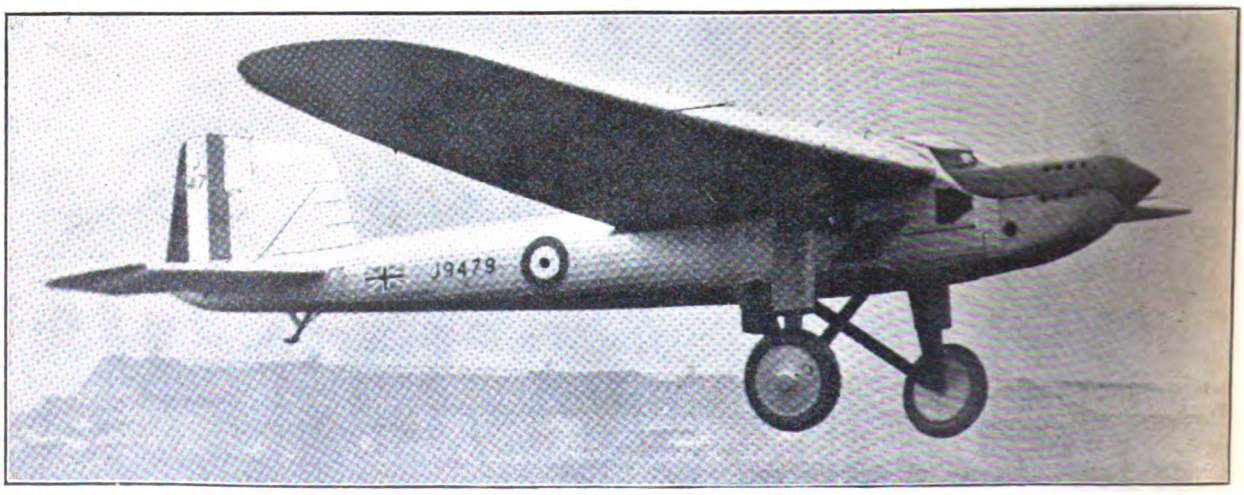
The Elliot Memorial Prize, which is a sum of five guineas awarded annually by the Royal Aeronautical Society in memory of the late Mr. A. B. Elliot (Sir Alan Cobham's mechanic, who was shot by an Arab during a flight in Southern 'Iraq in 1926 and died in Basrah), for a paper written by an aircraft apprentice under training at Halton, has been won this year by AA. A. Armstrong and AA. E. H. Lanham.

Central Flying School Categories.

The following officers have been re-categorised as stated from the dates following their names:—

A.2 to A.1.—Flt. Lt. V. B. Bennett (Oct. 29, 1929).

B.2 to A.2.—Flt. Lt. C. R. Davidson, M.C. (Nov. 18, 1929); Flg. Off. A. R. Leslie-Melville (Nov. 8, 1929); Flg. Off. G. A. V. Tyson (Nov. 16, 1929); Flg. Off. L. C. Barling (Nov. 16, 1929).



THE FIRST STAGE.—The Fairey Long Range Monoplane (530 Napier Lion engine) leaving Northolt for Cranwell for the final trials before starting on the non-stop flight to Cape Town.—(*"Aeroplane" photograph.*)

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The following officers have been categorised as Flying Instructors from the dates following their names:—

A.1.—Flt. Lt. G. H. Martingell (Nov. 18, 1929).

B.—Flt. Lt. R. E. M. B. Milne (Nov. 18, 1929); Flt. Lt. J. MacG. Fairweather, D.F.C. (Nov. 18, 1929).

The R.A.F. Club.

The Royal Air Force Club will be closed from 14.30 hours on Dec. 27 until 12.30 hours on Dec. 28 (for the purpose of holding the Annual Staff Dance), except in so far as affects bedroom accommodation (with breakfasts only) to Residents and Members who have engaged bedrooms prior to 12.00 hours on Dec. 27. The Club will remain open during the Christmas Holidays.

No. 3 Squadron Re-Union.

The tenth annual re-union dinner of No. 3 Squadron, R.F.C., and No. 3 (Fighter) Squadron, R.A.F., was held on Dec. 6 at the Hotel Cecil.

Air Chief Marshal Sir John Salmond, K.C.B., C.M.G., C.V.O., D.S.O., A.D.C., was in the Chair, and Air Vice-Marshal C. A. H. Longcroft, C.B., C.M.G., D.S.O., A.F.C. was the Guest of Honour of the evening.

Thirty-nine past and present members of the Squadron were at the dinner. It was a very rough night—meteorologically of course—and this probably accounts for there being eleven empty seats.

Speeches were made by Air Chief Marshal Sir John Salmond, Air Vice-Marshal Longcroft, and by Sq. Ldr. E. Digby-Johnson, the present Commanding Officer of the Squadron.

An impromptu concert was held after dinner, which went on till midnight, when the party reluctantly broke up.

A Medical Branch Dinner.

The Royal Air Force Medical Branch held their ninth annual dinner at the Hotel Cecil on Dec. 13. The Guests were Mr. W. Girling Ball and Dr. A. M. Gray. Air Vice-Marshal D. Munro and seventy-five other officers of the R.A.F. Medical Branch were present.

THE SITUATION IN THE MIDDLE EAST.

A lecture on The Situation in the Middle East was given by Sir E. Denison Ross, C.I.E., Ph.D., at the Royal United Service Institution on Dec. 11. Major-General Sir Percy Cox, G.C.M.G., G.C.I.E., K.C.S.I., formerly High Commissioner for 'Iraq, was in the Chair.

Although Sir Denison Ross said very little about aviation, the Lecture was of particular interest to the R.A.F., most of whom have served, are serving, or will serve in the Middle East.

Sir Percy Cox said that the Lecturer had been for fifteen years Director of Oriental Studies at the London University. He was the foremost Oriental scholar of our time and was, in addition, a great traveller.

Sir Denison Ross said that events moved so rapidly in the East in these days that the situation was already much changed since he was there at the beginning of the present year. The greatest of all the questions in the World to-day was the question of East and West. Since the War the whole map of the Middle East had been altered.

The general policy had been the dismemberment of the Ottoman Empire. Egypt, Syria, 'Iraq, Palestine and Arabia had been part of the Turkish Empire for many years. Arabia had become independent, Egypt partially independent, 'Iraq and Palestine had been handed over to Great Britain by mandate, and Syria had been handed over to France by mandate. The various mandated territories had come into being in much the same way as various countries had come into being with the dismemberment of Austria-Hungary.

'Iraq, Syria and Transjordan had passed with one bound from the caravan stage of development to the stage of the most modern methods of transport.

The Lecturer said that he did not believe in the dissolution of Islam or that any of the great religions would ever die. The new Wahabi ruler of Arabia had shown a strong reaction in the direction of puritan Islam. Ivn Saud, the strictest Moslem of the strictest sect, had no prejudice against modern transport and even allowed pilgrims to go by motor-car as far as the outskirts of Mecca. A great deal of delay in the development of these countries had been caused by the change in the language from Turkish to Arabic.

Ibn Saud was having a very difficult time in Mecca, but he was one of the greatest men Arabia had ever produced.

'Iraq was another newly-founded state and could almost be described as a nation in the making. At present it was ill-provided with capable officials of its own nationality. On the military side the integrity of the country had depended in the past and still depended on our splendid Royal Air Force with its Headquarters at Hinaidi and its armoured cars. The sight of the machines overhead and the armoured-cars patrolling the desert was of the greatest support and comfort to those who were working to make the country peaceful and prosperous.

Internal order was adequately maintained by smart, well-mounted and efficient gendarmerie recruited from the old Syrian regiments.

Such good progress had been made in 'Iraq that we were strongly supporting their claim to be admitted to the League of Nations next September. When the mandate was withdrawn the 'Iraq Government would still require our help, although those who stayed in the country would become the servants of the 'Iraq Government instead of being British officials. King Faisal had shouldered his many responsibilities splendidly in every way and was every inch a King.

When the Lecturer was in Palestine about nine months ago the situation had appeared very peaceful, but since then trouble had developed between the Arabs and the Jews, and it once more appeared that the country could not be ruled without soldiers.

In Syria the French had to maintain many thousands of soldiers in order to keep the peace.

In Egypt the situation changed from day to day. He hoped that the new British representative there would have the full support of the Foreign Office. With regard to the new Treaty with Egypt, its terms were so liberal that it was quite possible that it might not be rejected.

King Fuad was a remarkable personality. If he remained King he would do a great deal for his country. If the country's aim was peace and prosperity then it must have a strong garrison at Cairo. Egypt did not like the British garrison being in Cairo, but she had yet to prove that she could maintain law and order without them. It was many centuries since Egypt had walked alone.

There existed in Egypt a responsible middle-class which was incapable of realising that the Pyramids were not built in a day. We should not have to be in Egypt if the route to India still ran round the Cape.

The principal changes in Persia had been caused by the progress in locomotion. Thirty years ago there was one carriage road from Kazvin to Teheran. To-day there were motors on roads all over the country. There was also an excellent Junkers air line to Teheran, a line which he understood had not had one single breakdown since it came into operation.

He was glad to say that there was no change in the Persian people themselves, who were some of the most charming people in the world. The Shah was a strong ruler, and his object was to bring about reforms in his country without interference from foreign Powers. Persia was the only country in the Middle East to retain her pre-War frontiers. She was making slow progress, but at least she was attempting to work out her own salvation.

Speaking of Great Britain's role in the East, Sir Denison Ross sketched an outline of the origin of our commitments. He explained that from the beginning of the 16th Century the merchandise of the East had been taken to the seaports of the Mediterranean and there shipped to Europe by Europeans. At that time Europeans had no interest beyond the actual ports. Later on the ships were built in the Mediterranean ports from wood brought from Cyprus and other islands to Suez.

When the Portuguese had discovered the all-sea route to India it had become necessary to protect the routes. Factories (*i.e.* trading-stations, not manufactories) had been established by English merchants and the Powers had begun to establish territorial rights. Malta had been acquired to keep the route free to India. England then began to take an intense interest in the Government of Egypt.

Regarding what he called "the morality of exercising control in Egypt," the Lecturer said that our commitments were absolutely necessary and had arisen from the paramount necessity of keeping a free flow of commerce from East to West. He referred to "that self-determination, of which we have heard so much and seen so little."

Discussing the reasons why the East had been left behind in progress, the Lecturer said that the East was handicapped by the tyranny of tradition, the tyranny of the sun and a lack of initiative in Science and Economics. The mental progress of the Oriental was arrested because of his religion.

One of the chief blessings of the West was its temperate climate. You could reduce the risks of malaria and protect from the rays of the sun but you could not get away from the debilitating effects of a tropical Summer. The East had started first, but had been left behind. It had made no progress in science and economics but only in the arts. The builders of the Mosque of Omar and the Alhambra had been unable to draw an intelligible map.

The ideal government for the East was that of a good despot, but the East desired Western institutions without Western guidance. While despising Western culture they wished to adopt those features of Western civilisation which made for progress and independence.

In thanking the Lecturer, Sir Percy Cox said that we could not force our assistance on any of these young Nations. We must let them play their own hand, and then when they failed, they would come back to us for help—

C. M. MCA.

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GREATEST SPEED OVER 100 KILOMETRES

Flying Officer R. L. R. Atcherley on Supermarine Rolls-Royce S6 (Motor, Rolls-Royce 'R') on 7th September 1929

331.6 MILES PER HOUR
(533.800 Kilometres per hour)

*

WORLD'S GREATEST SPEED

Squadron - Leader A. H. Orlebar, A.F.C., on Supermarine Rolls-Royce S6 (Motor, Rolls-Royce 'R') on 12th September 1929

357.7 MILES PER HOUR
(575.700 Kilometres per Hour)

*

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THE LAUNCHING OF R.100.

On Dec. 16 R.100 left her shed at Howden at 07.56 hrs. Soon after 09.00 hrs. a small group of optimists gathered at Cardington to welcome the ship after her first voyage. As time passed people who were less optimistic and therefore left home later came along, so by 11.15 hrs. when the airship came into sight, there was a goodly crowd.

The weather was perfect with a 10 m.p.h., but rather unsteady, N.W. wind. R.100 cruised round, made preliminary tests of controls and showed that she had a good turn of speed.

It was noticeable that the fabric of the aft part of the hull and bottom fin pulsated considerably in the slipstream of the airscrews.

The low winter sun cast long shadows on the fabric showing how it presses inwards against the frames, unlike R.101, in which the fabric is kept out by air pressure.

The ship was flying light and keeping down to about 1,500 ft. by dynamic depression which made her fly slightly nose down.

At 12.15 hrs. the mooring coupling was dropped, and linked to the cable from the Tower. Mooring operations began by the ship rising to about 2,000 ft. which was especially necessary because the wind was flukey and too light for easy mooring. At 13.00 hrs. all the slack was taken up and she was drawn down. The side-guys were lowered when about 200 ft. above the mast.

The usual three-cable mooring was made without any hitch and the locking pins were screwed home 50 minutes after the start of operations.

The gangway was lowered and Major Scott and Commander Sir Dennistoun Burney came down the lift.

Major Scott said that the ship handled differently from R.101 but was just as easy to control. The controls were just as light and there was the added advantage that the engines could be throttled down to a slower speed.

When coming up to the mast the two rear airscrews of the forward cars were running reversed and one airscrew in the aft car was running ahead. Manœuvring was done by the engine throttles.

When asked about the flight Major Scott said that he had flown at 1,800 ft., that there was a great deal of mist, and so the ground could not be seen at intervals. The speed of 70 m.p.h. was easily maintained as a cruising speed. In fact his description of the flight was that all was just as it should be.

Commander Burney, with his usual smile, said that the voyage accorded with the views expressed in his book, "The World, the Air, and the Future."

On Dec. 18 R.100 is to start her trials, which will be similar to those of R.101.

Of course there will be minor alterations and adjustments to be made to this ship just as there have been to R.101, but if the first day's performance is any indication of the future, there can be no doubt that the nation has two of the best airships possible at the present day. Let us hope that real use will be made of them to settle the question, Are we to have Airships or no Airships in the future?—L. HOWARD FLANDERS.

Commander Burney, as the organiser of the great scheme under which R.100 was built, and Mr. V. N. Wallis, as the designer of the ship, deserve the highest praise for the remarkable success of this first flight. And not less credit is due to Vickers Ltd. for having staked their faith on the building of this ship at a time when the finances of every great engineering firm in this country were in a state which at best can only be described as delicate.

Though in a general way the structure of R.100 resembles the Zeppelin principle of construction more than does R.101 nevertheless she is full of new and clever notions, for all of which Mr. Wallis, the chief engineer, is responsible. Many of the most vital of these details are definitely his own inventions, such as the idea of making a mass-production job of one single ship by the ingenious process of using the same component unit multiplied over and over again for the major parts of the whole ship.

Mr. Wallis is recognised as being one of the cleverest engineering designers in this country. And, even if the Government should mistakenly decide not to build any more airships, the genius of Mr. Wallis is sure to be well employed in the design of heavier-than-air craft. Nevertheless, those who believe that airships have their own particular part to play in the development of air transport will hope that he may continue in this special branch for which he has shown such outstanding aptitude.

Likewise, all will hope that Commander Burney's determination and energy and initiative, which enabled him to carry through such a difficult scheme as the financing and construction of R.100 will again find support, so that he may go on constructing yet other ships.

Nobody who believes in airships is so foolish as to think that R.100 is not going to meet with mishaps of one kind or another. And nobody knows better than the designers and constructors how easily the designs of R.100 could be improved in another ship. In fact one has good reason for saying that R.100 could have been out several months ago but for the fact that so many alterations were made simply because so many possibilities for improvement were discovered while she was being built.

As is well known, the Goodyear Zeppelin Co. in the States are building two ships, each with a capacity of 6,500,000 cubic feet, as against the 5,000,000 of R.100 and R.101. Therefore obviously this country must proceed at once with the design of new airships to compete with the big American ships.

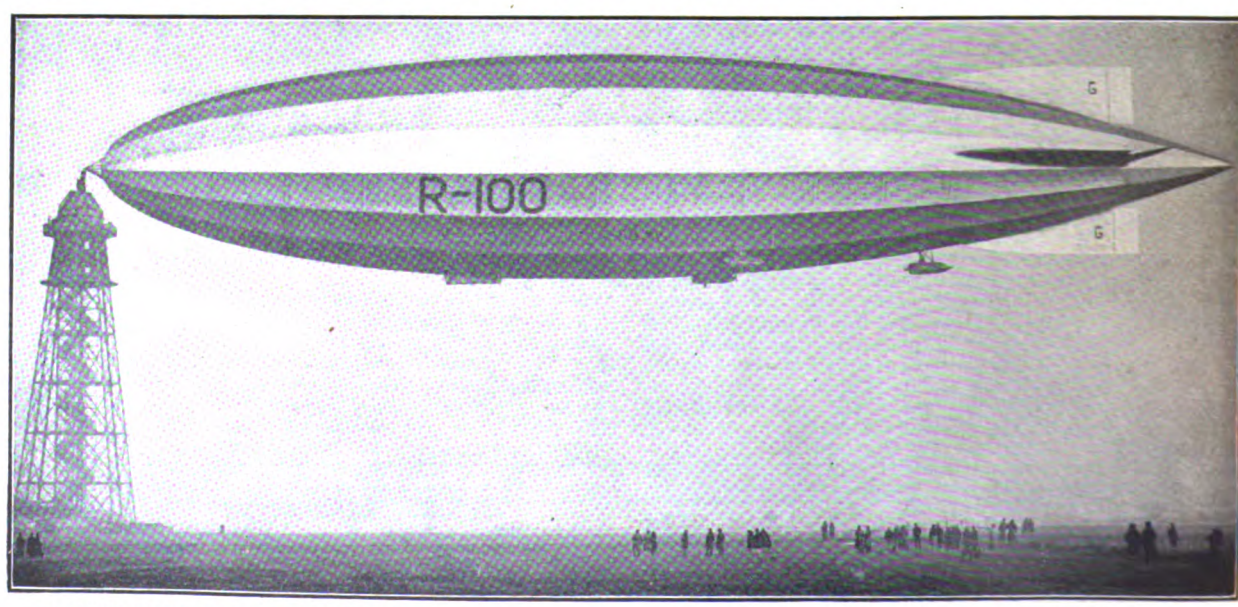
Our next ships need not necessarily be any bigger than our two new ships. All we have to do is to produce something very much better in construction and performance than the American ships. And with the experience which we have gained, and with the brains which we have available, we certainly can produce such ships. But, if we are to get the best results from them, work must begin at once, and we must not wait till the American ships come out and beat our existing ships.—For by then all our experienced airship designers and workers will have been dispersed into other trades and we shall have to start work all over again.

—C. G. G.

R.101 in the House of Commons.

In the House of Commons on Dec. 11 Major Church asked the Under-Secretary of State for Air what facilities, if any, existed for training the necessary personnel in the use of engines of the type carried by the airship R.101, other than those actually in use on the R.101.

Mr. Montague said that the engineer crew of R.101 con-



A PRELIMINARY SUCCESS.—The R.100 (six 650 h.p. Rolls-Royce Condors) at the mast at Cardington after flying from Howden.

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The Giant Do.X

(Constructed by the Aktiengesellschaft für Dornier-Flugzeuge, Altenrhein)

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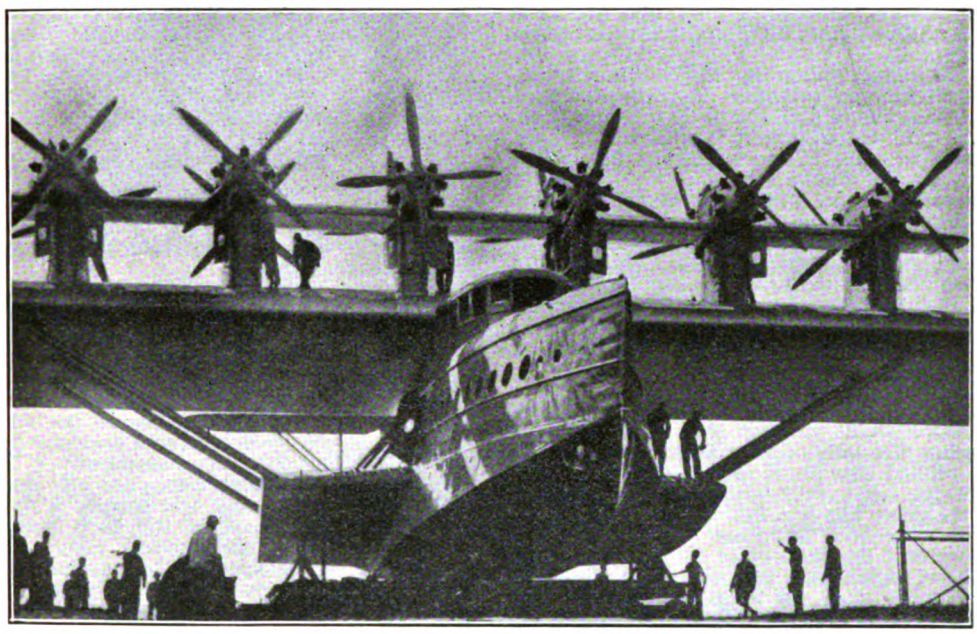

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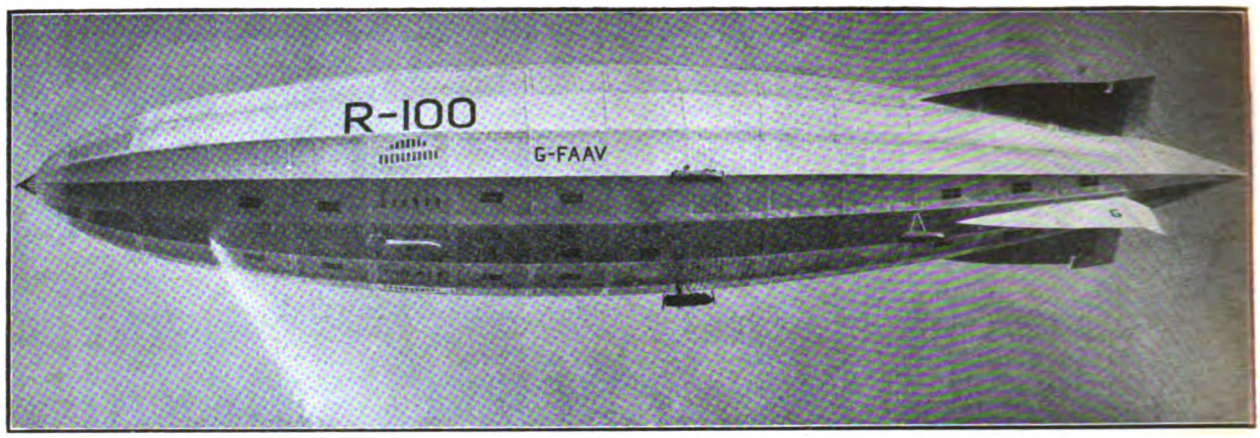

JUST OUT.—R.100 at Howden, seen from below, rudely dropping water-ballast on the crowd.

sisted at present of three watches of men who had been trained in the use of the engines both at the makers' works and in the airship.

Replying to a further question by Major Church, Mr. Montague said that the crew personnel was recruited on a full three-watch basis before the recent flying operations began, and there were three officers available for duty. Further operational experience was necessary before the numbers required could be finally settled.

In reply to a question by Sir N. Grattan-Doyle, Mr. Montague said that the R.101 would remain in the shed while the R.100 was at the only available mooring mast. During this period certain modifications would be made which might require some time for their completion. Apart from the cost of these modifications, maintenance charges would be negligible, as the crew would be usefully employed.

[Apparently the gas-bags will be, or have been, de-flated, and the gas stored for future use.—ED.]

The R.100 in Another Place.

In the House of Lords on Dec. 11 the Marquess of Londonderry asked the Government whether they could give any information regarding the tests of the airship R.100.

Lord Thomson replied that three sets of tests had to be carried out. One set had already been carried out—the shed trials—and the other two sets had not been carried out because R.100 had never been taken out of her shed. The reason for this was that the shed fitted very closely to the ship, and to get it out demanded a flat calm. This, however, was not the permanent shed for R.100. There were two sheds at Cardington, and it would be possible to get R.100 in and out without the same difficulty. At Cardington they also had the mast. He could give no information about future tests of R.100 until she had gone through the second set, which consisted of four flying trials, increasing from not less than three hours to not less than 48 hours' flight.

AN AIRSHIP MAST FOR NEW YORK.

The tallest-to-be skyscraper is now being erected in New York on the site of the old Waldorf-Astoria Hotel. The new edifice, the instigator of which is Al. Smith, the Catholic drinker who nearly became president, will be known as the Empire State Building, and will be 1,100 feet high.

On top of this the owners intend to build a 200 feet mooring mast for airships, so that the total height of the structure will be 1,300 ft. above the street. This mast will be designed to hold airships of the largest size in anything up to a 50 m.p.h. gale.

This sounds at first a reasonable proposition. Presumably American airships will be safe from fire as they are filled with helium. The airship terminal will be right in the middle of the City, where it is wanted. And the airship will be floating in more or less uniformly behaving air 1,200 feet above ground level.

But one wonders how the mooring rope from the airship will be picked up and connected to the rope from the mast. Perhaps a special squad of roof-clamberers and chimney-climbers will be detailed to chase the trailing pennant over the roofs of New York.

[Also, having no tail-anchorage, the ship may plunge up and down till it wipes its tail off on a not-so-much-lower building, for the air out of and into and over and round those cañons and peaks which are New York streets is probably more disturbed at 1,200 feet than any air in the World.—What with the frost in Wall Street and the hot-air of Times Square it must be worse than the Greek coast. So one does not think much of the idea.—ED.]

AN ACCIDENT IN AUCKLAND HARBOUR.

A Dornier Libelle flying-boat fell into the sea in Auckland Harbour, N.Z., on Dec. 12. The pilot, Capt. D. F. Harkness, and the mechanic, Mr. C. F. Goldsboro, were both killed.

Captain Harkness was a lecturer in civil engineering at Auckland University College. During the War 1914-18 he was in the R.A.F. and won the D.S.C.

SIR ALAN COBHAM'S VOYAGE.

Sir Alan Cobham left Croydon for Broken Hill, Rhodesia, on Dec. 11 at 10.20 hrs. He reached Paris two hours later, and after a halt of two hours flew on to Dijon.

On Dec. 12 he reached Rome by way of Marseilles, and on Dec. 14 he reached Tunis, whence he left for Tripoli on Dec. 15.

THE DEATH OF A PIONEER.

M. Rougerie, the director of the Farman Aerodrome at Villacoublay, was killed on Dec. 12 while talking to M. Maurice Farman. The roof of a hangar was blown off by the gale and a heavy door fell on M. Rougerie. M. Farman was not hurt.

M. Rougerie learned to fly in 1911 and had been interested in Aviation ever since. Recently he has created a school for "blind-flying" which is likely to prove of great value.

A FORD-JUNKERS ARGUMENT.

The Madrid correspondent of *The Times* reports that the company which controls the Spanish air lines recently bought a Ford Trimotor for use on the Madrid-Seville service. The machine was expected to arrive in Madrid on the 15th on its first flight with passengers.

The Junkers Company, which has also supplied aeroplanes to the Spanish company, has entered a protest against the introduction into Spain of the Ford aeroplane, which, it alleges, infringes Junkers patent rights, and the Junkers Company is endeavouring to lay an embargo on it.

The Spanish company, without prejudice to whatever the Spanish Courts may decide as to the validity of the Junkers claim to patent rights, is determined meanwhile to put the aeroplane into service.

MIAMI—BUENOS AIRES.

On Dec. 15 a Pan-American Airway's machine left Miami (Florida) for Buenos Aires by way of the East Coast of S. America. At least, so the New York correspondent of *The Times* says. One feels a little uncertain about the machine flying all the way to Buenos Aires, as one had always understood that the various sections of the route were flown over by different types of machines.

The real news is that Pan-American Airways, who hitherto have only flown to Paramaribo, Dutch Guiana, are now continuing the route right down to Buenos Aires, where they will link up with their other route, which goes down the Pacific Coast to Chile and thence across the Andes.

One does not quite understand how this will affect the New York, Rio, Buenos Aires line, commonly known as the N.Y.R.B.A. line, which has a mail contract with the Brazilian Government for the transport of mail northwards.

PILOTAGE IN BRITISH COLUMBIA.

On Oct. 26, the Air Pilots', Engineers and Navigators' Association of British Columbia was formed in Vancouver, B.C. The first directors of the organisation are Mr. E. J. A. Burke, Mr. A. H. Wilson, Mr. J. C. Ballard, Mr. T. E. Snelgrove and Mr. George Silk.

The Association, whose function is similar to that of the British Guild of Air Pilots and Navigators, aims to promote and maintain high standards of ethics and efficiency in the several professions of its members and to provide an organisation whereby its members may work together in the interests of their professions and of aviation in general.

NEXT FRIDAY.

Any reader of THE AEROPLANE in London on Friday next who has not already fixed a date, will do well to go to the Wigmore Hall, Wigmore Street, and hear Sir Philip Sassoon's lecture on "The Third Route." This is bound to be one of the most interesting aeronautical lectures of the year, and as the proceeds will go to the Great Northern Hospital, those who go to the lecture will know that they are spending their money in a good cause as well as assuring themselves of a pleasant hour or two.

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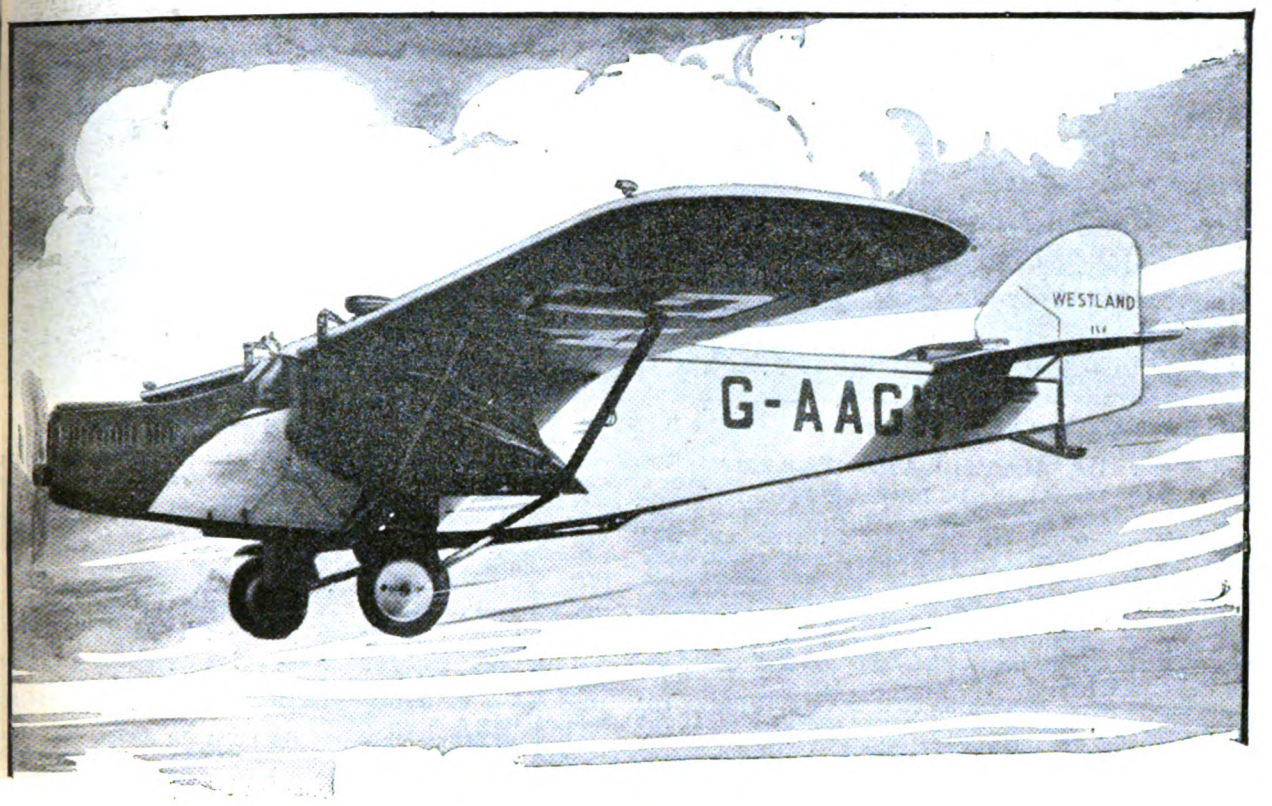

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ENTERPRISE IN THE DOMINIONS.—The new De Havilland Factory in Canada seen from the Aerodrome.

THE DE HAVILLAND PARTY.

On Saturday, Dec. 14, the De Havilland Aircraft Co. Ltd. had their Annual Staff Party at the Wharncliffe Rooms. There were somewhere between three hundred and four hundred people present,—all, if possible, more enthusiastic than they were at the firm's party the year before. Mr. Alan Butler, Chairman of Directors, presided, with his co-directors, Capt. Geoffrey de Havilland, Mr. Charles Walker, and Mr. T. P. Mills in support. After dinner there were a few speeches which, because of their historic value, deserve to be reported.

MR. RONALD MALCOLM, proposing the toast of "The Directors," said that the competence of the Directors and the enthusiasm of the staff accounted for the firm's remarkable successes. This was greatly aided by the fact that two World's Records were held by directors of the firm, Mr. Butler and Capt. de Havilland. He held up the De Havilland Company as example of progressiveness.

MR. ALAN BUTLER thanked those present for the warm reception they had given to the toast. He said that since last year the firm had been made into a public company so he could not give quite as much information this year as he had done at the dinner last year, because the Annual General Meeting of the firm had not yet been held.

He said that in the past the marketing of their products had been hard. There had been a prejudice against flying. But this had been got over by the enthusiasm of everybody in the firm. The result was that this year the firm's sales were 75 per cent. up, and the sales of Moths alone was 100 per cent. up.

Like all trades, the aircraft trade suffered from seasonal depressions, but the world-wide distribution of their sales got over that to a great extent.

The Gipsy engine was going ahead well. Major Halford, its designer, might well be proud of it, especially of the record of the "sealed engine," which had done 600 hours' flying, which was equal to flying twice round the world, without anything inside being touched. He added that many firms outside of their own firm were considering fitting Gipsy engines.

As an example of the De Havilland method of discovering the needs of the World market, he said that Hawk Moths were being flown experimentally in Canada and in Australia to see how they suited the conditions of those countries.

Referring to new types, Mr. Butler said that he had done a good deal of flying in the firm's latest light aeroplane, the Puss-Moth (otherwise the D.H.80). It gave him an entirely different outlook on flying.

[So many people, foreigners as well as English people, have seen the Puss-Moth that one is giving away no secrets when one lets the rest of the World know that it is a cabin monoplane with an inverted Gipsy engine. It gives the pilot a clear view in almost every direction and it has an extraordinary performance.]

Mr. Butler also referred to a bigger machine which the firm has recently built, but as it is on the secret list it must not be described. He did however say that its performance exceeded expectations and that it handled like a Moth.

On the strength of these products Mr. Butler said that he hoped that the D.H. Company would be able to beat all its competitors.

Continuing, he said that the School had exceeded the amount of flying that it had done last year and had turned out more pilots. In Australia their branch firm was doing well. Their Canadian branch was now a public company largely financed with Canadian money, but under English control. New works had been built in Canada and prospects were very good.

In the United States, he said, the Wright Corporation were turning out Gipsy engines, and the American Moth Corporation had been taken over by the Curtiss-Wright Group, which was the biggest aeronautical concern in the States.

The latest link in the Empire chain was the opening of a branch in India in charge of Wing Commander Crosbie. And he said that it was up to them all to extend this chain all over the world.

He then read cables from the Australian, Canadian, and Indian branches wishing everybody a pleasant evening and future success to the firm.

Thereafter Mr. Butler exhorted all members of the firm to strive to reduce costs and to improve the firm's products, because they were now entering a period of intense competition. Referring to future improvements, he said that aircraft constructors must have greater freedom in design,—implying that official restriction and supervision of design should be slackened,—and he argued that the D.H. firm's reputation was a strong weapon in obtaining such greater freedom.

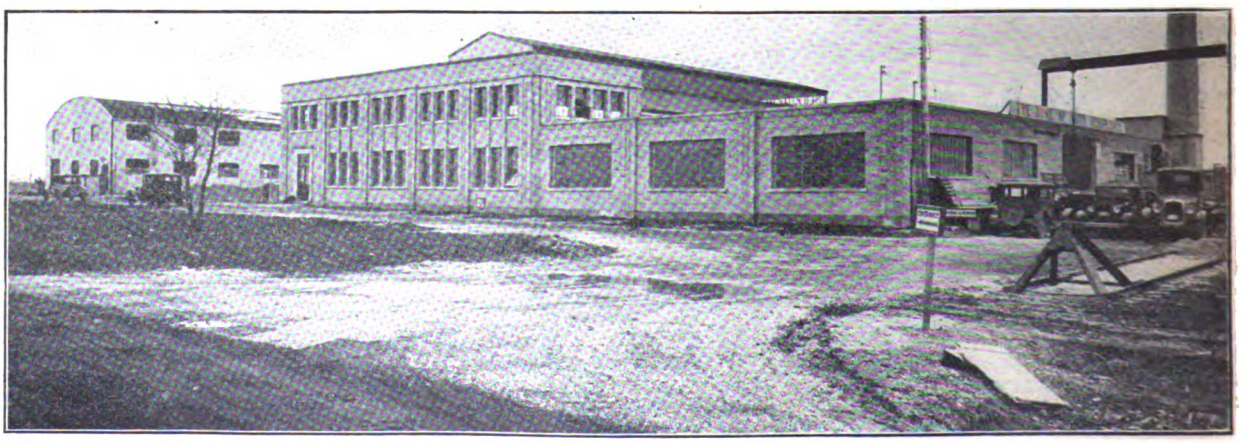
Turning to domestic affairs, he said that the amount of money in the Superannuation Fund was double that of last year, and that the finances of the Sick Club were progressing well. He thanked those responsible for the organisation of the sports ground.

He then read a list of the firm's successes in public competition, which was truly formidable. These included second, third, and fourth places in the King's Cup Race; the first to the sixth place inclusive in the Siddeley Trophy Competition; Mr. Broad's victory in the large class in the European Tour, coupled with second place in the general classification; Mr. Broad's winning of the Zenith Cup Contest, a full-throttle flight of 1,100 miles; the winning of the Grosvenor Cup; the winning of the first prize at Rotterdam; the South African Derby; a number of races in Canada; and fastest time in the Australian trans-Continental race from Sydney to Perth.

CAPTAIN GEOFFREY DE HAVILLAND, proposing the toast of the Staff and the Workshop Personnel, said that the success of the firm was due to every member of the staff. Every department had put up a fine show. And he thanked them all.

MR. F. T. HEARLE, Works Manager, supporting the toast, said that nobody realised better than he did the individual efforts which all had made. Only by such team-work and spirit could the firm keep its end up.

In a way, he said, the firm suffered from the excellence of the work done in their factory. There were not enough properly trained



THE DE HAVILLAND AIRCRAFT OF CANADA.—The works seen from the road.

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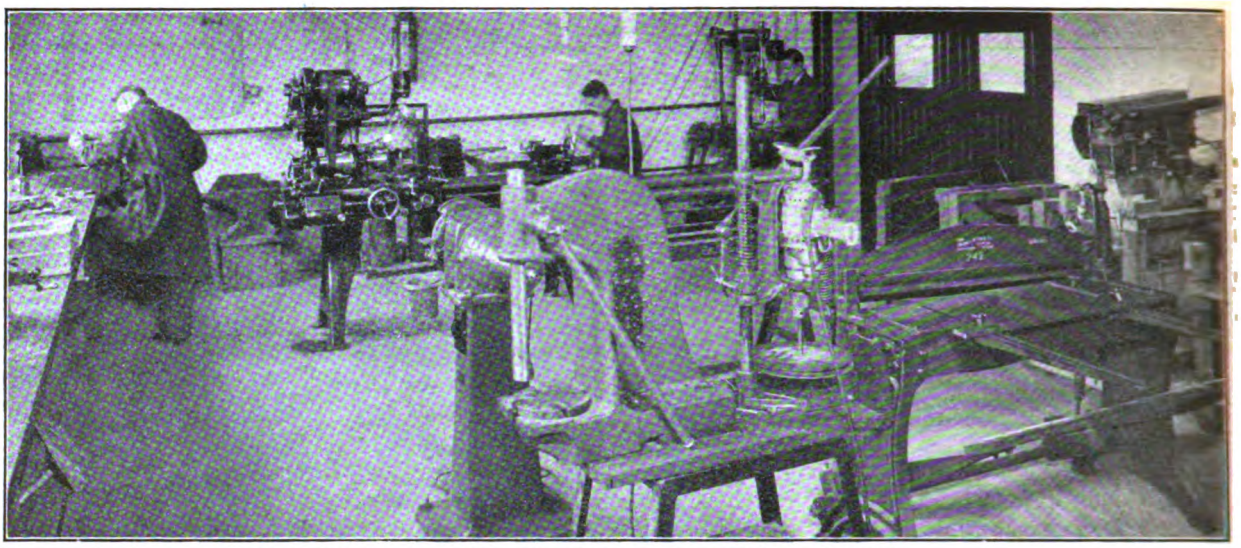


CANADIAN DE HAVILLANDS.—In the Machine-shop.

people in the Aircraft Industry to fill jobs when the boom in aircraft came, so newcomers to the trade naturally came to Stag Lane to get people who knew their jobs.

To cope with the demand for trained people they had recently started a regular educational section. Mr. Eadon had done particularly good work in training ground engineers.

In conclusion he said that he wanted everyone in the firm to help in entertaining visitors to Stag Lane, whether they were owners of De Havilland machines, or prospective owners, or merely students of aviation, or even foreign competitors. They wanted everybody who came to Stag Lane to come again, for they wanted everybody to say, after having been there: "A damn good crowd, de Havilland's." [There is no need for Mr. Hearle to want people to view the D.H. firm in this light. That is exactly what everybody does already. For anybody concerned with British Aviation a visit to Stag Lane in the most depressing weather is the best possible cure for depression. Whether in the offices or the workshops everybody is obviously full out and there is always an inspiriting atmosphere of optimism. Everybody is busy and yet there is always somebody of importance who can spare time to show visitors round the place. And there is an openness about the way things are shown to visitors which is generally only met in America. Probably that is why our American visitors always think so very highly of the De Havilland Company.]

MR. RADFORD, replying on behalf of the Personnel, said that after all that had been said about them they were beginning to think that they must be quite an important body of people. They appreciated these gatherings very much, for this was the only time when they were able to learn whether they were giving satisfaction. He assured the directors that the whole staff were there to pull their weight in the boat and to make good profits for everybody.

He referred admiringly to Mr. Butler's flight across the Channel in the gale on Saturday Dec. 7, when Mr. and Mrs. Butler and Mr. and Mrs. Norman were the only human beings to cross the Channel on that day. Referring to the ultimate object of this great flight, he remarked that some people in Paris after the Big Fight that night, had to walk home because "there was no car nearer."

Discussing the internal affairs of the firm Mr. Radford said that in the past year 72 new members had joined the Superannuation Fund, and he thanked Mr. Mills on behalf of the fund for his handsome gift of £50. By way of describing the enthusiasm of the personnel of the firm he said how unlike they were to those in a certain workshop full of men in which a visitor asked his guide "How many men work here?" to which the guide replied, "About one in ten.

MR. W. E. NIXON, Secretary to the firm, briefly proposed the toast of "The Guests."

MR. R. C. N. NEWPORT, Borough Surveyor for the Edgware Council, claimed that nobody in the room had had longer business relations with the firm than he had. He remembered that in 1920 they only had 50 employees, and now the number ran into four figures. They had achieved their success entirely by hearty co-operation. He said that in the course of his duties he visited a large number of factories, but he knew none in which the Directors did more for the social good of the employees.

After that quite a good concert party occupied the platform in the middle of the room. But there seemed to be amateur concert parties at each end of the room as well, and general conversation all over it. So there was some little doubt whether the conversation interfered with the concert or whether the concert interfered with the conversation.

Still everybody enjoyed themselves immensely. And so far as the music is concerned, one merely throws out the suggestion that next year the organisers of the party should content themselves with a band of tom-toms and Jew's harps, merely to keep the conversation going.—C. G. G.

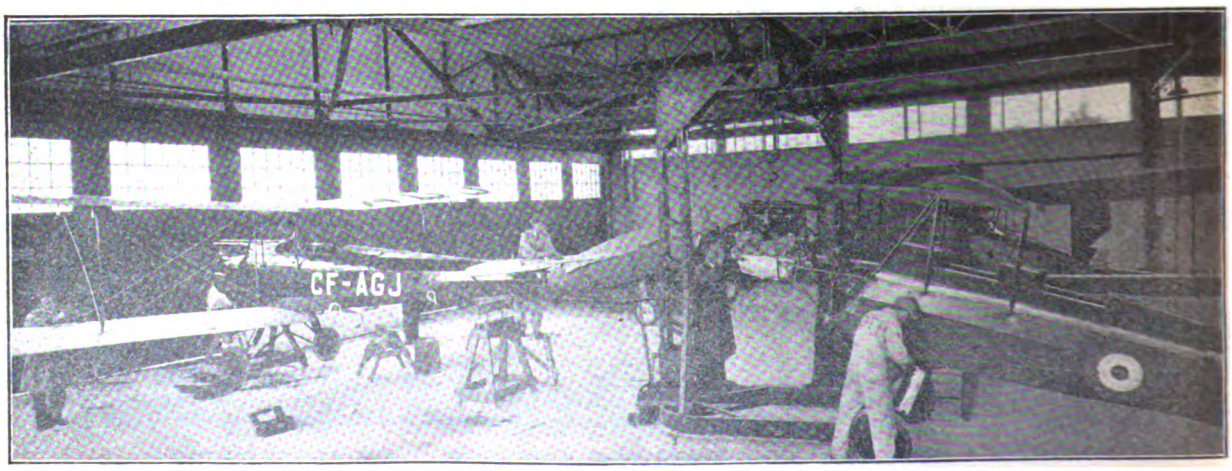
DESOUTTERS OVERSEAS.

That enterprising firm, the Desoutter Aircraft Co. Ltd., is wisely turning its attention to the Overseas market and is evidently not staking its future on the home market. Agencies for the Desoutter Sports Coupé (Cirrus-Hermes) have already been fixed for Australia and New Zealand, among the British Dominions, and for the Argentine and Uruguay among the South American nations. In each case a definite order for machines has been placed, so these are not paper agencies of the kind which so often kill British trade.

The firm has a number of inquiries for agencies and for manufacturing rights from various parts of the world. Altogether the Desoutter Sports Coupé looks like being one of the most popular aeroplanes in the World next year.

THE LAST ISSUE OF THE YEAR.

Readers of THE AEROPLANE who are not regular subscribers are reminded that they should order the next issue of THE AEROPLANE, dated Dec. 25, at once. It will be the last issue of this year and will be of unusual importance. The first article will be devoted to a review of the development of the Royal Air Force from the Royal Flying Corps, under Sir Hugh Trenchard, who vacates the office of Chief of the Air Staff on Dec. 31. And the Engineering Supplement will have a particularly interesting article by Mr. R. J. Mitchell, designer of the Schneider Trophy winner, on the Effect of High Speed Flying on the Design of Aircraft.



CANADIAN DE HAVILLANDS.—In the erecting and assembling shop.

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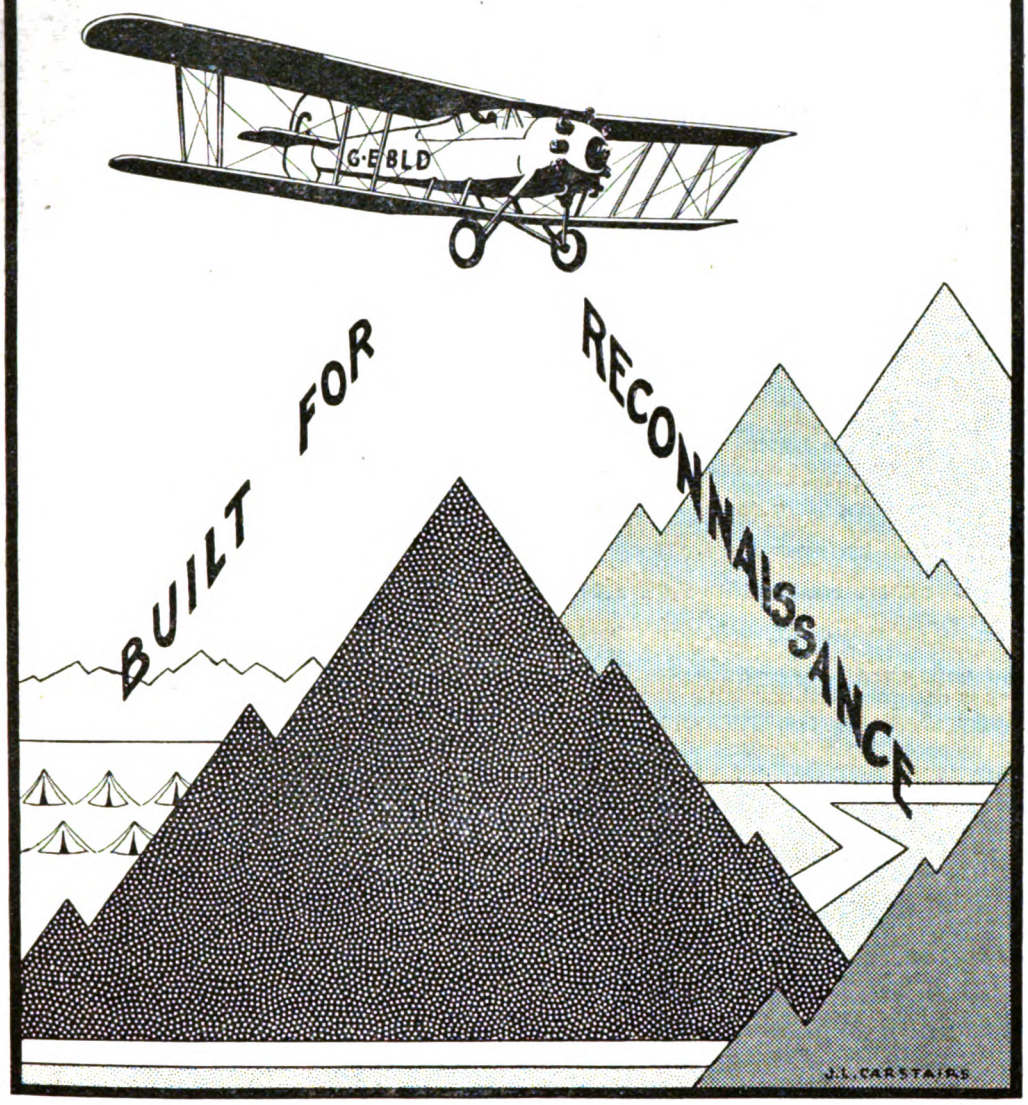
'VESPA'



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CANADIAN DE HAVILLANDS.—In the plane-covering shop.

FAIREY PROGRESS.

The first report of the Fairey Aviation Company, formed in March of this year to acquire the business of the Fairey Aircraft Holdings Company, covers to September 30.

The trading profit of £164,954 is practically that estimated when the shares were put on the London Stock Exchange. It is an advance of £4,762 on the profits for the previous complete year ending in March 1928.

A sum of £56,625 (the profit prior to incorporation) is transferred to capital reserve, leaving £108,329, of which £33,000 is placed to income-tax reserve and £15,425 to reserve for patents.

A dividend of 7 per cent. is recommended on the £500,000 share capital.

Preliminary expenses, share issue expenses, and debenture discount are to be written off from capital reserve, and the balance of £24,575 transferred to reserve for patents.

Mr. C. R. Fairey is chairman and managing director.

THE WESTLAND SOCIAL EVENING.

On Dec. 7 the employees of the Westland Aircraft Works foregathered at the Yeovil Town Hall for a Social Evening. Mr. R. A. Bruce, Managing Director, and Mrs. Bruce were accompanied on the platform for the opening speeches by Mr. Gibson (Works Manager), Mr. Gaunt (Secretary of the Westland Aircraft Society, the Yeovil branch of the Royal Aeronautical Society), Mr. Davenport (Chief Designer), Flt. Lt. Paget (Chief Pilot), Mr. McLean (Contracts and Buying), Messrs. Norton and Watts (A.I.D.) and Messrs. Fitcher, Swetman, Dalwood, Carey, Rowe, Cook, Lower, Pomeroy, Nicholls, Millman and Goswell.

Mr. Bruce said that this was the first occasion of its kind which was devoted entirely to the Westland Aircraft Works (The Westland Works is a branch of Petters Ltd., the well-known Oil Engine Manufacturers) and he hoped it would prove a great success. It was gratifying to him to see the progress which had been made since the early days when the Westland Aircraft Works was started in the early part of the War, in 1915. In those days he himself with Mr. Davenport would lay out the fuselages.

He was glad to see a few of the oldest hands still with the firm—he saw Mr. Davenport, Mr. McLean, Mr. Dalwood and one or two others who had been with him from the start. He felt that everyone had a great interest in the products of the firm—he personally felt privileged to be engaged in work of such absorbing interest. They all had dull tasks at times, but even the office boys and typists would feel that they were privileged in working at the production of machines of such scientific and general interest.

Referring to the Westland Aircraft Society, he said that he considered this useful ground on which they could meet and learn of the developments in aeronautics, and the meetings were a valuable means of increasing the knowledge of all members. From this aspect the Society was very helpful, and he hoped everybody would join. He would ask them to drink to the health of the Westland Works.

The toast was drunk with enthusiasm, followed by a toast to Mr. and Mrs. Bruce, with musical honours. Mr. Bruce replied with a toast to the employees, and the musical programme then proceeded. After turns by local artists the floor was cleared for dancing, which lasted until midnight.

THE WESTLAND AIRCRAFT SOCIETY.

The Westland Aircraft Society, which is the Yeovil Branch of the Royal Aeronautical Society, is becoming widely known through the excellence of the lectures read before. A number have been published in THE AEROPLANE.

This Society should evidently be a valuable focus of air-mindedness in the West Country, for one gathers from the rules that although intended primarily for employees of Petters Ltd., other persons can become members.

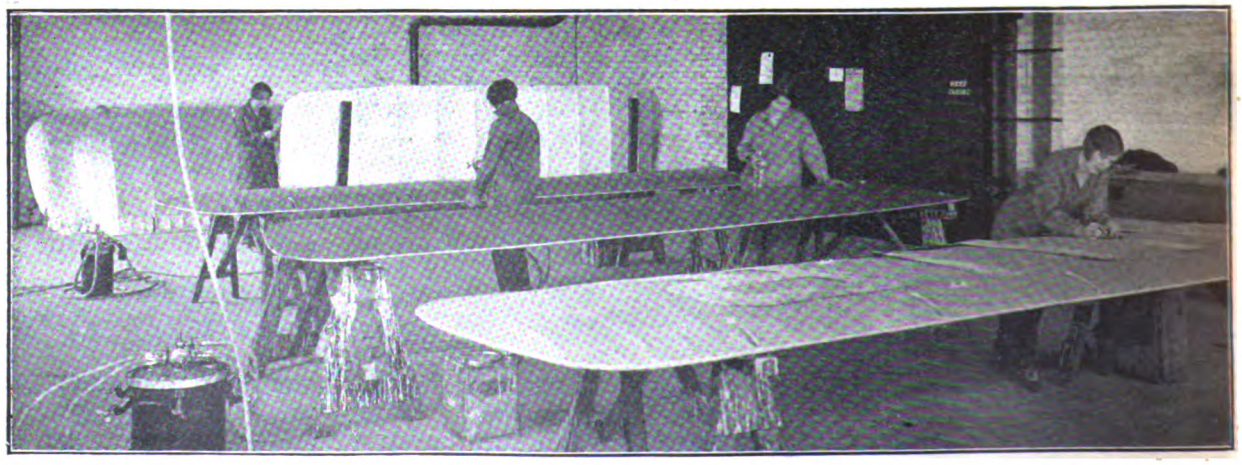
Among the lectures scheduled for the New Year are an instructional film on machine tools; a lecture on Wireless Apparatus for Aircraft; Wapiti Steel Wing Construction; the Wapiti in Service; and Aircraft Production Methods.

After these there will be a lecture on the Schneider Trophy Contest 1929 by Flt. Lt. H. R. D. Waghorn, A.F.C.; then a lecture about Racing Seaplanes; next a talk on the Gipsy Aero Engine; probably a lecture on Aircraft Armament; a talk on High Altitude Equipment for Aircraft; and, finally, a lecture on Aircraft Accessories.—Which is rather more interesting than is the Syllabus of the R.Ae.S. itself.

One says "finally," but that is because one has quoted the calendar up to its end. There is no doubt that the sequence of lectures will be continued.

The Society also manages to run Instructional Classes for Prospective Ground Engineers. If the number of letters received by THE AEROPLANE be any measure of the demand, many other firms would do well to emulate it.

These instructional classes include a series of 12 lectures one a week, in which the various rules and regulations



CANADIAN DE HAVILLANDS.—In the Dope-shop,—with pressure-fed spray-painters.

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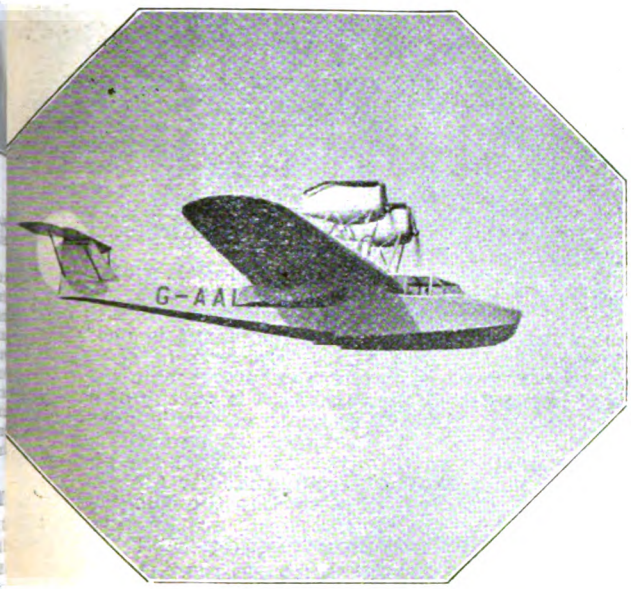
SARO "CUTTY SARK"

CABIN FLYING BOAT.



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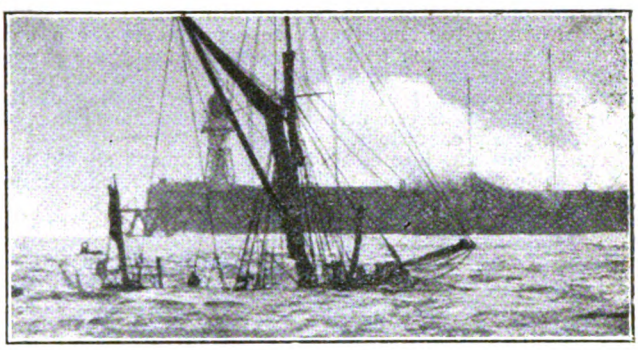
On Friday, Dec. 6th

in the fury of the gale-



Seas breaking over Dover Harbour in the gale

—two GIPSY MOTHS were the only aircraft to cross the channel

In the teeth of the gale which wrecked many a stout ship, Mr and Mrs. A S. Butler and Mr. and Mrs. Nigel Norman with splendid confidence in their Gipsy-Moths, crossed the storm-swept Channel to St. Inglevert. On that wild day, no other aircraft dared the passage.

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affecting ground engineers are explained, followed by lectures of technical instruction.

One notes that Mr. V. S. Gaunt, the indefatigable Secretary of the Society, finds time not only to run the Society but also to address 25 per cent. of the instructional classes.

THICK WINGS AND SLOTS.

For years the advocates of slots and the advocates of thick wings have been arguing as to whether slots are of any advantage when fitted to thick-wing monoplanes. Mr. Antony Fokker has demonstrated over and over again that he personally can do anything on one of his thick wing monoplanes, either large or small, that can be done with slots. And undoubtedly thick-wing monoplanes of the Fokker type can be made to do extraordinary things in the way of remaining under lateral control when stalled by clever pilots. On the other hand, the advocates of slots claim that whatever a thick wing monoplane can do without slots, it can do still more with slots.

That interesting little broad-sheet, the Handley Page Monthly Bulletin, in its December issue, devotes two pages to illustrations of wind-tunnel experiments with a thick-wing monoplane without slots and with slots.

According to the Bulletin, these experiments are a conclusive demonstration that a thick-wing monoplane cannot be made stable and controllable at or beyond the stall either by special balancing of the controls or by grading of the wing sections, whereas with slots the machine refuses to spin under any conditions.

Those who are interested in this argument should certainly get a copy of the Handley Page Bulletin from Handley Page Ltd., Cricklewood, London, N.W.2.

The price of the Bulletin is 3d., but one feels sure that Mr. Handley Page, with his well-known generosity, whether in dealing with patents or pamphlets, will be glad to send the Bulletin gratis and post free to convince anybody who is really worth convincing.

That category includes all aeronautical enthusiasts from the aerodynamic experts at the Air Ministry down to those who are only starting their aeronautical work as makers of models,—as in fact Mr. Handley Page himself did in his pioneering days,—all the way through the various grades of Service pilots, private owners, aircraftmen in the R.A.F., ground engineers, and all the rest. There is endless fun to be got at Christmas out of the arguments provided in this pamphlet.

THE FIRST AERONAUTICAL FUNCTION OF 1930.

The Royal Aero Club in conjunction with the Royal Aeronautical Society, The Air League and the Society of British Aircraft Constructors will hold a Banquet at the Savoy Hotel, on Wednesday, Feb. 5, 1930.

Group Captain H.R.H. The Duke of York has honoured the combined associations by consenting to be present. The Chair will be taken by Sq. Ldr. the Rt. Hon. Sir Philip Sassoon, Bart., M.P., the Chairman of the R.Ae.C.

Presentations will be made to the Schneider Team and Certficates of Performance in connection with World's Speed Records will be presented to the Supermarine Aviation Works Ltd., Rolls-Royce Ltd., the Gloster Aircraft Co. Ltd., and D. Napier and Sons Ltd., and also to the pilots, —Sq. Ldr. Orlebar, Flt. Lt. Atcherley, Flt. Lt. Waghorn, Flt. Lt. D'Arcy Greig, and Flt. Lt. Stainforth.

The Gold Medal of the Royal Aero Club will be presented to Captain C. D. Barnard and an illuminated Address to the Duchess of Bedford in recognition of their flight from England to India and back.

Application for Tickets, £1 1s. each, from the Members of the above Societies, should be made to the Secretary, Royal Aero Club, 3, Clifford Street, London, W.1. Members may be accompanied by Ladies.

THE PRINCE OF SPORTSMEN.

Our old friend, *The Illustrated London News*, which represents the best public interests, as is shown by the way in which it deals with such diverse subjects as archæology and aeronautics, has produced in its current issue a very fine double-page colour-print of His Royal Highness the Prince of Wales flying over Windsor Castle in his Moth. The picture is one of the best that Mr. G. H. Davis has ever done, which is saying a good deal, for he has done a number of the finest flying pictures that have been produced.

Artist proofs on art paper of this picture, suitable for framing, are also being produced by *The Illustrated London News*. These will certainly be much appreciated as decorations in R.A.F. Messes, in Flying Clubs, and in the homes of aeronautical enthusiasts. The price is about 10s. each from Inveresk House, Strand, W.C.2.

Incidentally the De Havilland Company are to be congratulated on having in this picture as fine a free advertisement as any British manufacturing firm has had for a very long time.

A PROGRESSIVE COMMERCIAL OUTLOOK.

The Times reports that the council of the London Chamber of Commerce recently approved of a memorandum drawn up by its East African and Civil Aviation Sections, which is to be submitted to the British Government. This emphasises the importance of conducting a comprehensive aerial survey of the East African territories under British rule to determine their mineral and other resources and their best lines of development.

The memorandum adds that an aerial survey of East Africa might be conveniently linked up with a survey of other parts of the African Continent under British control, about which information for development is needed.

Members of the East African Section of the Chamber "feel that a more comprehensive programme than is envisaged in the East African proposal is worthy of consideration on the ground of its ultimate economic advantage to the various Colonies and Protectorates participating."

[This resolution seems rather to be what the divines call "a work of supererogation," seeing that the Aircraft Operating Co. Ltd. is already hard at work in the Rhodesian-Congo area, and that various aircraft firms are working in East Africa to develop aeronautical progress.—ED.]

THE GLOSTER SURVEY BIPLANE.

The first example of the Gloster A.S.31 or Survey biplane which has been designed and built by the Gloster Aircraft Co. Ltd. to the specification and order of the Aircraft Operating Co. has been submitted to Type Test at the Aeroplane and Armament Experimental Establishment at Martlesham Heath and has emerged from the ordeal much to the satisfaction of all concerned with it.

Below is shown the performance of the machine as determined by Martlesham Heath tests.

These figures are for a loaded weight of 8,500 lbs. (3.864 kgs.), which includes 460 lbs. (209 kgs.) of survey load, 240 gallons of petrol and 31 gallons of oil.

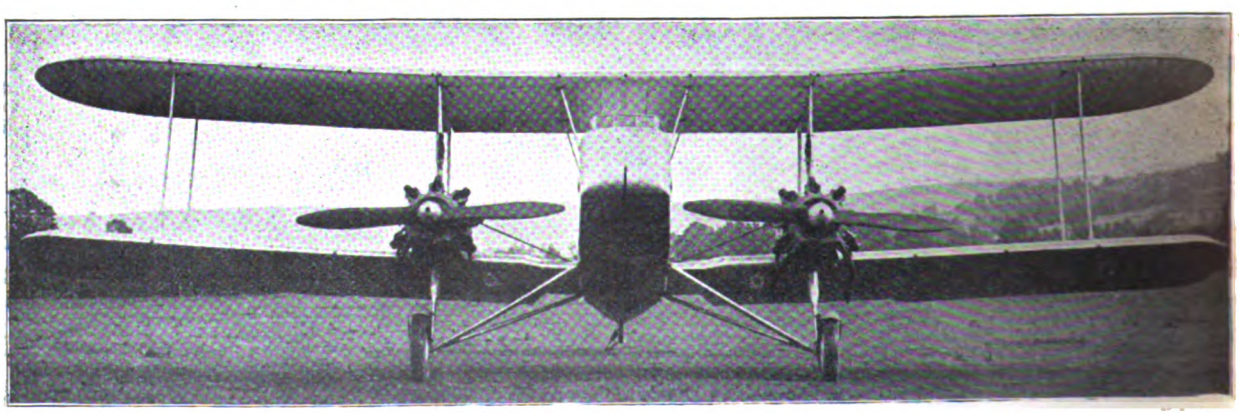
PERFORMANCE.—Speed, maximum, 139 m.h.p. (222.4 km.p.h.). Speed at 5,000 ft. (1,525 m.) 138.5 m.p.h. (221.6 km.p.h.). Speed at 10,000 ft. (3,050 m.) 135 m.p.h. (216 km.p.h.). Speed at 15,000 ft. (4,575 m.) 128.5 m.p.h. (205.6 km.p.h.). Speed at 19,000 ft. (5,795 m.) 120 m.p.h. (192 km.p.h.).

Initial rate of climb 1,840 ft./min. (567 m./min.). Climb to 5,000 ft. 3.2 min., Climb to 10,000 ft. 7.4 min., Climb to 15,000 ft. 14.2 min., Climb to 19,000 ft. 22.7 min.

Service ceiling 21,900 ft. (6,680 m.). Absolute ceiling 23,200 ft. (7,076 m.). Ceiling with one engine 10,000 ft. (3,050 m.).

Stalling speed 44 m.p.h. (70.4 km.p.h.). Maximum permissible flying weight 9,000 lbs. (4,091 kgs.).

These figures are all superior to the estimated figures published by the Gloster Company at the last Aero Show when the Survey biplane was exhibited to the public for the first time.



A SPECIALISED TYPE.—The Gloster Survey biplane (two Bristol Jupiter engines) specially designed and built for the Aircraft Operating Co. for air-survey work.

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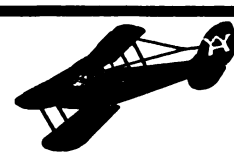
THE AIRWORK FLYING SCHOOL



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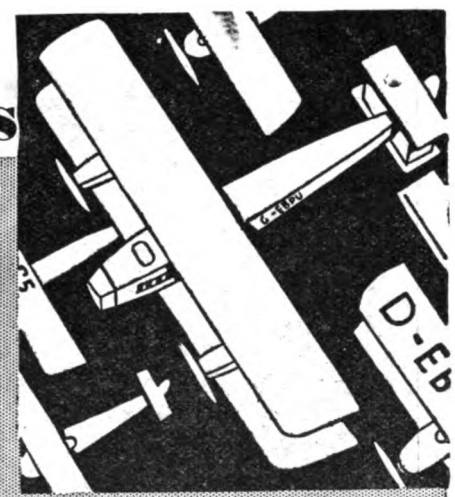

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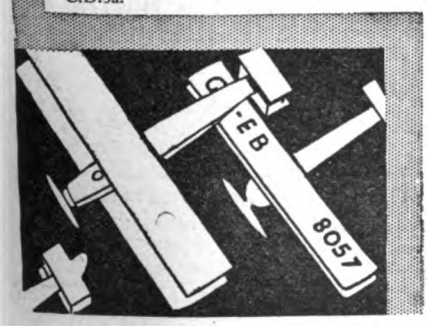

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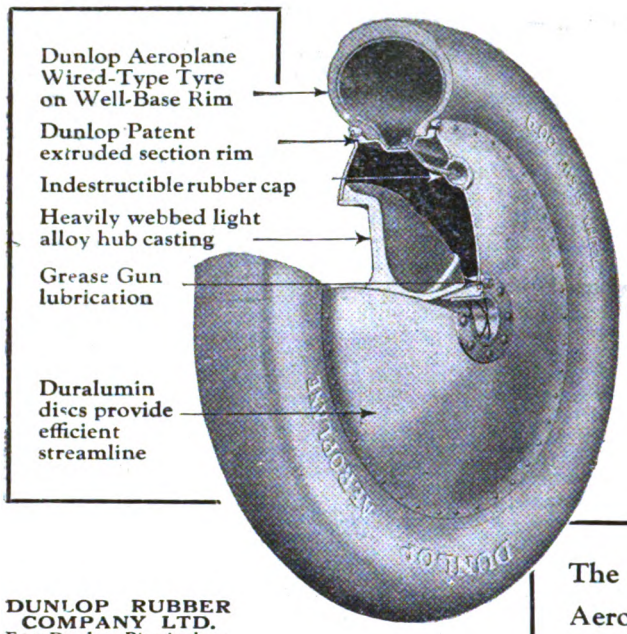

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COMMERCIAL AERONAUTICS.

THE INTERNATIONAL COMMISSION FOR AIR NAVIGATION.

The International Commission for Air Navigation insti-ted by the International Air Convention of Oct. 13, 1919, d organised in July, 1922, held its Seventeenth Session in ris on Dec. 10, 1929.

This special Session, with a limited agenda, was held for e purpose of settling without delay the question of the tes to be allotted on the Commission to the British ominions and the problem of facilities of passage to be anted to aircraft used by the League of Nations.

Twenty-five of the twenty-six States parties to the Con-ntion were represented.

M. Alejandre Alvarez, Delegate of Chile, was elected hairman of the Session.

The composition of the Commission was as follows:—*Australia*: Mr. T. Trumble, C.M.G., C.B.E. (Official Secretary of the ommonwealth of Australia in Great Britain). *Belgium*: Major-eneral Van Crombrugge. *Bulgaria*: M. S. Kiroff. *Canada*: The onourable P. Roy (Minister of Canada in Paris). *Chile*: Sr. Alejandre varez. *Denmark*: M. Gregersen. *France*: M. Pierre-Etienne Flandin nd M. Chaumie.

Great Britain and Northern Ireland: Air Vice-Marshal Sir W. Sefton rancker, K.C.B., A.F.C. (Director of Civil Aviation). *Greece*: Admiral otassis. *India*: Sir Atul Chatterjee, K.C.I.E. (High Commissioner of ndia) and Mr. E. J. Turner, C.B.E. *Irish Free State*: Count G. 'Kelly de Gallah (Minister of Ireland in Paris); *Italy*: H.E. General . Piccio and H.E. Cav. de Gr. Croce Giannini. *Japan*: M. Kawai nd General Kaba. *New Zealand*: Major R. M. Wilkes, M.C., and Mr. V. G. Housden.

Netherlands: M. E. Th. de Veer. *Poland*: M. W. Czapski. *Portugal*: rof. Lobo d'Avila Lima. *Roumania*: General Dumitrescu. *Saar 'erritory*: M. Chanzy. *Siam*: Khun Visutra Virajjades. *Sweden*: . W. Winther. *Czechoslovakia*: M. V. Roubik. *Union of South frica*: Mr. C. te Water (High Commissioner of the Union of South frica) and Mr. D. Steyn. *Uruguay*: Sr. Carlos A. Pons. *Yugo-Slavia*: ol. Preditch.

The Secretariat of the League of Nations was represented y M. Robert Haas, General Secretary of the Advisory and Technical Comittee for Communications and Transit.

After having heard the representatives of the British Dominions and India set forth their reasons for desiring a modification of the present provisions of the Convention, which stipulate, as regards votes on the Commission, that "Great Britain, the British Dominions and India shall count as one State," the Commission adopted a Protocol concerning amendments to Articles 34 and 40 of the Convention.

This Protocol was then and thereupon signed by the Representatives of the eleven following States: Australia, Chile, Denmark, France, Great Britain, India, Irish Free State, Italy, New Zealand, Saar Territory, and the Union of South Africa.

As soon as this Protocol enters into force, following its ratification by the States now parties to the Convention, each of the Dominions and India will be entitled to a separate vote in the deliberations of the Commission.

With regard to aircraft destined to ensure communications of importance for the working of the League of Nations, the Commission, invited by the League of Nations to give an opinion on the measures to be taken to facilitate such communications at all times and in particular at times of emergency, considered that the most practical procedure would consist of inserting in the Air Convention of Oct. 13, 1919, a text relating to the facilities of flight to be granted to these aircraft.

This text was accordingly prepared and will be presented to the League of Nations to be examined by the Committee on Arbitration and Security of the League of Nations in conformity with the Resolution adopted by the Assembly in September, 1929.

A certain number of new items, relating to night flights, registration of aircraft, aerial sabotage, international radio-electric service for aeronautics, revision of the customs provisions of the Convention, etc., were taken up to be studied and dealt with at the Eighteenth Session of the Commission which will take place at Antwerp in June, 1930.

GERMANY'S PLANS FOR THE FUTURE.

(Extracted from *Les Ailes*.)

Since its creation, Luft Hansa has essentially devoted itself to the development of an internal network of German air lines. Strengthened by subsidies from the Reich, from various States and from the Towns, it has been able to furnish Germany with a fabric of air lines particularly closely woven.

The reductions of the Budget of this year have caused a radical modification of the policy followed by this Company (Luft Hansa) up to the present time. Willy nilly it has been obliged to practise a policy of economy which has resulted partly in the reduction of personnel and partly in the suppression of a number of routes. The principle of "rationalisation" has triumphed in Aviation as in other fields.

One has criticised the creation by Luft Hansa of innumerable *Hüpflinien* (feeder lines). It is thus that one names the short routes between important provincial centres and the main trunk-lines. These lines are now only maintained in so far as justified by local subsidies and the possibility of using existing *matériel*. The others have been pitilessly scrapped.

The new policy of Luft Hansa is occupied with the development of important trans-European and inter-Continental air routes. It sees in the operating of these lines the principal reason for its survival in the future.

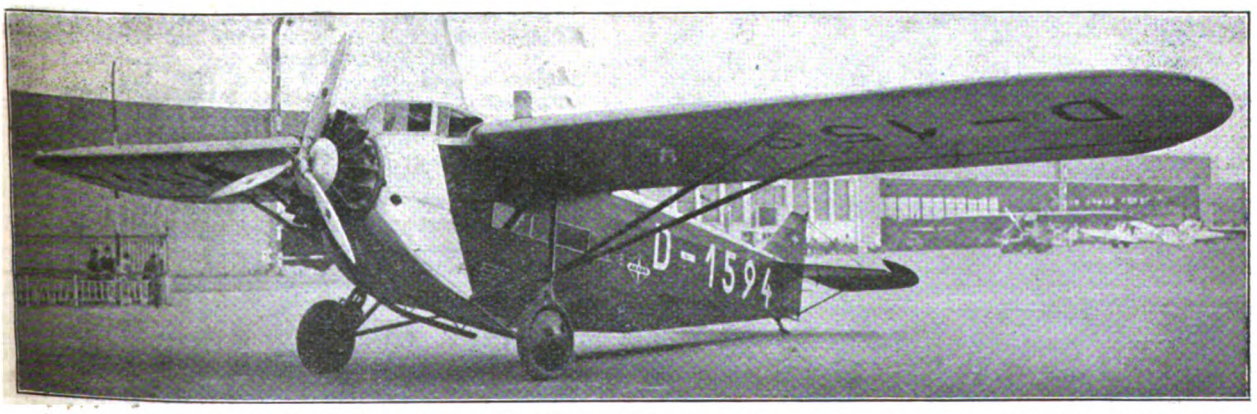
The new European lines which Luft Hansa counts on exploiting next year are the route between Berlin and Constantinople which will be extended to Baghdad; the route between Berlin and Seville by way of Marseille; and that between Berlin and Lisbon.

These lines will be operated by fast night-flying machines, which will fly non-stop or with only one halt. They will be operated on the model of the Berlin-London and Berlin-Stockholm lines. They will carry passengers but above all, mails. The Post Office (of Germany) is very interested.

The first trial has been made over the Berlin-Constantinople route. *Les Ailes* has reported it. The machine was forced to land by lack of oil 50 km. (32 miles) short of Constantinople, at the village of Silibri. The lesson to be learned from this flight is that a commercial machine can fly in 12 hours non-stop the 1,900 km. (1,200 miles) between Berlin and Constantinople.

Two other long distance flights have been made, these over the Berlin-Seville route. Herr von Schroeder piloting the new postal Arado has flown from Berlin to Seville in 13 hours with a single stop at Marseille. On the return journey his time was 14 hours. The distance between the two cities is 2,500 km. (1,550 miles).

The three lines which Luft Hansa is going to develop



A GERMAN MAIL-CARRIER.—The Arado V.1. (525 h.p. Hornet—built by the Bayerische Motoren Werke of Muenchen under license to the Pratt and Whitney Co.). A new type which is being tried-out on trans-European air-mail lines (as described above) instead of slower multi-engined passenger machines.

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next year: Berlin-Moscow, which has been in existence for several years; Berlin-Constantinople; and Berlin-Seville; must only be considered as the feelers for the future inter-Continental system. Then if the political situation will allow, that is to say if the Russo-Chinese embroglio, and the internal affairs of China are put right, Luft Hánsa counts on prolonging the Russian route to Pekin by way of Siberia with a branch to Japan. Germany possesses in fact three big commercial interests in the Far East and the creation of direct aerial communication can only accelerate their development.

The link between Berlin, Constantinople and Baghdad with a link towards the Indies, by favour of the Turkish and British Governments, seems to us the nearest realisation.

Nevertheless the development that most concerns us is that which is directly in competition with our own Aviation, that is the link between Seville and South America, and Portugal and South America. After the declarations of Herr M. Wronsky, Managing Director of Luft Hansa, one assumes that this line will present, from the postal point of view, the highest return. Our neighbours are concentrating on this aspect of the problem.

The Luft Hansa has already marked three stakes in the South American route. First registering the air route between Berlin and Seville by the Rhone valley and Marseille. Secondly its very active participation in the formation of a network of Spanish air lines which will assure to it a very solid base in the Iberian Peninsula. Thirdly its penetration into South America through the intermediation of the mixed (Nationalities) Condor Company in which the German capital of Luft Hansa preponderates. The company is actually opening the line which joins Rio Janeiro with the Rio Grande.

One cannot help admiring the logical and organised way in which the Germans are proceeding. They advance step by step, but the road they have made they do not abandon. Besides all this they have created an interior system (of air lines) which has made a valuable proving ground for material, personnel and organisation. To-day they are reproducing on a larger scale the lesson of their early experiments. To-morrow they will pass to the attempt of greater things when they will have correct *matériel* and every chance of success.

[And meantime all British effort will lie dormant because anyone who proposes to start an air line will be told by capitalists that Imperial Airways Ltd. have proved that air lines cannot be run without a subsidy. And anyone who asks the Government for a subsidy will be told that all money available for subsidies is pledged to Imperial Airways Ltd.—But Mr. Churchill's dictum that "Civil Aviation must fly by itself" is still the only economic truth.—C. G. G.]

N.F.S. NOTES.

National Flying Services Ltd. now provide at the London Air Park at Hanworth, lock-up sheds for privately-owned aircraft and assure regular inspection and maintenance services. Workshop overhauls and repairs are done under competent craftsmen. And the firm offers an attractive scheme of insurance. The firm's licensed ground engineers inspect and certify the machines as fit for use. And the machines are regularly cleaned and refuelled.

The lock-up sheds cost £3 15s. a month and the maintenance service, under what is known as Schedule B, costs £1 a week. The owner-pilot who does a great deal of flying and needs a more comprehensive service, which leaves nothing to his own personal attention, is offered a scheme known as Schedule A, at £3 a week.

The organisation at Hanworth is now, like All Gaul, divided into three parts: (A) instructional and club flying; (B) taxi and commercial flying, and (C) sales and service. Each division has its own sheds and staff, under the general management of the Senior Pilot.

Mr. Dudley Page, late R.A.F., has been appointed to take charge of Division C. Twenty lock-ups have been, or are being, built for C. Division (which seems appropriate), and a large shed is provided for other private machines and as a show-room for new and second-hand machines. N.F.S. Ltd. now have some twenty-four second-hand machines for sale.

N.F.S. Ltd. have a new insurance scheme by which any flying member of an N.F.S. club who has done twenty hours, including at least ten hours' solo, can insure his own aeroplane up to £300, and take in all third-party risks up to £1,000 for an annual premium of £50.

THE LONDON TERMINAL AERODROME.

ANALYSIS OF FIGURES FOR PAST WEEK.

Trips per Day.—Sunday, 0; Monday, 2; Tuesday, 25; Wednesday, 14; Thursday, 13; Friday, 12; Saturday, 13.

IMPERIAL AIRWAYS LTD.:

London—Egypt—India: London—Le Touquet—Paris—Basle—Zurich—London—Ostend—Brussels—Cologne and return: Machines 28, passengers 130, freight 10 lbs. India Route: Inward, passengers mail 0 lbs.; outward: passengers 0, mail 0 lbs.

AIR UNION:

Paris—London: Machines 20, passengers 62, freight 10¼ tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 10, passengers 19, freight 5¼ tons.

SABENA:

Brussels—London: Machines 12, passengers 8, freight 3¼ tons.

DEUTSCHE LUFT HANSA A.G.:

Amsterdam—London: Machines 7, passengers 10, freight 1¼ tons.

MISCELLANEOUS:

British machines 2, passengers 0.

Foreign machines 0, passengers 0.

Total number of trips by British machines, 30, carrying 122 passengers. Foreign machines, 49, carrying 99 passengers.

COMPARATIVE FIGURES.

Week ending Dec. 14:
Machines, 79; Passengers, 219; Crews, 211; Total personnel, 43[illegible]

Corresponding week, 1928:
Machines, 70; Passengers, 250; Crews, 140; Total personnel, 39[illegible]

Corresponding week, 1927:
Machines, 84; Passengers, 244; Crews, 149; Total personnel, 39[illegible]

Corresponding week, 1926:
Machines, 54; Passengers, 120; Crews, 65; Total personnel, 18[illegible]

Corresponding week, 1925:
Machines, 42; Passengers, 110; Crews, 51; Total personnel, 16[illegible]

Corresponding week, 1924:
Machines, 35; Passengers, 82; Crews, 39; Total personnel, 12[illegible]

Corresponding week, 1923:
Machines, 51; Passengers, 87; Crews, 77; Total personnel, 164.

Corresponding week, 1922:
Machines, 52; Passengers, 168; Crews, 100; Total personnel, 26[illegible]

Corresponding week, 1921:
Machines, 49; Passengers, 108; Crews, 73; Total personnel, 18[illegible]

Corresponding week, 1920:
Machines, 10; Passengers, 9; Crews, 18; Total personnel, 27.

CROYDON NOTES.

Commercial Air Traffic Companies are given to understand that their aircraft are but faintly welcome at R.A.F. Aerodromes.

In an emergency, they may land on these so Holy spots and even disembark wholly undistinguished passengers without titles or social standing, but unless they obtain special permission, they must not depart from R.A.F. Aerodromes next day for the Continent with passengers, freight or His Majesty's Mails.

What they have to do apparently, is to sneak away to Croydon empty next morning, to the sound of muffled drums and with reversed R.A.F. aircraft in all four corners of the Aerodrome.

Our Air Force must be kept pure and socially uncontaminated of course, but it is hard to see why a commercial machine having once landed, as it were, in a higher social plane than it belongs to, should not be got rid of as quickly as possible next day, with a load of passengers, freight and mails to the Continent, especially as it may be unable to fly empty to Croydon for days and days on account of fog.

It can hardly be expected to fly empty to the Continent from the R.A.F. Aerodrome on such occasions, and the longer it stays in the brilliant social atmosphere of the R.A.F. Aerodrome, the more chance there is of it teaching low manners and horrid swear words to R.A.F. machines. Surely, the R.A.F. would do better to get rid of the social climber as soon as possible at all costs, and then have the Aerodrome purified by issuing peppermints to all ranks and having a full dress, deep breathing parade.

Actually the commercial firms find it worrying when Argosies, Fokkers and so on, come back from such brilliant social surroundings, because the machines are always swollen headed and out of hand. The main trouble is that the machines *will* try to sound the wholly unaccustomed aspirate, which always leads to engine trouble.

We are told that passengers must not be embarked from R.A.F. stations, except in an emergency. Our point of view is that when our aircraft are at R.A.F. Aerodromes and cannot get to Croydon, but can fly straight to their Continental destinations, it is very much an emergency and an important one too. Nobody in their senses supposes we want to fly from R.A.F. Aerodromes if we can

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'oid it, surely? And therefore, we again assert, that it is irely an emergency when we want to do so.

Doubtless in the past, some jolly, jolly privateer has set il in the teeth of a hurricane for the sheer fun of the ing, what time the Merchant Skipper sat snug in port. ıe privateer who had no responsibilities and nothing to se but his own ship and his own life, could indulge in sail-g matches with Davy Jones if it so pleased him, whereas ıe Merchant Skipper, who was a no less stout or inexperi-ıced seaman, had to consider his responsibilities for pas-ngers, freight and vessel entrusted to his care by the wners. Moreover, he was expected to show common sense ıd eschew spectacular stuff and his job was to bring his ıyage to a successful conclusion.

History repeated itself the other day when two light single-ıgined aeroplanes crossed the Channel to France on a day gales when the Commercial Services were all suspended. was a splendid and a sporting effort, but it was definitely stunt of stunts, comparable perhaps to that of a gent who ent over the Niagara Falls in a barrel some years ago for ɔ discoverable reason, and lived to tell the tale.

Such feats of flying have a fine filibustering flavour and ır the amateur pilot they are doubtless most thrilling iventures. Lest however, anyone at any time should have reamed of the simulacrum of a howling newsboy in a owling gale, howling, "Fids! Fids! I gloat! Hear me!" ver such a matter, it is best that the view point of the ommercial Air Traffic Companies and the Commercial pilots ıould be made known.

On the day in question, Commercial Services were not ıncelled because it was impossible to fly through such 'eather, but because it was dangerous and inexpedient to o so *from a commercial point of view.*

The pilots who saw fit to cancel on that occasion were men ·ith years of experience of bad weather flying across the 'hannel, and some of them had flown over the World as 'ell. One of them, as it happens, had just come back from is third return flight on the Amsterdam—Batavia air-mail oute, where really bad weather is encountered and is flown hrough in the ordinary course of the job.

Such bad weather, about which no proclamations are ever ssued, is unavoidable, whereas the recent gales, which inci-lentally stopped all cross-Channel boats, can be and should ɔe avoided by air traffic companies and their experienced air-line pilots.

The Air Line Pilot is the Merchant Skipper of the air and ıas very serious responsibilities, which the private owner knows nothing of. The private owner can go on privateering expeditions when and how he chooses, but the Commercial ɔilot cannot.

Comparisons, if any were made, which one does not assert to be the case, between amateur flying for fun and profes-sional air line piloting, are obviously odious and moreover they are inclined to have the ungentle habits of the boomerang as well.—SPRY.

A DESOUTTER DEMONSTRATION.

On Dec. 11 Flt. Lt. A. J. Styran, pilot, and Mr. W. D. T. Gairdner, passenger, took a Desoutter Coupé monoplane be-longing to National Flying Services Ltd. to Manchester and Liverpool, returning next day to London. On the outward journey there was a 50 m.p.h. gale blowing with low clouds and rain-storms, and next day the weather was not much better.

The machine was sent to demonstrate the Desoutter mono-plane to prospective customers in the North of England and it certainly did its job All who flew in it were immensely impressed by its steadiness in a bumpy wind and by the comfort of flying in a cabin through heavy rain. On the homeward journey an air speed of about 95 m.p.h. was kept up.

A FINE RECORD FOR SWITZERLAND.

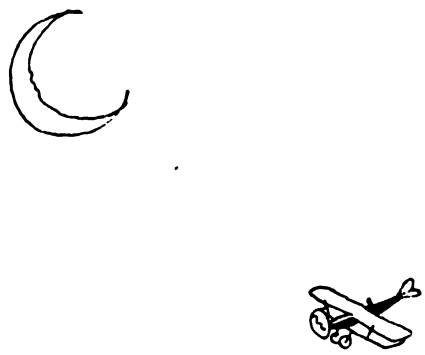
The Geneva correspondent of *The Times* states that the aggregate distance covered by Swiss air services during the past eight years was 3,906.250 miles, and the number of passengers carried was 62.000. During the same time the machines of Swiss air companies covered 1,562,000 miles without accident and without a single mail-bag being lost.

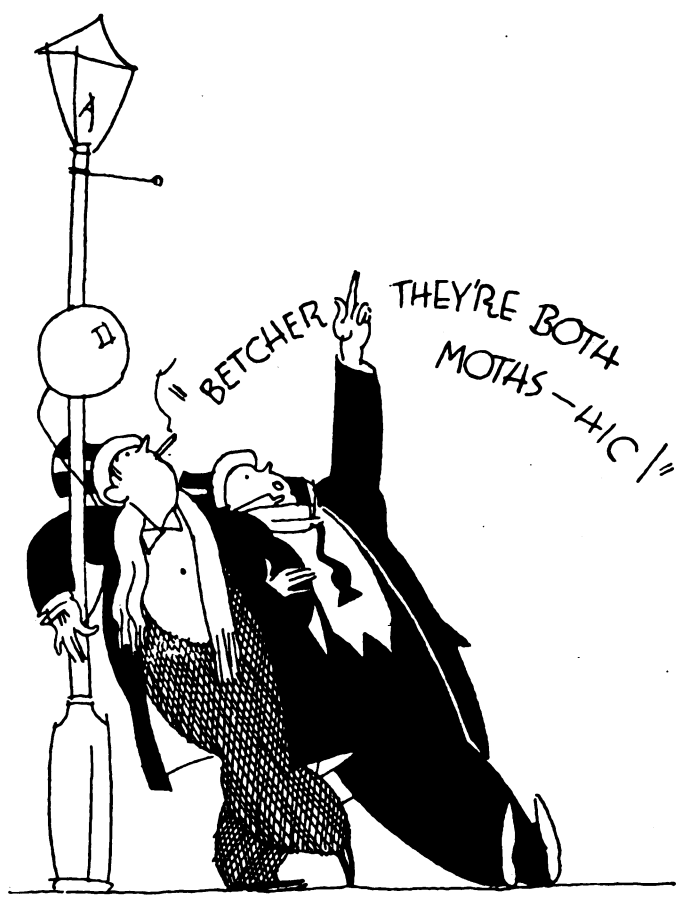
MODEL AEROPLANES.

Lately one had the pleasure of seeing the model aeroplane factory of Mr. F. J. Mee, of 137a, Greenwich Road, S.E.10. Between 60 and 70 hands are employed here in the mass-production of various types of model aeroplanes, hundreds of which are sent abroad and to the colonies. There are models from 1s. 6d. upwards all easily put to-gether and able to take off under their own power, and to fly from 200 to 800 yards.

Kits of parts are also available from which actually to build the machines. In all these machines, which are amazingly light (some barely weighing 1 oz.), the construction is extremely strong.

A feature of all these machines is the patent bracket which car-ries the bearing of the airscrew together with the airscrew and





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undercarriage. The object of this is to take the force of impact, should the machine hit anything while it is in the air. The whole bracket is hinged and moves backwards.

It was too dark to see a demonstration flight, but the hundreds of letters which one saw (from officers of the Royal Air Force and also from various Aircraft Constructors) left no doubt in the mind as to the capabilities of these aeroplanes.

Quite apart from these models, however, there is another side. Mr. Mee had made to special order various types of experimental models for the Aircraft Industry, and certain Laboratories.

One also saw the machine which holds the World's speed record for model aeroplanes (34 m.p.h.). The construction was extremely interesting, as it is made from pieces of solid wood carved out by hand. The motive power was five separate rubber motors, geared to one airscrew.

One would suggest that any one of these models would make a suitable gift for a child of *any* age.—C. L. S.

SUPERCHARGED SHAVING.

The ingenious Mr. M. L. Bramson has broken out in a new place. Or rather an old place has broken out again, for this latest invention of his has been incubating for several years. Not content with his Stall Indicator, and with step-fathering the Monospar Wing and the Redrup Engine, Mr. Bramson invented a couple of years ago a wonderful supercharged shaving brush in which the shaving soap is carried in the handle and is fed under pressure from the base of the bristles instead of being untidily distributed on top of them or smeared clammily on the face.

The new brush is marketed by Dunhill's of 30, Duke Street, W.1, which assures the finest workmanship, and the price is 37s. 6d., which assures the wealthiest clientele. Possibly for that reason it has been made as fool-proof as possible in its action.

As a matter of fact, it is really very good value for the money, because you cannot buy a first-class badger-hair shaving brush of such size for less than a guinea anyhow, and the convenience of being able to do away with messy soap-sticks and squdgey paste tubes, besides actual economy in the use of the soap, is worth the extra money.

Anyhow, it is an ideal Christmas present, because the essence of a present is that it should be something in the nature of an extravagance to which one would not lightly treat oneself.

AN OMISSION.

On the cover of THE AEROPLANE of Nov. 13 a photograph appeared of one of the original Sopwith Tabloids over the title "A Vision of the Past." The photograph had been in this office for many years and there was nothing on it to indicate its origin. It seemed peculiarly suitable to give a hazy idea of days gone by, so it was used.

Since then evidence has been produced which proves that the photograph was taken by the Chief Photographer of our esteemed contemporary *Flight*, to whom due acknowledgment is now made as the owner of the copyright.

NEW COMPANIES.

V. G. ENGINEERING LTD.—Private company. Registered Dec. Capital, £100 in 1s. shares. Objects: To carry on the business of aeronautical, mechanical, electrical, automobile, nautical, civil structural and consulting engineers, inventors and designers, etc. The subscribers (each with one share) are: W. Villa Gilbert, 19, Hillcrest Road, Acton Hill, W.3, consulting engineer. G. R. Waygood, Abbey House, Westminster, S.W.1, accountant.

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PERSONAL NOTICES.

FORTHCOMING MARRIAGES.

GORE—CHAMBERS.—The engagement is announced, and the marriage will take place early in January, between Flg. Off. Charles William Gore, R.A.F., son of Lieut.-Col. C. W. Gore and Mrs. Gore, of 30, Marlborough Road, Donnybrook, Dublin, and Frances Catherine, eldest daughter of Major O. A. Chambers and Mrs. Chambers, of Manor House, Sandgate, Kent.

HERN—DAVIES.—The engagement is announced between Horace E. Hern, D.F.C., youngest son of the late J. H. Hern, and of Mrs. Hern, Hillersdon Avenue, Barnes, and Mary P. Davies, L.D.S., R.C.S.Eng., only daughter of Mr. and Mrs. P. Percival Davies, Havant, Hants.

PELLY—SPENCER.—A marriage has been arranged, and will shortly take place, between Claude Bernard Raymond Pelly, R.A.F., eldest son of the Rev. D. R. Pelly, D.S.O., and Mrs. Pelly, of Woolbeding Rectory, Midhurst, and Margaret Ogilvie Spencer, daughter of Mr. and the late Mrs. E. J. Spencer, of 3, Grand Avenue, Hove.

WALKER—DANIELS.—The engagement is announced between Flt. Lt. Henry Walker, M.C., D.F.C., R.A.F., only son of the late Dr. Muirhead Walker and Mrs. J. J. Roberts, of Buenos Aires, and Eleanor Louise, only daughter of Mr. and Mrs. Clark E. Daniels, of Madison, Wisconsin, U.S.A.

MARRIAGES.

HUMPHERY—PATERSON.—On Dec. 14, at Sunninghill, G. Woods Humphery to Dorothy Josephine, daughter of Col. Philip J. Paterson, C.M.G., D.S.O., and Mrs. Paterson, of Sunningdale, Berks.

TRAVERS—SHERWILL.—On Dec. 7, at Harrow-on-the-Hill, Charles Tindal Travers, youngest son of the late James Lindsay Travers to Marian, daughter of the late T. H. Sherwill.

YEATMAN—WRIGHT.—On Dec. 9, at Holy Trinity, Brompton, Harry Morgan Yeatman, son of the late Mr. and Mrs. H. O. Yeatman to Sylvia Margaret Giraud Wright, daughter of Mr. and Mrs. R. E. Giraud Wright.

BIRTH.

KNOWLES-BROWN.—On Dec. 7, at Hampstead, to Marjorie (nee Cordingley), wife of A. W. Knowles-Brown (late R.A.F.)—a son.

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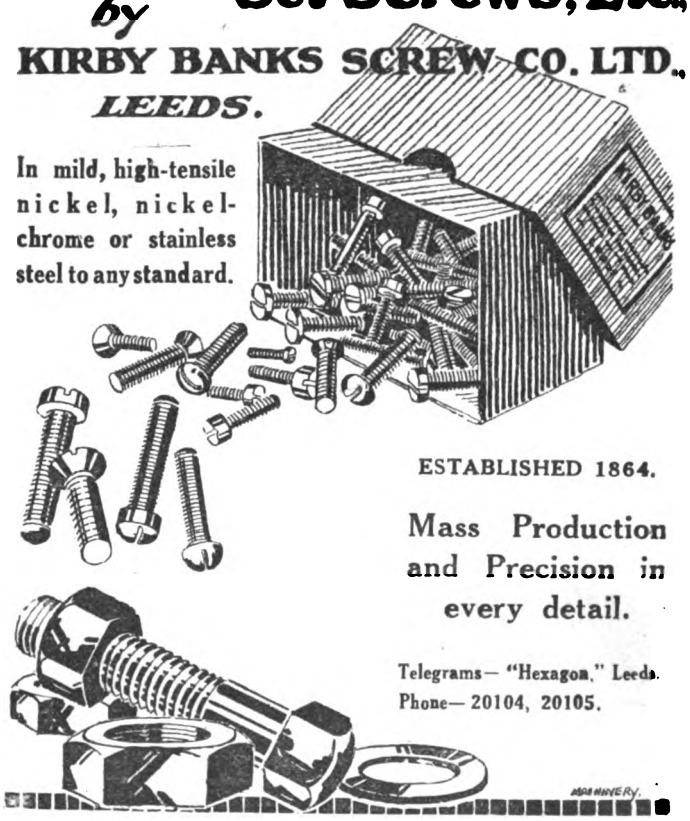

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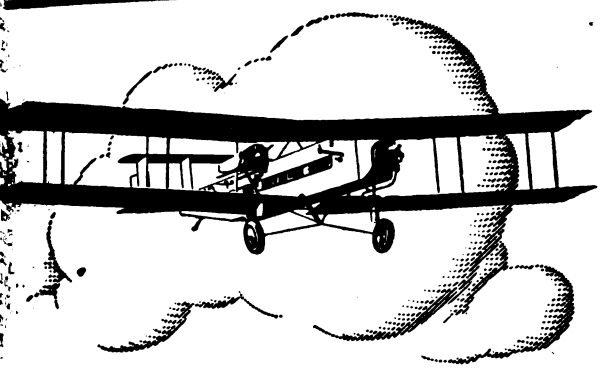

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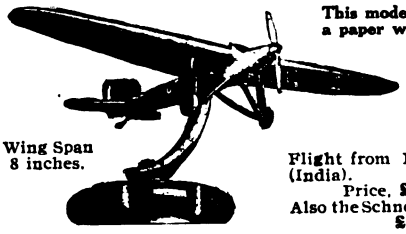

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ON THE DEPARTING CHIEF.

On December 31, Marshal of the Royal Air Force, Sir Hugh Trenchard, Bart., G.C.B., D.S.O., vacates his post as Chief of the Air Staff which he has held since 1919. He will be succeeded on January 1 by Air Chief Marshal Sir John Salmond, K.C.B., D.S.O. This therefore seems a fitting and proper time at which to publish some record of the services of the officer who has been responsible not only for building up the Royal Air Force, but for maintaining its integrity in the face of strenuous opposition from politicians and from the Senior Services.

Also apart from his strictly official service record there seems good reason at this time to publish some few reminiscences of his work with the Royal Flying Corps, and with the Royal Air Force after that third service was formed by amalgamating the Royal Naval Air Service with the Royal Flying Corps, so that those who have served under him of late, but were too young for the War 1914-18, may know something more of the officer to whom their Service owes its existence.

A Service Career.

Hugh Montague Trenchard was born in 1873, the son of Capt. Montague Trenchard, King's Own Yorkshire Light Infantry.

He was gazetted to the Royal Scots Fusiliers from the Militia in September, 1893, and was promoted Lieutenant in August, 1896.

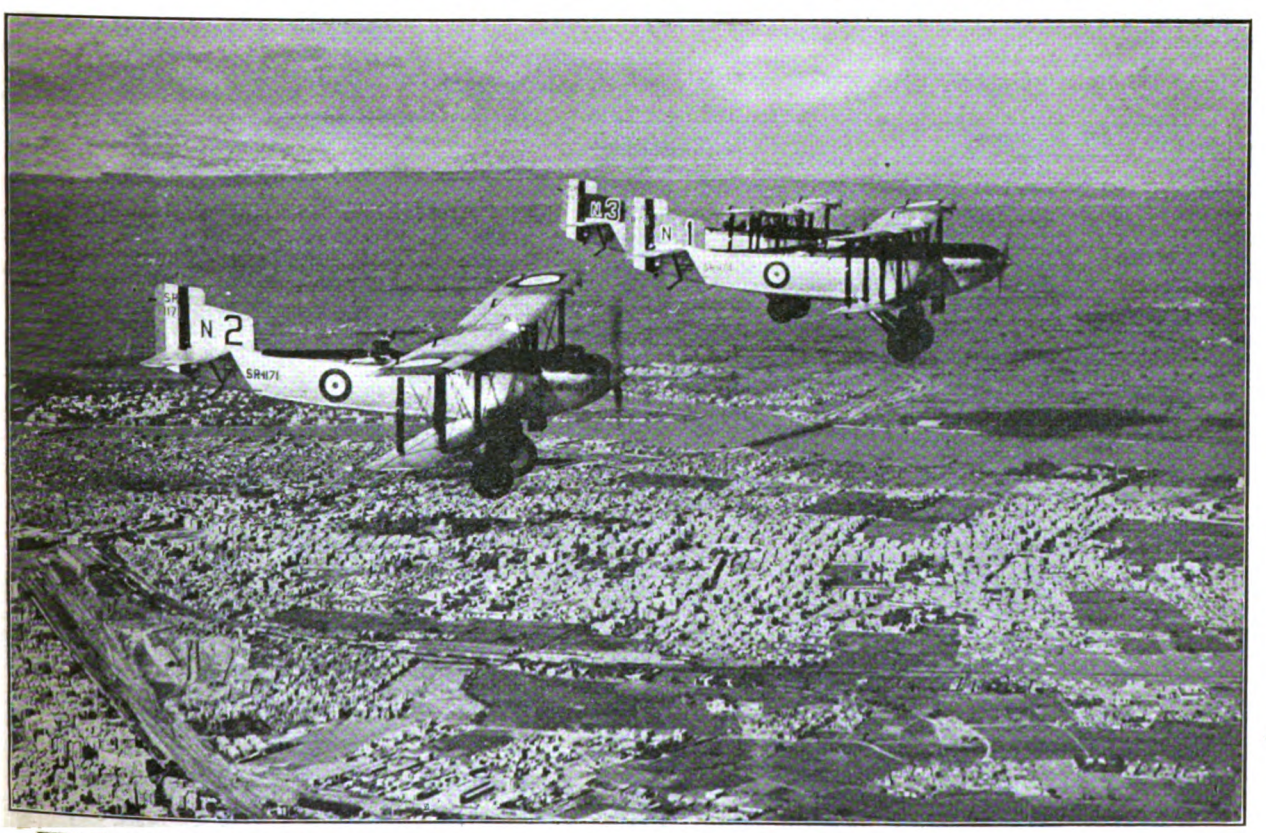
In 1899 he went to the war in South Africa. While on active service he was promoted to Captain, and later he was dangerously wounded. His services in South Africa were somewhat varied. At first he commanded the Bushman's Corps of the Imperial Yeomanry. Thereafter he commanded Canadian Scouts. He was concerned in the operations in the Western Transvaal from July to November, 1900. Thereafter he took part in the Mounted Infantry operations in the Transvaal and in the Orange River Colony up to the end of the war. In 1902, at the end of that war, he was promoted Major by brevet.

In 1904 he went to West Africa, and served in Southern Nigeria until 1906. From 1908 till he was invalided home from West Africa, he was Commandant of the North Nigerian Regiment of the West African Frontier Force.

During this period he was in command in the Owerro district, and patrolled the unsettled portion of the Ibiti and Kwa country. He also commanded the Bandi-Onitaba Hinterland expedition.

For his services in West Africa he was made a Companion of the Distinguished Service Order in 1906. And while in West Africa he held the temporary rank of Lieutenant-Colonel.

"CEASELESSLY EATING THE DISTANCES THAT WAS THE WONT OF THEM."—(Kipling—*Song of the Desert.*)



THE WEST AFRICAN FLIGHT.—The three Fairey III.F high-speed bombers of No. 45 (Bomber) Squadron, R.A.F., which flew, under the command of Sq. Ldr. F. J. Vincent, D.F.C., from Helwan to Tamale and back between Oct. 19 and Nov. 29, making twenty-two stops according to plan. The Flight was photographed from another Service machine over Cairo.—(*R.A.F. Official photograph.*)

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In November 1910 he returned to duty with the Second Battalion of the Royal Scots Fusiliers,—reverting thus to his substantive rank as Captain.

Aeronautical History.

In August 1912 he learned to fly at the Bristol School at Brooklands. And his Royal Aero Club Certificate is No. 270.

In October 1912 he was appointed Instructor at the Central Flying School at Upavon on Salisbury Plain, with the rank of Major in the Army. This School had shortly before been organised as a joint establishment at the cost of the Admiralty and the War Office. At it pilots were trained for the Naval Wing and the Military Wing of the Royal Flying Corps, in those days before the Royal Naval Air Service had come into being as a separate branch of the Royal Navy.

Being a joint establishment the first Commandant of the Central Flying School was Captain Godfrey Paine, R.N. Major Trenchard was appointed Assistant Commandant to him in September 1913.

On the outbreak of War on August 4, 1914, every available officer and man of the Royal Flying Corps, either flew or was transported to France under Major-General Henderson. Major Trenchard was left with practically a row of empty sheds and a few officers and men who were unfit for foreign service, and a few decrepit aeroplanes which were also unfit for service. And with these he was set the task of building up not only a new Flying Corps but reserves big enough to keep our Flying Forces adequately supplied during the rest of the War.

For this task he was appointed from Assistant Commandant at the Central Flying School to be Officer Commanding, and in Charge of Records of the Royal Flying Corps, at South Farnborough, with the temporary rank of Lieutenant Colonel while so employed, as from August 10, 1914.

Having set this house in order as far as was humanly possible in three months, Colonel Trenchard was summoned to France in November 1914 to take command of No. 1 Wing R.F.C. at St. Omer, which was then the Headquarters of the Royal Flying Corps in France.

In August 1915 General Sir David Henderson returned to England from France to take charge of the whole Department of Military Aeronautics in this country, and Colonel Trenchard was appointed to command the R.F.C. on active service with the temporary rank of Brigadier General.

From August 1915 until December 1917 the history of General Trenchard's service in France is the history of the Royal Flying Corps. When he took over the command of the Royal Flying Corps it amounted in importance in the scheme of the Army in France to a Brigade.

In March 1916 he was appointed temporary Major-General and thus the R.F.C. itself was promoted to the importance of a Division. General Trenchard himself was promoted substantive Major General on January 1, 1917. And in that rank he served until the Royal Air Force came into being on April 1, 1918.

The Royal Air Force.

At the beginning of January, 1918, while the Royal Air Force was in process of formation and before it came actually into being, General Trenchard was recalled from France and was appointed a Member of the Air Council with temporary rank in the Royal Air Force as Major-General. At the same time he was appointed the first Chief of the Air Staff.

At that time Lord Rothermere was our first Secretary for State for Air. His ideas and those of General Trenchard concerning what was the right and proper way in which to conduct one of His Majesty's fighting services did not agree. The result was that very soon after the Royal Air Force came officially into being, in April 1918 General Trenchard resigned, and Major-General Sykes was appointed Chief of the Air Staff.

The resignation of General Trenchard caused such a storm, not only in Service circles but even among the politicians, that within a few days Lord Rothermere also handed in his resignation.

The Independent Force, R.A.F.

Lord Rothermere was happily succeeded by Sir William Weir, later to become Lord Weir of Eastwood. Before becoming Secretary of State for Air, Sir William Weir had been in charge of the production of all aeronautical material for the Naval Air Service and for the Royal Flying Corps, and later for the Royal Air Force. In this office as later in the office of Secretary of State for Air, Sir William Weir had shown remarkable ability in judging men and getting their best work out of them. Having this faculty, he saw at once the folly of allowing a man of General Trenchard's qualities to remain unemployed.

General Trenchard was asked to take up again the office of Chief of the Air Staff, but he refused to take the place of General Sykes, who had served with him in the earliest days of the R.F.C. Then he was offered the command of the Royal Air Force in France, which had been given to Major-General John Salmond when General Trenchard came back from France. General Trenchard very properly refused to oust from an important command an officer in whom he himself had the highest confidence. Quite apart from this, General Trenchard was not the kind of man to accept an appointment which would deprive another officer of great opportunities and high position.

After a period of consultation with Sir William Weir General Trenchard agreed to take command of a new force formed partly of existing squadrons of the Royal Air Force, to be augmented as soon as possible with new squadrons, which force was to be stationed in the East of France, as near as possible to the German frontier.

REBUILDING THE AIR FORCE.—Sir Hugh Trenchard inspecting the Aircraft Apprentices at Cranwell. On the right of the picture is Air Commodore (as he was then) F. C. Halahan, who is himself shortly retiring from the R.A.F. as an Air Vice-Marshal.

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with the express purposes of bombing the German centres in which munitions of war were manufactured, and of bombing the railways by which these munitions, and troops also, were sent to the German front in France. It was the first force in the World to make air war independently of troops on the ground, and so was the prototype of the Air Force as it now is.

For this purpose General Trenchard was appointed to Headquarters R.A.F. in France for special duty in May 1918. And in June 1918 he was appointed definitely to command what was known officially as Independent Force R.A.F. The intervening month was spent in arranging with Sir John Salmond to take over certain squadrons, and in the general organisation of the Independent Force.

Sir Hugh Trenchard commanded the Independent Force until the end of the War, or rather until the Armistice was declared on November 11, 1918, and he remained with it until the middle of December 1918 when he returned to England to take over once more the post of Chief of the Air Staff, which post he has held from that date until his appointment lapses on December 31.

Sir Hugh Trenchard's services during the War 1914-18 have been, or are being, duly set forth in the Official History, called "The War in the Air." And they have been told more intimately by the Hon. Maurice Baring (Hon. Group Captain, Reserve of Air Force Officers) in "R.F.C. H.Q." The history of his war at home for the preservation of the R.A.F. has yet to be written by another historian.

Strenuous as were Sir Hugh Trenchard's duties in France, and difficult as was his position during the conflict with Lord Rothermere in April 1918, the greatest of his work still remained to be done. He had before him ten years of hard labour in which he had first of all to watch the destruction, for purely financial reasons by the political people, of what was at the date of the Armistice the greatest aerial fighting force the World has ever seen, and from its ruins he had to build up a Third Service for the King, under or against strenuous opposition from the Navy and the Army, but mostly from the Navy.

AWARDS AND DECORATIONS.

This is another chapter in his Service history, and before starting on it, we may well have before us a list of his various decorations and distinctions. They are part of his official history and they are taken from official records.

As already mentioned he was appointed a Companion of the Distinguished Service Order in September 1906 for services in Southern Nigeria. In January 1914 he was appointed a Companion of the Order of the Bath, obviously for his work in forming the Royal Flying Corps in its early days and for his work as Assistant-Commandant at the Central Flying School.

At this time he already held the Queen's South African Medal with three clasps, the King's South African Medal with two clasps, and the West African Medal with a clasp for 1904, and two other clasps, one for 1904-5 and another for 1905-6.

His first decoration in the War of 1914-18 was the award of the Russian Order of St. Andrew, first class, with sword for gallantry and distinguished service in the field. Th was awarded in August 1915.

In February 1917 he was awarded the Cross of Commander of the French Legion of Honour for distinguished services rendered during the course of the campaign. An in September 1917 he was awarded the Belgian Order of Leopold, grade of Commander, for distinguished service during the campaign.

In *The London Gazette* of January 1, 1918, he was gazetted a Knight Commander of the Bath, for valuable services rendered in connection with military operations in the field.

In March 1918 he was awarded the Belgian Croix de Guerre for distinguished service. In November 1918 he was awarded the Order of the Crown of Italy, grade of Commander, for valuable services. In July 1919 he was awarded the American Distinguished Service Medal for valuable services in connection with the War. Also, on some date which was not gazetted, he was awarded the Russian Order of St. Stanislas of the first class with swords.

In July 1919 he was appointed Colonel of the Royal Scots Fusiliers,—the appointment is dated in the Army List to July 13, 1916.

In *The London Gazette* of December 30, 1919, Sir Hugh Trenchard was created a Baronet, which title he holds at the moment of writing.

In January 1921 he was awarded the Japanese Order of the Sacred Treasure in recognition of valuable services rendered in connection with the War. This was a slightly belated recognition on the part of our oriental Allies, but of course it had a long way to come.

In *The London Gazette* of January 1, 1924, Sir Hugh Trenchard was promoted Knight Grand Cross of the Order of the Bath.

Over and above these decorations and distinctions, Sir Hugh Trenchard was appointed extra Aide-de-Camp to the King, and to be Brevet Colonel, in the *London Gazette* of June 3, 1915. And on Feb. 22, 1921, he was appointed Principal Air Aide-de-Camp to the King.

THE WAR AFTER THE WAR.

Any attempt to record the work of Sir Hugh Trenchard in building up the Royal Air Force during the past ten years would need at least several large volumes. Therefore in such a memoir as this one cannot hope to give more than the barest outline of the work which he has done. Moreover, readers must remember that there is no official history and there are no official records published of that work.

At various times official documents have been issued recording changes in the organisation or in the status of the Royal Air Force, but even to quote those records would fill a whole book. Therefore one believes that perhaps a general account of the process by which the Royal Air Force has reached its present position may be better than a list of definite dates.

When the Armistice was signed the Royal Air Force

REBUILDING THE AIR FORCE.—Sir Hugh Trenchard inspecting Cadets at Cranwell.

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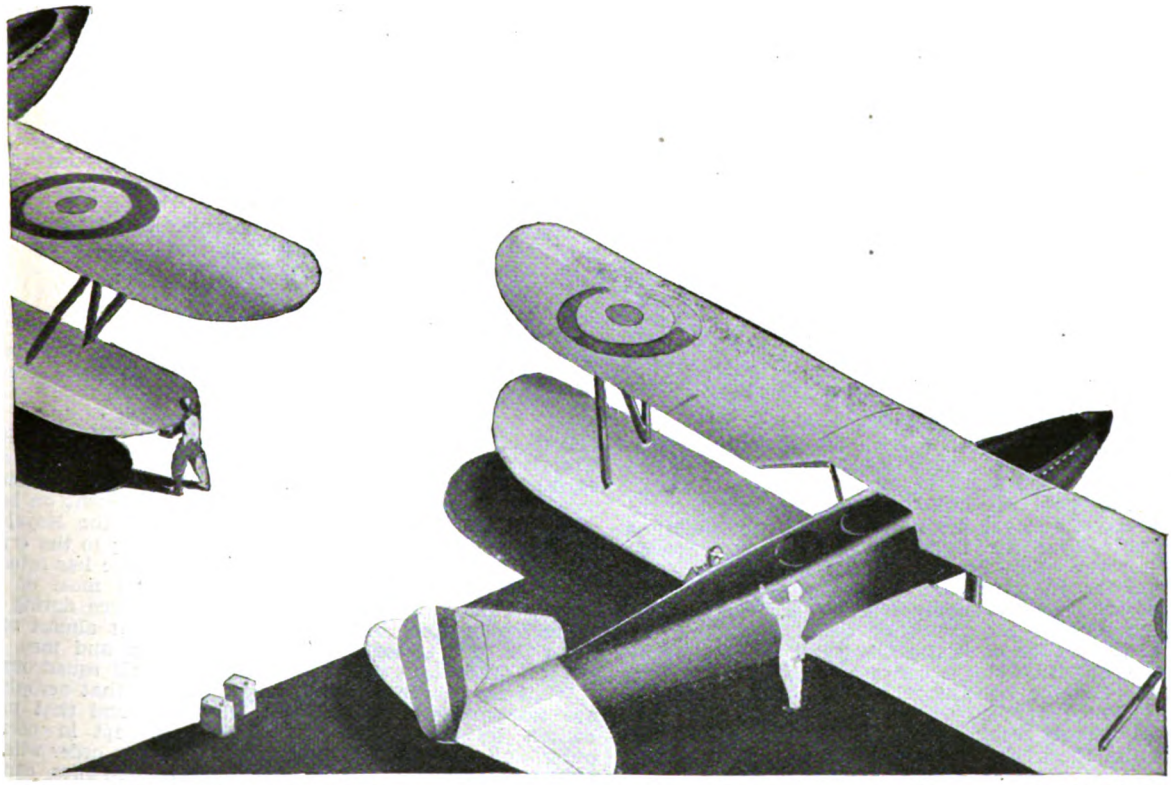

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consisted roughly of thirty thousand officers and three hundred thousand men. It had more aeroplanes and better aeroplanes than any air force in the World, and it had complete command of the air.

For a few months the Air Force remained on a War footing. At any rate it retained its war numbers, though, as in every other Fighting Service which had been engaged in the War, it suffered from a nervous reaction which had disastrous effects on discipline and on its general bearing.

As soon as might be after the Armistice, the political people, for perfectly good economic reasons, set about disbanding the Fighting Services. And the Royal Air Force was disbanded along with the rest.

Everything was in a state of chaos. The best men in the Air Force were wanted urgently to re-establish the industries of the Nation, and so were many of the best officers. Consequently the Air Force lost nearly all its best mechanics, and a number of its best officers were given opportunities of well-paid work in civil life. Also, for some curious psychological reason, many of the best fighting men and many of the officers who were the best leaders of men, had no liking for a service career and managed to get themselves demobilized just at the very time when their character, or even their popularity, would have made them most useful in holding together the old spirit of the Air Force.

On the other hand, quite a number of officers who could very well have been spared from any of the King's Services, not seeing any prospects for themselves in civil life, managed to persuade their immediate commanding officers to recommend them for permanent commissions in the Air Force. The net result was that the Air Force kept a good many officers who, if not actually undesirable, were of no particular use to the Service and let go, or sent out, many officers who would have been of the highest value.

While all this was going on, Air Stations were being closed down, buildings which had cost many millions of pounds were abandoned. All orders for new aircraft and new engines, and even experimental orders for the development of new types of aircraft, were cancelled. All progress ceased and chaos fell upon the Air Force.

THE WAY OUT OF CHAOS.

From this chaos Sir Hugh Trenchard was called upon to build an Air Force which would be capable of protecting not only the British Isles but the whole British Empire against the next biggest air force in the world, or presumably against a combination of the next two biggest air forces. The Parliamentary people grudged him money, and though he kept many of his most trusted officers, new officers and men grudged themselves to the new Air Force.

Added to this he was faced with the difficulty that the Admiralty, which had treated the Naval Air Service during the War with contempt, and had even prevented by order the Naval Air Squadrons from doing the work which they should have done, by harassing the enemy in France and in the Mediterranean, and by adequate patrolling of our coasts for the protection of our food ships, suddenly awoke to the fact that in any future war an Air Force of some kind would be necessary to the life of the Fleet. The immediate result was that the Admiralty started a powerful agitation in the Press and by political string-pulling to break up the Royal Air Force into its original components, so that the sea-going side of the Air Force might be returned to the Navy.

To a lesser degree so far as public agitation went, but none the less quite strongly in a quiet way, with a great deal of political influence brought to bear, the War Office also sought to have the Royal Flying Corps returned to it.

If these two powerful influences had prevailed there would be to-day no Royal Air Force. We should doubtless have a Royal Naval Air Service which would be well equipped,—for the Admiralty can always find money from the tax-payer for whatever schemes it may fancy. And we should probably have a highly efficient but very small Army Flying Corps,—for the War Office is never the favourite of the Nation as is the Admiralty, and the Army has to make do with what it can get after the Navy has helped itself. But the one thing certain is that we should have no Air Force as such.

Our Naval aircraft would be subject, in type and in use, entirely to the ideas of Naval Officers and to the requirements of the Fleet as such, and our Army Flying Corps would be used entirely for Army purposes such as scouting for enemy troops on the ground, and for artillery observation, and for tactical bombing within the radius of action of the armies in the field. But the great work of an air force as such could not possibly be developed.

Sir Hugh Trenchard had to fight these powerful influences practically singlehanded. At any rate he was at once the brains and the spearhead of the defence of the Air Force. At all times he had the wholehearted support of the various Secretaries of State for Air and their Under Secretaries. They always supported him in the Cabinet.

But his real fight was not with the political people. It was ultimately with the Committee of Imperial Defence, on whose advice the Cabinet would necessarily act in a purely Service matter of this sort. Time after time the Sea Lords, backed by the whole weight of the Admiralty, tried to wreck the Royal Air Force, and time after time Sir Hugh Trenchard managed to save the Royal Air Force as a Third Service, one and indivisible.

His task was all the more difficult because to make good his own case he was obliged at all costs to supply the Navy and the Army with such aircraft as they might need, so that they could have no excuse for saying that the Air Force was starving the sister services.

The result was that in certain years vast sums of money were spent on new equipment for the Fleet Air Arm, which was not in any way being used on active service, while the squadrons of the Royal Air Force, which were very much on active service in 'Iraq and in Southern Arabia and Central Africa and on the North-West Frontier of India were carrying on their work on antiquated war machines which had in fact been designed as far back as 1916 and 1917.

Even to-day in India and in 'Iraq there are squadrons of the R.A.F. using D.H.9A's with American-built Liberty engines, and other squadrons are using Bristol Fighters with Rolls-Royce engines, which were designed in 1916, and these Squadrons are doing work under most difficult and dangerous conditions which is of direct use and even of the utmost necessity for the safety of the Empire.

In the meantime, aeroplanes of completely new types are produced year after year for the benefit of the Fleet Air Arm, which so far has not been called upon to use them on anything resembling active service, other than a little admonitory flying round Shanghai Harbour.

Whatever arguments the Navy may produce now or hereafter for handing over the complete control of the Fleet Air Arm to the Admiralty, they can never say that the Air Ministry in any way kept the Navy short of aircraft of the very latest possible type.

Admittedly there is plenty of room for improvement in the types of aircraft used by the Navy for the Fleet Air Arm. But that is the fault of the Admiralty rather than of the Air Ministry. The Navy insists on aircraft being produced for certain work which the Navy imagines to be necessary and the Air Ministry produces them, but there would be little enough difficulty in improving on a great many of the types on which the Navy insists, by altering entirely the way in which they are used.

To a much less degree the Army has also been the cause of the Air Force keeping the obsolete types of aeroplanes. Ever mindful of the needs of the Army, the Air Ministry has re-equipped Army Co-operation squadrons with aeroplanes and engines of new types. And it has spent quite fair sums of money in reconditioning and altering Army Co-operation machines so as to make them as effective and as safe as possible.

The last squadrons of all to be re-equipped with modern machines have been the bombing and fighting squadrons and the long-range night-bombing squadrons of the Royal Air Force, which are intended to conduct Air War without direct co-operation with the other Services.

So much then for the general policy which the Air Council and the Air Staff have had to follow. Let us then look at some of the other points of policy which have been so wisely followed in the past ten years.

LAYING THE FOUNDATIONS.

One of the chief criticisms hurled against Sir Hugh Trenchard during the earlier years after the War, more especially by political critics in the House of Commons, was that he allowed such vast sums to be spent on bricks and mortar, while the officers and men of the Royal Air Force were compelled,—unwillingly, according to the critics,—to fly the old types of aircraft to which one has referred. Apparently these critics would have had most of the money which was available for the Air Force during the years immediately following the War, spent almost solely upon the pay of large numbers of officers and men and on the production of new aeroplanes for all squadrons.

What they seem to have forgotten was that aeroplanes are no good without pilots to fly them and that pilots cannot fly unless their aeroplanes are kept in perfect order, and that aeroplanes cannot be kept in order without properly trained mechanics, and that mechanics cannot be trained or do their work without proper workshops and without proper lodging.

As has already been said, the best of the mechanics left the Air Force immediately after the Armistice, or as soon after as they could get themselves demobilized. And the garage-hands and such, who enlisted from the street when out of work, were more trouble to train than if they had known nothing at the start.

Also a quantity of the best pilots left the Air Force. And as the years went on other pilots grew too old to fly or developed a dislike of flying. Moreover to maintain a

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fighting Air Service at its best a constant supply of young and energetic pilots is necessary.

When the War ended the Air Force was living in War-time huts of wood or iron. There were no proper barracks, there were no proper quarters for officers, either married or unmarried. In fact about the only decent housing of the Air Force was that provided for the aeroplane itself. There were plenty of enormous and solidly-built sheds for them, but there were hardly any decent quarters anywhere for the human elements.

Consequently Sir Hugh Trenchard set out on one quite definite policy.

First of all he established a first-class training establishment for Aircraft Apprentices. Then he built enormous and beautifully equipped barracks for the boys, and quarters for their instructors, and excellent work-shops, in which they could learn their trade. Elsewhere, comfortable barracks were provided for the airmen. And, years afterwards be it said, attention was given to the quarters of Officers who had hitherto been living in wartime huts with leaky roofs and walls which were by no means weatherproof. In fact even to-day, eleven years after the Armistice, one doubts whether the majority of the Officers' Quarters in the Air Force, with their leaky roofs and windows, and non-shutting doors, and damp floors, would be considered fit for habitation by Officers of the Navy or Army, or by any Urban Council's sanitary inspectors.

But the great thing was to build first of all a solid foundation on which could rest an Air Force which will be capable of expansion when the next War comes. And to that task Sir Hugh Trenchard has devoted these ten years.

Having established Training Establishments for Mechanics, he then proceeded to lay out great Flying Training Schools. Here Officer Pilots and a certain number of N.C.O. Pilots were to be trained,—and have been trained. And be it said nowhere in the world is the training of Pilots and Mechanics as good as it is in our Air Force.

THE SUPPLY OF OFFICERS.

The next step was the foundation of a Cadet College in which young men could be trained from their school age to become Permanent Officers in the Royal Air Force. This establishment was organised at the former Royal Naval Air Service training establishment at Cranwell in Lincolnshire. At this College the human element was more important than bricks and mortar. Consequently the gentleman cadets and the instructional staff have been been living in war-time huts from the foundation of the College until now. And the other ranks have been living in fairly good barracks which were built by the Naval Air Service. Only during the present year was the foundation stone of the new College laid.

Notwithstanding these drawbacks, or perhaps rather because of them, the Cadet College at Cranwell has turned out from its very first term, officers of the class most desirable in the time when the King must fight his foes.

At first there was difficulty in getting boys from our best Public Schools to join the Air Force. To-day the best people are beginning to see that the Air Force is to be taken seriously and may be justly reckoned on on a social level of the Senior Services.

Also the class of boy who is most desirable at Cranwell is now attracted thereto by a system under which Officers of the R.A.F. who have distinguished themselves more or less, and have themselves come from our great public schools, are unofficially appointed Liaison Officers with their old schools and are encouraged to go there and talk to the people who have succeeded them, with the idea of inducing the best of them to join the R.A.F., and come to Cranwell.

How successful this association is may be judged from the fact that, a year or so ago, at one examination for Cranwell six candidates appeared from Wellington College. And to-day Winchester, Eton, Harrow and Rugby and our other major public schools send their fair share of Cadets to what is now called the R.A.F. College.

Furthermore, a Staff College has been established at Andover, where officers are trained in the higher arts of their profession.

THE SHORT SERVICE SYSTEM.

Another system in the R.A.F. for which Sir Hugh Trenchard has been criticised is that which is known as the Short Service Commission System. Under this a young man joins the Royal Air Force as a Commissioned Officer, just after leaving school, or somewhere up to the age of twenty-two or twenty-three, and is engaged for a period of five years, which may in some instances be extended to seven years.

At the end of his engagement he leaves the Air Force with a gratuity which is quite big enough to keep him comfortably while he is finding a job on which to live. Also there is in the R.A.F. a system known as the Vocational Training System under which an officer holding a Short Service commission can study for one or other of the well-paid professions. There also exists an Employment Board, which has in fact been very successful in planting officers into well-paid jobs when their term in the Air Force has expired.

In spite of this, successive Air Ministers, and Sir Hugh Trenchard in particular, have been accused of luring young men into the Air Force at a tender age and throwing them out into a cold and unsympathetic world just when they would be earning a good living if they had gone straight from school to a University or into some profession.

This is very unfair criticism, because, in point of fact, of those officers who have left the Air Force during the past few years, the great majority have found employment at pay which is as a rule higher than they would have been getting if they had gone in for medicine or law or engineering at the same age. And few of them would have been earning as much money as they are getting if they had gone in for commerce in the ordinary way.

As a matter of fact there are to-day a number of important firms who prefer to take a man out of the Air Force after he has done his five years' service and pay him fairly well for a year or two while he is learning their par-

REBUILDING THE AIR FORCE.—Sir Hugh Trenchard inspecting the men of the Wireless School at Flowerdown.

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2.	Approximate number of Channel Crossings to 31st October. 1929 - - - -	3,750.
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ticular business. They find that after having that three years under discipline and in presumably decent society, coupled with an opportunity of seeing foreign countries, the young officer is much more a man of the world and much better able to take on a responsible job than if he had gone straight into an office from school.

That, however, is merely an explanation of why the short service system is a benefit to young men and not a disadvantage. The real reason for the existence of the Short Service System is that it is a necessity for the protection of the British Empire.

The first and most important thing is that, being our First Line of Defence, as it is officially, the Air Force must have an adequate reserve of properly trained pilots. And the only way to build up such a reserve is to keep on training young men.

The amount of money voted by Parliament for the Air Force is so small that the Establishment is now only 3,000 officers and 30,000 men. Of those 3,000 only a certain number are or can be competent to fly. If every officer were given a permanent commission, as some people argue is most desirable, we should find ourselves at the end of a certain number of years with all our Flying Officers at the age of forty or thereabouts, all our Flight-Lieutenants ranging from 45 to 55, and all our Squadron Leaders somewhere about the age of 60. And we should have absolutely no reserve of young pilots at all.

Consequently, the only possible thing to do is to train young men to fly and then let them go from the Air Force while they are still young enough to get well-paid employment in private life. By constantly passing a few hundred young men out of the Air Force while they still have ten or fifteen years of flying in front of them, we shall be able to maintain a constant reserve of some thousands of pilots who with a little refreshing on the outbreak of War will still be able to do good war flying.

Apart from this reserve of pilots who have passed through the Regular Squadrons of the Air Force, a number of Auxiliary Squadrons have been established during the past five years. These correspond quite closely to the Territorial Battalions of the Army. There are also a certain number of Reserve Squadrons of the Air Force which correspond to the Militia Battalions of the Army. These also form a useful and well-trained reserve both of officers and men.

Thus, as may be seen, the past ten years have been spent in laying down a foundation for an Air Force which on the outbreak of War can be expanded within a few weeks to a fighting force of considerable power, and can be further expanded within a few months to what will be probably the biggest air force in the world.

Sir Hugh Trenchard has said in one of his rare speeches that the Air Force has laid down the foundations of a castle and that if nobody wants to build on it anything more than a cottage it will be at any rate a very sound cottage. And those who regard the safety of the British Empire as being of some importance will be duly grateful to him for having laid the foundations on which we can finally build an Air Force worthy of the Empire.

TECHNICAL DEVELOPMENT.

Somewhat earlier in this article the statement was made that for a period a large proportion of the money which was voted for the Air Force was expended on bricks and mortar in which to house first of all the Airmen and then the Officers of the R.A.F. But all the time this expenditure was going on, and while there was no money with which to re-equip the squadrons of the Air Force with modern aircraft, a comprehensive scheme of technical development was being followed.

One important member of the Air Council is an officer who carries the title of The Air Member for Supply and Research. The duty of this officer is to direct, organise, and control scientific research and the practical development of new types of engines and aircraft.

This Department is divided into two Directorates: the Directorate of Scientific Research and the Directorate of Technical Development. The one department studies the purely scientific side of aeronautical progress and the other develops aircraft and engines and equipment which are already in existence.

Under this system new machines of advanced types for use in War are constantly being built, and then tested under the hardest possible conditions. When a machine of considerable promise is introduced, a number of the same type are built. Thus while the Regular Squadrons of the Air Force are still doing their regular work on machines which were perhaps designed during the War 1914-18, we have at any rate plans for new machines constantly going through the Research and Development Directorates, in such a way that they can be put into mass production at short notice should War break out. In this way the Air Force is assured of best and most up-to-date aircraft in the World, and all their equipment,—and in the cheapest possible way.

REBUILDING THE AIR FORCE.—Sir Hugh Trenchard with the Premier, Mr. Ramsay MacDonald, at the R.A.F. Display at Hendon.

AIRSHIPS.

Yet another policy on which the Administration of the past ten years has been severely criticised is that relating to airships. At the time of the Armistice we had a number of big airships which were all more or less copies of Zeppelins. These were allowed to rot in their sheds till they became unusable. We built a few more slightly modern ships during the year or two after the Armistice, and one of them was the first airship to cross the Atlantic. After that we dropped making airships altogether. And the critics said that we were allowing other nations to get ahead of us in this important method of air transport.

The fact of the matter was that money which might have been spent on airships was wanted for bricks and mortar. An airship costs anything between half a million and a million pounds, according to its size, when all its overhead charges are reckoned and when only one ship is built from bed-rock, as it were. And a lot of bricks could be bought for that much money.

Then when the barracks which were immediately needed had been built and when some of our squadrons had been re-equipped with comparatively modern aeroplanes, the Air Ministry proceeded to build some more airships and the Administration was again criticised. This time the complaint was of waste of money on what must obviously prove to be a useless type of air vehicle. In point of fact, the abandonment of the original airship programme, the institution of the six-ship programme and its later curtailment to the two airships which now exist, have all been thoroughly justified.

THE POSITION TO-DAY.

Let us then take a look at the Air Force as it is to-day, when Sir Hugh Trenchard is leaving his post. We have not the biggest Air Force in the World. The French *Armée de l'Air* is bigger, probably the Italian *Regia Aeronautica* is bigger, and the Russian Government claims that its Air Force is bigger still, but our Air Force does more flying per machine and more flying per pilot than any Air Force in the World, and it does that flying with a very much smaller percentage of accidents, for miles flown and for pilots flying, than does any other Air Force in the World.

This year, 1929, in fact the casualties are only about half those of last year and much more flying has been done.

So far as the quality of the Air Force is concerned, all that any anxious taxpayer need do is to go to the Royal Air Force Display at Hendon each year. There he will see

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flying of a quality which cannot be seen anywhere else in the World. Other nations may have individual pilots as brilliant as ours, other nations may have pilots who have put up records which ours have not yet touched, but no other nation can show such amazing organisation on the ground, or such a high standard of combined flying as is shown by the R.A.F. And, let the fact be remembered that ground organisation and combination in the air is the essence of strength in time of war.

Representatives of every foreign Government in the World come regularly to the Air Force Display at Hendon so that they may see for themselves what represents the high-water mark of Service flying for the rest of the World.

Even in America where men of our own blood fly as much and as well as our own people do, they admit that even their best combinations of pilots have never put up a show equal to that put up by a formation of the Royal Canadian Air Force which appeared at the American National Air Races this year, and that Canadian formation, be it remembered, learned its flying from the Royal Air Force, and was in fact led by an officer in the Royal Air Force who had been lent to the Canadian Government.

Apart from that, although so many of our squadrons are still using War-time aeroplanes, the fact remains that there are no aeroplanes in any Air Force in the World so well built or so well maintained as are ours. Our detail design, our material, and our construction are ahead of those of any other Nation. And our air mechanics, or aircraftmen as we call them in these days, in the Air Force, are far and away superior to those of any other nation.

Undoubtedly, there is still plenty of room for improvement in the design of our aeroplanes and in their equipment. But as Service aircraft go, we have nothing to learn from other nations. Our weakness is on the commercial side and not on the Service side, and this itself is the strongest possible evidence of the soundness of the policy which has been followed by the Administration at the Air Ministry for the past ten years.

Whatever charges of lack of commercial enterprise may be made against our Aircraft Industry for being content to depend on the Air Ministry not only for its orders but for its actual specifications to which it builds aircraft, instead of going out for the ordinary commercial trade of the world, we have the satisfaction that our First Line of Defence—the Royal Air Force—has the finest possible equipment.

Thanks entirely to the encouragement of the Air Ministry we have captured the World's Records for speed, also we have produced a long range aeroplane which, though it did not actually beat the World's Record for distance at the first attempt, came very near doing so in spite of conditions which would have prevented any other aeroplane from coming as near beating the Record as our people did.

Also we have produced flying-boats of several types which have proved themselves superior to those built by any other Nation.

The excellence of the personnel and material of the Air Force, as it has been rebuilt during these ten years, is shown by the way in which the Air Force never fails to carry out any job which may be given to it.

We have had that great flight to the Far East and round Australia and back by way of China by four standard Service flying-boats. We have had the annual flight from Cairo to the Cape and back, and from Cairo to West Africa and back, year after year. We have had our continual little troubles with tribes in Arabia. We have had small wars on the North-West frontier of India. We have had more recently that excellent example of organisation, the despatch of aircraft from Baghdad to Peshawur and the rescue of the unfortunate foreigners who were in peril in the Capital of the King of Afghanistan.

Quite in the early days after the War the Air Force organised the desert Air Mail between Baghdad and Cairo and prepared the way for our Imperial air route to Australia.

Of all the Air Forces in the World, ours was the first to have handed over to it the complete control of a country which needed to be controlled. To Sir John Salmond, the new Chief of the Air Staff, was committed the control of 'Iraq by the Air Force. Through his good work we were able to remove many battalions of troops from that country, and to save the British tax-payer and the Indian tax-payer many millions of money per annum.

Later on, thanks to the success of the Air Force in 'Iraq, the control of Palestine and Trans-Jordan was handed over to the Air Force. And more recently Aden was made an Air Force command instead of an Army command.

In each of these instances millions of pounds have been saved and peace has been maintained with the least possible loss of life as well as the least expense.

In every way we have reason to be proud of our Air Force. And for every reason we are entitled to have confidence in it. And the man whom we owe this happy state of affairs is without argument, Sir Hugh Trenchard.

THE MAN AND THE TIME.

He himself would be the first to say that if he ha done the job somebody else would have done it. P that is true. There is much in the old proverb th are as good fish in the sea as ever came out of it.— times there are better. But there is also as much old saying that the time finds the man. And certain anxious time during the last ten years in which body had to decide whether we were going to ha Air Force as our first line of defence or whether we going to have two aerial branches of the senior fo services, each of which would be merely an auxili those services, has found the man to do what is ne for the good of the Empire.

Earlier in this article one said that with the promo Sir Hugh Trenchard step by step in the Army the R Flying Corps itself was promoted from Brigade to Di and from Division to Corps. In much the same way the tion of the Royal Air Force in the affairs of the N has been marked by the promotion of Sir Hugh Trenchar

In 1919 the rank titles in the Air Force which before had been the same as those in the Army were altere a complete new series of ranks was invented. When th new ranks came into being Sir Hugh Trenchard w appointed an Air Marshal, a rank which correspond that of Lieutenant-General in the Army. Thus the Force was at that time regarded as being of abou same importance as an Army Corps. In April 192 was promoted to the rank of Air Chief Marshal, which cor sponds with that of a General in the Army, or to a Admiral in the Navy,—thus the Royal Air Force itself recognised as having the status of an Army, under the mand of a General.

In the New Year's Honours List of 1927, Sir Hugh Tr chard was promoted to the highest rank possible in Air Force, that of Marshal of the Royal Air Force. T rank corresponds with that of a Field Marshall in the Ar or of Admiral of the Fleet in the Navy. An officer of rank may command several fleets at sea, or several arm on the ground, or several air forces in the air.

At the same time Sir John Salmond was promoted rank of Air Marshal and since then he also has been p moted to the rank of Air Chief Marshal. Thus the Force now finds itself in a position of still having at its he an officer carrying the substantive rank of a full Gen in the Army. And Sir Hugh Trenchard retires from Air Force with the rank equivalent to that of Field Mars

To have risen from being an Infantry Major in 1914 the equivalent of Field Marshall in 1927 is a truly remar able history. There cannot have been, in the British Arm anyhow, any officer who has risen so rapidly as he ha and we may be thankful that although he is leaving th post of Chief of the Air Staff, Sir Hugh Trenchard sti has many years of usefulness before him.

CERTAIN MEMORIES.

So much, then, for official records and historical facts But this piece would not be complete without some fe memories of the earlier days, which are still in the mind of the older people in, and out of, the R.A.F.

Writing a memoir of a man who is alive is always dif cult. It is difficult enough when he has definitely retired from active life and has become a back number. It is sti more difficult when he is a man with a great future still before him,—and we must remember that, as the histories of great soldiers show, Sir Hugh Trenchard is a young man.

There have been brilliant young leaders, but they have de pended for much of their success on experienced soldiers. Napoleon's victories owed much to the staff-work and organisation of old Royalist officers. And Alexander must have inherited, besides the Macedonian phalanx, an able Chief of Staff from his father, Philip.

In the war 1914-18 two of the most successful generals were nearer 70 years of age than 60. General von Mackensen, whose record of victory on the Eastern Front was unbroken, celebrated his 80th birthday a week or two ago. And General (now Field Marshall) Plumer was a middle-aged man in the South African War 30 years ago, yet he of all British generals, had the finest record in France, and in Italy, for victorious attack and successful defence.

At the end of the War 1914-18 the fact was commonly known that arrangements had been made for General Trenchard to take supreme command of all the Air Forces of the Allies in 1919,—if the War had gone on. He was to have been "the Foch of the Air,"—to use the graphic French phrase. He is now 56 years of age. So by any ordinary reckoning he may still be the Generalissimo of the Air Forces of the League of Nations against Oriental barbarism any time within the next twenty years.

And if he should not be needed for the defence of Western Civilisation he has still before him many years of usefulness as the guardian of the Royal Air Force against any

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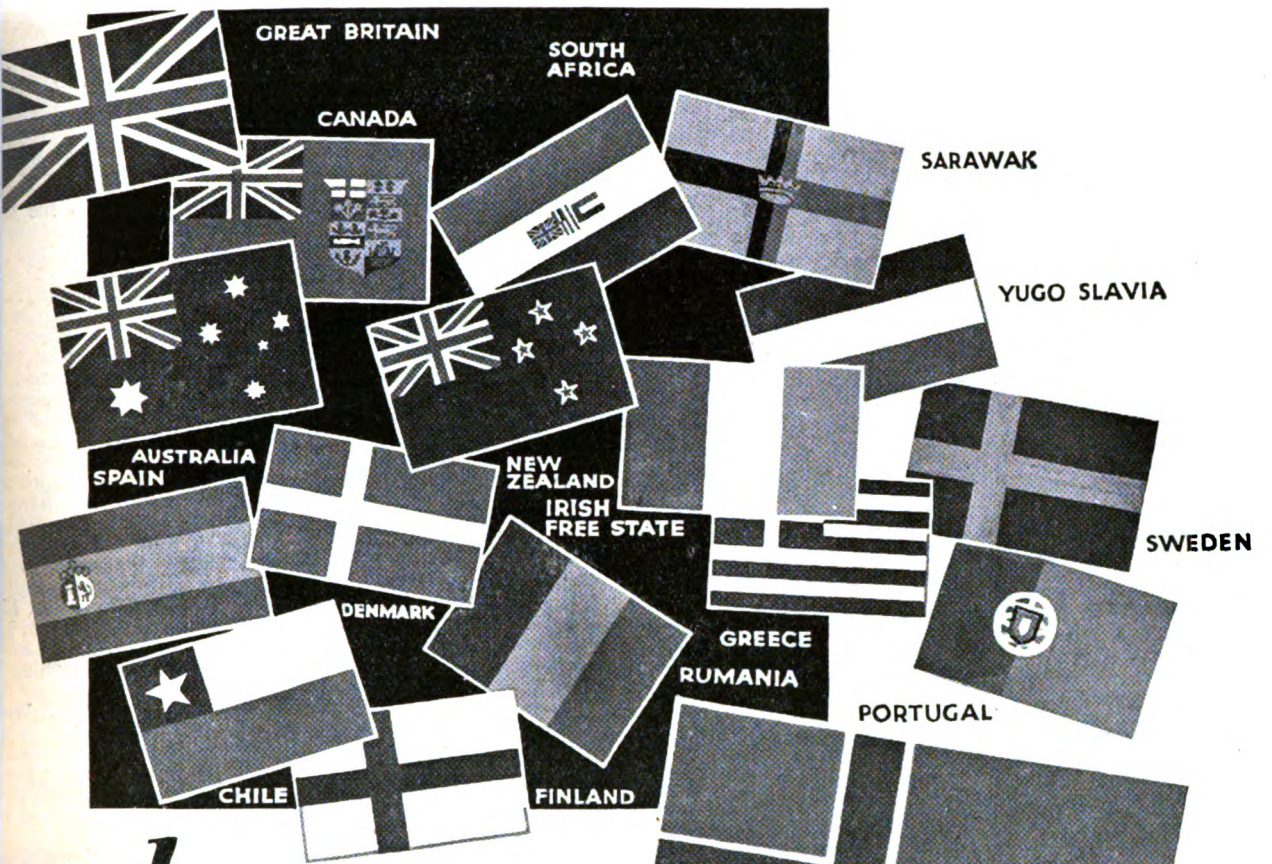

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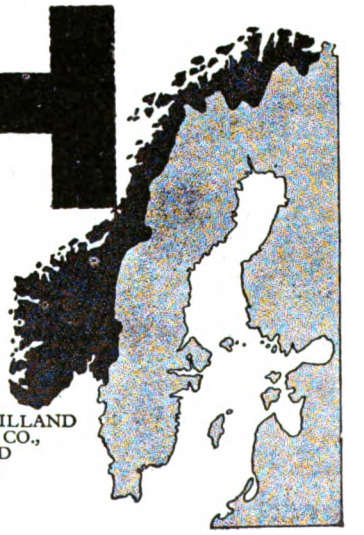

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attempts to break it up between the two older Services. That such attempts may be made is more than likely. The remarks of Admiral Beamish in the House of Commons a few weeks ago may only have been the personal opinions of a sailor of the old school. But there is just as much likelihood of their having been inspired by the younger school at the Admiralty, who now understand the power of air force over the sea, and want it in their own hands.

Though Sir Hugh Trenchard has, happily, been the object of little public interest in the past ten or eleven years, except as the subject, mostly by innuendo, of attacks in certain personally-prejudiced papers, and so is not regarded by the people at large as anything of a political force, there are few men who carry more weight, or whose opinions are more highly regarded, among the people who matter most in this country. And we may be sure that all his strength will be devoted in future to keeping safe the Royal Air Force, one and indivisible.

Those who know all about everything except their own business have been telling us for months that on retiring from the post of Chief of the Air Staff Sir Hugh Trenchard was to be appointed Governor-General of New Zealand. Unfortunately for their repute as prophets somebody else has just been appointed. Those who know Sir Hugh Trenchard best will be very much surprised if he leaves this country for anything other than a short holiday. He is much more likely to stay here to keep an eye on the welfare of the R.A.F., and confound the politics and frustrate the knavish tricks of its enemies.

Sir Hugh Trenchard's influence in the greater world, as it always has been in the Services, is due simply to his singleness of purpose and strength of personality. There is never any doubt about what he wants or what he means to get,—but his methods are all his own.

None of his achievements in this way have been due to eloquence. He hates making speeches, and there are few worse speechmakers when duty compels him to speak. But, after he has made a speech, his hearers are always enlightened, and often inspired by it. And one has never heard him speak without his uttering some outstanding phrase or some idea which has cast new light on a puzzling problem.

Having been so much concerned with Service Aviation ever since it began in 1912, when the Air Vice-Marshals of to-day were junior captains in the Army or two-stripe lieutenants in the Navy, one has perforce come closely in touch with many who served with Sir Hugh Trenchard. And even in those earliest days all had for him the same mixed feeling of affection and respect which has been the secret of his power throughout his career.

At the Central Flying School, when he was Assistant Commandant, newcomers were at first afraid of him. His size and his abrupt way of speaking over-awed them,—apart from the awe which a young officer feels for a senior with many years of distinguished war service. But his strict sense of justice, and his kindliness, and his sense of humour soon did away with their fear of him, and increased their respect.

And yet there is one fear which those who have served with him never lose. That is the fear of losing his good opinion of them, or of losing his friendship if they have been so fortunate as to win it.

Because of his deep voice and abrupt speech some irreverent junior at the old C.F.S. at some time or another referred to Major Trenchard as "Boom,"—and the nickname stuck. To-day it still survives as a mark of esteem and regard.

A SQUADRON STORY.

His curious influence over men is perhaps best shown by a story of a certain single-seat squadron in France. The squadron had been shot to pieces. Its best pilots were dead or wounded or missing. It had been filled up with youngsters fresh from home, and they had lost their nerve before really knowing what war was, and they had taken to coming home with imaginary engine failures, or damaging their machines in forced-landings-on-purpose before crossing the enemy lines.

The squadron commander was heart-broken. The wing commander came and talked to the squadron. So did the brigade commander, but without much effect. And at last they appealed to the G.O.C., General Trenchard.

Word was passed round that he was coming, and the squadron shivered in its boots. He came and inspected the squadron,—each pilot standing by his machine in its shed. He had a few words with each pilot, and asked him how he liked his machine and so on, but never a word of reproof. Then he went to the mess for lunch.

After lunch,—which was an unpleasant meal, because of the dressing-down to come—the G.O.C. got up, and the squadron stood strictly to attention along its tables waiting for its punishment. Boom walked to the door, turned, with the door half open, looked along the rows of faces for a few moments, said quietly, "Well! You're good boys" and went.

Within a week or two that squadron was one of the most effective fighting units over the lines.—The G.O.C. had the material on which he had to work.

AND A DEPOT STORY.

Wherever he went the G.O.C. spread confidence and encouragement. He had a way, when on a visit of inspection, of talking to any stray air-mechanic who crossed his path, asking the man where he came from and what his trade was, and telling him that his job was as much needed to win the war as that of the finest pilot. Sometimes the man gibbered with fear at being talked-to by the G.O.C.—and that distressed General Trenchard more than anything. But they always went away full of keenness and enthusiasm. And so one can tell a story against the G.O.C. himself.

Once he was inspecting the big engine-repair depot at Pont de l'Arche, and was walking round with the O.C. and a captain who commanded a section. As they came to the section office they found half a dozen men standing to attention outside, evidently waiting for the section-commander. So the G.O.C., as was his habit, had a few words with each man, asked him about his job, and told him that we could not win the war without fellows like him—and words to that effect.

As he talked he noticed the captain looking anxiously at the O.C. Depot, and the O.C. looking nervously at the captain. So, as they walked away he turned to the captain and said, "Who *are* those men, S——?"—"I'm sorry, Sir" answered S——, "But they're my morning's defaulters."

After that the party of inspection had to retire round the corner of a shed till the G.O.C. had done laughing.

THE PRODIGAL'S RETURN.

There is another story which deserves to be told. When General Trenchard had his H.Q. at St. Omer he went one day to Calais in a hurry. On the way he overtook a squadron car driven by a young pilot, who, being young and foolish, instead of letting the staff-car pass, stood on his accelerator, by way of being funny, and smothered the G.O.C. with dust the rest of the way to Calais.

When he stopped in the town, the staff car drove alongside, and a righteously infuriated G.O.C. demanded to know his name, rank, and squadron. Thereafter, he was told that not only discipline but manners must be preserved with the Army in France, and that he had better go back to England and never be seen in France again. And sure enough an hour or two after going back to his squadron, he was sent home in disgrace.

After which he was sent to the Eastern Mediterranean where he acquired a D.S.O., and an M.C., and three or four foreign decorations, and a couple of years later he came back to England to defend London. This was during the lamentable Rothermere's period as Air Minister, while Sir Hugh Trenchard was Chief of the Air Staff. And the young officer was called to the Air Ministry then at the Hotel Cecil, or the "Bolo House," to an air-defence conference.

After the conference the C.A.S. went over to him and for the second time asked his name.—When he gave it the C.A.S. asked him what he meant by coming to the conference, and by having that string of medals and decorations, when he had been sent home from France as a bad boy. And since then there has been no more fervent worshipper of the C.A.S. than the perpetrator of the disgrace crime.

A POST-WAR APPOINTEE.

Since the War Sir Hugh Trenchard has handled his men in just this same way of his own. There was, for example, a test-pilot of great skill who was also an engineer of unusual ability. His turn came for service overseas. The experimental unit to which he belonged protested loudly against his being made to do ordinary flying duty, and argued that he was indispensable. So the C.A.S. said in effect,—"No man is indispensable, and in a fighting service no man must be allowed to become indispensable, so that makes his removal necessary. But if he is so clever, send him to the Staff College." And to the Staff College he went.

After a few months there, he admitted to a sympathising friend that technical work is infantile compared with Staff work. And to-day he is on a fair way to high command, instead of being a kind of glorified aircraftman with a dash of the aerobat and the scientist.

Yet another personal story. A certain officer who had been at war in the War 1914-18 from the beginning to the end and for a while afterwards, came home from over-seas and was sent to see the C.A.S., who, after asking him about his last campaign asked what job had been given to him. The war-maker said that he had been made a staff-officer and that he didn't like being a staff-officer, he liked making war, and please couldn't he go to the next war that was beginning.—Said the C.A.S.—"No! You've got to be a staff-officer. We're none of us staff-officers here and we've got

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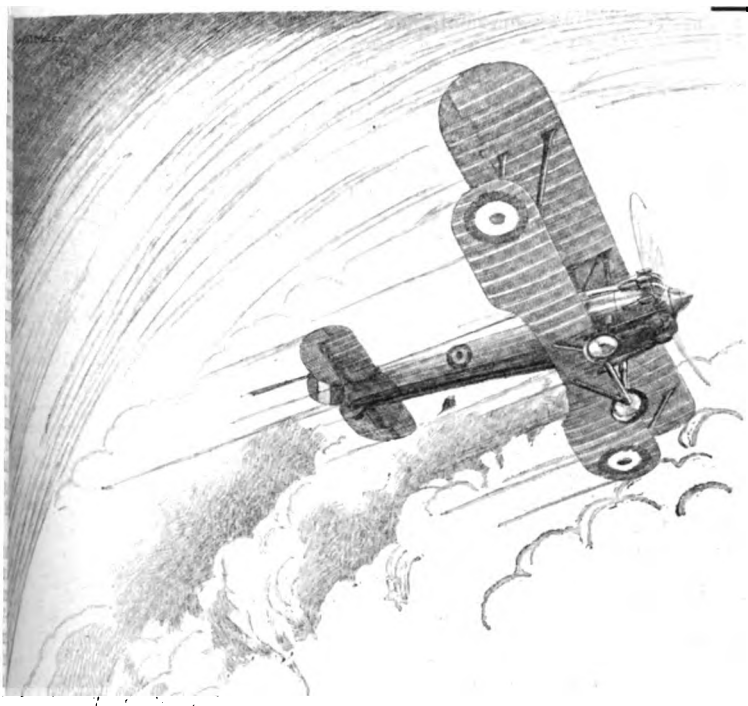

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to learn. I'm a bush-whacker by trade, but I have to sit here and do staff-work. So you go and learn to be a staff-officer too."—And he went,—with results which those who know do know.

Presumably, on the strength of having commanded three kinds of irregular cavalry in South Africa, and having done six years in Nigeria in command of Hausas and nigger levies, and having governed negro tribes with success, Sir Hugh Trenchard has a perfect right to describe himself as a bush-whacker if it so pleases him. But no fighting man has ever had a finer appreciation of the value of good staff-work.

Apropos that West African period,—during the later part of the War, when the name of Sir Hugh Trenchard had become famous in Dispatches, one used to get a lot of quiet amusement out of older people who had served in West Africa by asking them whether they remembered anyone by the name of Trenchard.—"Ah! Yes!" they used to say. "Such a pity too. A good fellow, and a fine soldier. They sent him home to die, I believe. Absolutely a wreck. Completely broken by service up-country. No man could go through what he did and live."—And so on.

And there used to be quite a trouble to persuade them that this brilliant general who had built a Flying Corps from nothing, and had won the command of the air, in spite of the seeming impossibility of doing such a thing, was the middle-aged infantry major who had been sent home to die some eight or nine years before.

Sir Hugh Trenchard has a way of coming to life again in disconcerting ways. He came to life with the Independent Force, which ultimately became the prototype of all Independent Air Services, after so many people thought that he had been killed, in the political sense, by Lord Rothermere,—and, as in the poem, "the man recovered from the bite, the dog it was that died."

After the war he was actually on the verge of death for months. But he arose from a sick-bed which looked like being his death-bed, and completely defeated the whole weight of the Admiralty intrigue to cut up the Air Force. He fought them before the Committee of Imperial Defence and into the Cabinet,—and emerged with the R.A.F. and himself stronger than ever.

We all hope fervently that he may never again have to face death so nearly as he has done in the past,—until his time comes to leave us for a better place. No man has deserved better of the Commonwealth, and no man has better earned a peaceful rest till the King and his country need him again. So let us all wish him and Lady Trenchard and his sons many happy New Years, and fresh victories in the future.—C. G. G.

THE S.B.A.C. AND PROPAGANDA.

On Dec. 18 the Council of the Society of British Aircraft Constructors gave a Lunch to the accredited aeronautical representatives of the leading English newspapers to discuss with them the position of the British Aircraft Industry in relation to the World's markets. At the time of this meeting one was under the impression that it was a purely personal affair and was not intended for publication. But as Major C. C. Turner has published a general expression of the S.B.A.C.'s views, one feels that a fuller account of the meeting may be acceptable.

MR. C. R. FAIREY, who presided in the absence of Mr. Handley Page, the Chairman of the S.B.A.C., who was fog-bound on the other side of the Channel, said that the idea of the meeting was to give and get views on the position of British aviation in relation to the immense amount of propaganda circulated all over the World, as well as in this country, in favour of the United States and Germany. Mr. Handley Page had intended to give his views resulting from his recent visit to the United States, but he, Mr. Fairey, would express those views as well as he could from what he had heard from Mr. Handley Page.

The idea had been spread everywhere that aviation in the United States was a vast commercial success and that American aircraft constructors were vastly ahead of us in execution and design. This was all the result of steady purposeful national propaganda the like of which was unknown in Great Britain.

The truth was that there was not an air-line working at a profit in the United States except on lavish postal rates. These postal rates had in fact only been got by a supplemental Post Office Vote of $5,000,000.

Apart from that, Mr. Handley Page had told him that the American aircraft factories had 15,000 aeroplanes in stock.

He himself had recently been in Germany. He had gone there with the impression that German civil aviation was a vast and highly organised business, and that the German technical people were vastly in front of ours. He had quite failed to see anything of the kind.

At Tempelhof Aerodrome, which he had been told was a kind of Clapham Junction of the air, he spent the greater part of a day and only saw three aeroplanes. One was Dutch, one was Czechoslovak and only one was German.

As regards technical development he did not see any evidence that their technique was as good as ours. One firm announced to him that they had not changed their design in ten years and he was shown engines in which the internal design appeared to be older than that.

Workshop methods were employed which would not be tolerated here. They had no Aeronautical Inspection Department. And they had no central technical body. He had been told that German aircraft carried higher payloads than ours, but if they did it was certainly by scraping over tree-tops and by flying without reasonable safety.

As regards the British Aircraft Industry itself, we had been told of the vast and impregnable self-complacency of British aircraft constructors, and that they were blind to opportunities. This doctrine was beginning to grow and to be preached and to be believed. And in spite of it we were told that the British Industry were making vast profits.

We should examine the truth and see for ourselves. If there was any truth at all in this outlook at least we had achieved something. British air lines in any case came as near as any in the World to operating at a profit. British manufacturers turned out a better article at a price which was very little more than that of their competitors. And our export figures were as good as those of any other country. The difference was that German and American aircraft were sent out with vast propaganda. The German system of propaganda was unrivalled. When you went to a German factory you were shown museums of models of all the types that a firm had built, and of parts specially prepared for exhibition. In Berlin at all the cinema houses films were always shown of German aircraft under varying conditions. The whole atmosphere was good.

In America everybody was surrounded by an atmosphere of the greatness of American aviation. Youngsters in America grew up with a belief that American squadrons crossed the lines during the War in quantities, whereas in fact not one American squadron on American aircraft ever crossed the lines at all.

Lindbergh had become a national idol. And yet his flight was not as long as that of Flt. Lt. Carr, R.A.F., to the Persian Gulf a few days earlier.

In this country we were surrounded by a national atmosphere of self-depreciation. He suggested that we should think of ways of pushing aviation. We could do so more honestly than any other country.

In no country was the technique of construction so high as here. British constructors were now approaching the time when we could create markets and could supply aircraft which would pay their way without subsidies. We must realise from winning the Schneider Trophy that our technique was right.

Thereafter followed some very interesting remarks from representatives of the Press. Possibly in view of the position of individual correspondents in relation to the editors of daily papers their names had better not be mentioned but their views certainly deserve to be.

One correspondent, who is notable for the accuracy of his information and for the soundness and moderation of his views, said that we of the Press thanked the S.B.A.C. for letting us hear their point of view. He agreed with all that Mr. Fairey had said.

He had tried to get definite figures for the performance of the Dornier Do.X. and such figures as he had been able to get, which were by no means complete, showed that its loading per horse-power was heavier than that in the best British aircraft and that its wing-loading was higher. The landing-speed of all German aircraft was too high, and we were getting nearer to the ideal.

But, he said, the Aircraft Industry and the Air Ministry themselves were responsible for lack of propaganda. When new machines were produced the Air Ministry would not allow information to be published and the Trade was afraid to release it. And there was no good in our preaching the excellence of British aircraft on a text six months old.

He quoted for example the fuss that had been made in the papers about automatic control (otherwise the Robot pilot), which apparently had been produced in the States. In fact we in this country had been using it for a year, and those who were closely in touch with developments had constantly asked the Air Ministry for permission to publish something about it and had been refused.

Also recently the experiments made at the expense of the Guggenheim Fund in fog flying, which were wholly estimable, had been circulated from American sources and published. And only then did the Air Ministry let out some information that we had been using instruments which made fog flying at least as possible, and that our instruments were in regular production.

Further, he said that even to-day we had never been told the horse-power of the engine which won the Schneider Trophy. The Rolls-Royce "R" engine should have been given credit at the time for the horse-power it developed

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He suggested to the S.B.A.C. that they should tackle the Air Ministry for greater liberty, and that films of test-flights of new and interesting types of aircraft should be taken and should be circulated to increase public interest. Showing films of the outside of a new machine would not teach anybody anything, in fact even experts might be allowed to inspect every part of most new machines without learning anything. Nobody could tell from looking at a piece of metal what its constituents were.

He said that he was very much inclined to advise the S.B.A.C. to take a more independent line and damn the consequences.

The next speaker, who represents one of our great provincial papers, suggested that the S.B.A.C. might appoint a real live man as the publicity agent for all British aircraft who would tell people who wanted to know what the Trade's activities were. Propaganda were needed to tell the World just as much as the Air Ministry allowed.

The thought of the number of American machines in Canada made him sad. He knew that the Americans were trying to capture all other markets as well and he would like the S.B.A.C. to be more active.

He pointed out that the British Empire in itself offered as as great opportunities for aviation as the United States had within its own borders, and we stood to gain more by air communication. He admitted that our air lines came nearer paying their way than did those of any other nation, but it was in Australia and not in Europe. He believed that the function of Great Britain was to design and produce paying aircraft, and of the Dominions to operate these aircraft. He suggested that the S.B.A.C. might arrange meetings at reasonably frequent intervals to give their views to the Press.

The Editor of THE AEROPLANE said that he felt rather like the criminal in the dock, but that he agreed with every word that Mr. Fairey had said. He knew perfectly well that we could build better aircraft in this country than any other country could build, just as we could make anything else in the World better than any other country. But the point he wanted to impress on the Trade was that we must make what the market wants.

He brought up the old argument that a number of important members of the Aircraft Industry habitually drove American cars, and said that the one thing he wanted to prevent was that history should repeat itself and that people in our Dominions and all over the World should use American aircraft as they use American cars.

He said that, not being a metallurgist, he was under the impression that the Germans knew more about light alloys than we did, especially magnesium alloys, but that otherwise he knew that we were ahead of any other country in design and construction.

But the point was that we were not making the type of machine which the Americans would soon start selling in the British Dominions. The Americans had got the car trade of the World because the cars they developed for their own use suited our Dominions, and the cars we built for our home use did not suit our Dominions, but the air was practically the same all over the world, and the types which were wanted in the Dominions were also the types which could be sold at home.

The representative of one of our most important evening papers said that his trouble was that when he tried to get any information about British aircraft he had great difficulty in finding anybody in any firm who could or would tell him anything that would make a story. Very often they were afraid to say what they knew without referring to higher officials in the firms.

He pressed for a more active propagandist spirit in the Industry itself, and brought forward a number of arguments in favour of greater activity, illustrated by examples of lost or neglected opportunities.

Another speaker said that the Press had been accused of making too much out of air crashes. He pointed out that when a crash did happen there was the greatest difficulty in getting any reliable information which would counteract the effect on the public of such an accident, such as explanations of what did happen.

Mr. Fairey interpolated the remark that the number of crashes in the Air Force this year had been only half that of last year. And the speaker replied that if this fact were made known, and properly given to the Press, this would make excellent propaganda.

Mr. Fairey in replying said that the first speaker had certainly hit on a vital point. The Air Ministry might very well relax the amount of secrecy with which it surrounded new British products. There had been considerable relaxation of late years. One of the first results of the permission to export British war machines which were still in current use, after Sir John Higgins had become Air Member for Supply and Research, was that our exports were doubled or trebled.

He admitted that he himself had driven American cars for a number of years, but that now he knew better and had bought a British car.

Quoting Mr. Handley Page, he said that our complaint was that the British Government insisted on being neutral, whereas the Governments of other nations laid themselves out to push their national products by every possible means.

A FURTHER NOTE.

All this needs very little comment. But one would like to point out a few salient facts. The first is that this meeting must obviously have far-reaching effects, in that the S.B.A.C. now probably understands the point of view of the Press much better than it has done hitherto and no doubt will understand the need for more active propaganda.

On this point one would draw the attention of the S.B.A.C. to the fact that potential buyers all over the World constantly receive masses of American aviation papers, the smallest of which is very much bigger and very much more elaborate, thanks to the amount of advertising support that it receives from the American Aircraft Industry, than are either of the two British aircraft papers which have for many years been spending what little money they have been making in pushing their circulations abroad for the benefit of the British Aircraft Industry,—despite the fact that they lose money on every copy they sell.

The second is that, while we are admittedly far ahead of all other nations with our war-machines and flying-boats and seaplanes and our "giant air-liners," as the Press loves to call them, and while we are still further ahead with our light aeroplanes—which account for the bulk of our increased exports of aircraft—we are not yet making the types for which there is a current market.

Mr. Siddeley has done the wise and courageous thing in frankly taking over the Fokker designs for three-engined jobs,—much as Mr. Fairey imported Curtiss designs six years ago, and, by improving on them, improved our war-machines till they are the best in the World. But we are not yet producing the cabin-job at a moderate price. There is nothing between the Desoutter at £800 and the Avro 10 at £10,000 or so, except some small-size three-engined jobs which cost a good deal of money, while other countries offer 4- to 6-seat cabin machines at £1,500 to £2,500.

One may perhaps illustrate this argument best by pointing out that though Mr. Fairey has now bought an English car, the English car trade has taken ten years to produce one which he has thought worth driving. And we cannot afford to wait ten years to produce the ideal civil aeroplane while the World, including the British Isles, is being flooded with cheap and good-enough machines built in America, and France, and Germany.—C. G. G.

BRITISH AIRCRAFT EXPORTS.

The following figures for exports of aircraft manufactured in the United Kingdom to foreign countries and to the British Dominions and Colonies have been supplied by the Department of Overseas Trade:—

1926.		
Aeroplanes complete	150	£391,471
Engines complete	266	£296,347
Other parts		£430,821
Total		£1,118,639
1927.		
Aeroplanes complete	140	£205,183
Engines complete	380	£396,143
Other parts		£483,629
Total		£1,084,955
1928.		
Aeroplanes complete	358	£450,552
Engines complete	432	£348,606
Other parts		£527,714
Total		£1,326,872

The probability is that the figures for 1929 will be a great deal higher, thanks to the increased export of Moths and Avians, to all countries, and of war machines—chiefly Fairey III.Fs and Westland Wapitis and Bristol Bulldogs to the Dominions, and to some foreign countries. Also the exports of Bristol, Armstrong Siddeley, Cirrus and Gipsy engines have been very large.

AMERICAN AIRCRAFT EXPORTS.

In the first nine months of 1929, 275 complete aircraft, valued at $4,397,311 (£879,460), were exported from the United States, as compared with 162 aircraft valued at $1,759,653 (£351,930) for the whole of 1928.

The 275 aircraft were distributed to 23 foreign countries, of which twelve were Latin-American. Fifty-nine per cent. of all exports of complete aircraft went to Cuba, Central and South America. Mexico and Chile were the biggest customers.

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VOLS HISTORIQUES.

1919.	**Premier vol transatlantique sans escale**	**Vickers "Vimy" Rolls-Royce.**
1919.	**Premier vol d'Angleterre en Australie**	**Vickers "Vimy" Rolls-Royce.**
1920.	**Premier vol Londres au Cap**	**Vickers "Vimy" Rolls-Royce.**
1920.	**Expédition d'exploration aérienne en Afrique du "Times"**	**Vickers "Vimy" Rolls-Royce.**

COUPE SCHNEIDER.

1922.	**Gagnant**	**Supermarine Napier "Sea Lion."**
1927.	**Gagnant**	**Supermarine Napier "S.5."**
1929.	**Gagnant**	**Supermarine Rolls-Royce "S.6."**

RECORDS DE VITESSE.

1922.	**Record du monde, 208·817 km./h. (100 kilomètres)**	**Supermarine Napier "Sea Lion."**
1925.	**Record du monde, 364·922 km./h. (3 kilomètres)**	**Supermarine Napier "S.4."**
1927.	**Record du monde, 456·521 km./h. (100 kilomètres)**	**Supermarine Napier "S.5."**
1928.	**Record britannique, 514·298 km./h. (3 kilomètres)**	**Supermarine Napier "S.5."**
1929.	**Record du monde, 575·700 km./h. (3 kilomètres)**	**Supermarine Rolls-Royce "S.6."**

VOLS REMARQUABLES.

1920.	Prix du Gouvernement pour la catégorie des amphibies	Vickers "Viking" Napier.
1920.	Prix du Gouvernement pour la catégorie des avions commerciaux	Vickers "Vimy" Rolls-Royce.
1921.	Vol du Bourget à la Tamise avec le Ministre de l'Air français, 1 heure 55	Vickers "Viking" Napier.
1924.	Vol d'Angleterre au Japon	Vickers "Vulture" Napier.
1924.	Premier hydravion amphibie à coque centrale employé en service actif (Service aéronautique de la Marine Royale espagnole, campagne du Riff)	Supermarine Rolls-Royce "Scarab."
1925.	Premier volpe de coopération avec la flotte	Supermarine Napier "Southampton."
1927-8	Vol en Extrême-Orient	Supermarine Napier "Southampton."
1928.	Vol de Lisbonne aux colonies portugaises d'Afrique	Vickers "Valparaiso" Napier.
1928.	Vol de Brooklands à Bucharest en 10 heures	Vickers "Vivid" Napier.
1929.	Vol d'Angleterre en Australie	Vickers "Vellore" Jaguar.

Reproduit du manuel "Vickers and Aviation," qui contient spéciales sur la construction métallique.
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Les usines.

L'usine de Weybridge de la société Vickers (Aviation), Ltd., située à 32 kilomètres de Londres à Byfleet, comté de Surrey, est la plus grande fabrique d'avions terrestres que possède le groupe. Le principal atelier de montage a une façade de plus de 120 mètres de long sur la piste automobile de Brooklands; de l'autre côté se trouvent les hangars d'aviation qui embrassent un terrain consacré aux essais en vol. L'usine même consiste en une série de constructions modernes en béton et acier couvrant une superficie d'environ deux hectares et demi. Intérieurement les principaux ateliers présentent les vastes dimensions auxquelles on s'attend lorsqu'il s'agit de la production normale en série d'appareils mesurant 30 mètres d'envergure. C'est ainsi que le principal atelier de montage a 4,275 mètres carrés de superficie, l'atelier d'entoilage 745 mètres carrés, l'atelier d'enduisage 465 mètres carrés et l'atelier des machines 2,790 mètres carrés.

La construction des hydravions se fait aux usines de The Supermarine Aviation Works, Ltd., à Woolston et Hythe, près de Southampton, dans le comté de Hampshire. La rade de Southampton est un des plus beaux ports naturels du monde et convient admirablement pour les essais et les manœuvres d'hydravions. Ces conditions favorables se prêtent au développement des avions du type marin et procurent à ces usines un grand avantage sur celles dont la situation est moins fortunée. Il est certain que Southampton est appelé à devenir l'un de premiers ports aéromaritimes du monde.

La principale usine Supermarine, située à Woolston, couvre une superficie de plus de 13,000 mètres carrés, dont 3,000 mètres carrés sont occupés par les ateliers de montage et 1,300 mètres carrés par l'atelier d'enduisage.

Un peu plus bas dans la baie de Southampton, à Hythe, se trouve une autre usine d'une superficie d'environ 16,000 mètres carrés, comprenant un vaste bâtiment en acier de 7,135 mètres carrés d'étendue. Cet édifice a 152 mètres de long sur 47 mètres de large et 11 mètres de hauteur libre, et peut accommoder à l'aise le plus grand avion qui ait jamais pris l'air jusqu'à ce jour.

Etant donné que les usines d'aviation Vickers et Supermarine travaillent dans la plus étroite coopération, les notes qui suivent se rapportent à leurs ressources combinées.

Elles disposent d'un laboratoire métallurgique complet équipé des derniers appareils d'essais mécaniques des matières premières, et notamment d'une machine Avery de 30 tonnes à levier unique pour essais à la traction, d'une machine Brinell, d'une machine Firth à mesures de dureté dite "hardometer" et d'un scléroscope Shore. Il y a aussi des machines spéciales pour les essais de tôles au pliage et pour l'épreuve de câbles de commande pouvant avoir jusqu'à 10 mètres de longueur. Un certain nombre de matériaux sont également soumis à des essais microscopiques et chimiques.

La résistance des matériaux à la corrosion et les revêtements destinés à les protéger sont l'objet de minutieuses études; d'autre part, des bacs spéciaux sont installés pour le traitement thermique expérimental des métaux et pour le traitement anodique du duralumin.

Il existe aussi des bancs d'étirage pour la production de profilés spéciaux en duralumin et en acier.

Un matériel moderne de peinture au pistolet a pris la place de la peinture à la main, parce que la couche ainsi obtenue est plus légère, plus uniforme et protège mieux contre la corrosion.

Ces usines fabriquent des accessoires d'alimentation en essence qu'elles fournissent à toute l'industrie aéronautique de la Grande-Bretagne.

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THE ROYAL AIR FORCE.

The London Gazette.

Air Ministry, December 17.

ROYAL AIR FORCE.

GENERAL DUTIES BRANCH.—Plt. Off. on probation T. Gadd is confirmed in rank (Nov. 1); Plt. Off. J. C. Allan is promoted to the rank of Flg. Off. (Nov. 25); Plt. Off. H. B. Maugham is promoted to the rank of Flg. Off. (Oct. 8, 1928) (substituted for the notification in the *Gazette* of Aug. 13, 1929).

Air Vice-Marshal F. C. Halahan, C.M.G., C.B.E., D.S.O., M.V.O., is placed on the half-pay list, scale A, Dec. 16 to Dec. 31 inclusive; Wing Cdr. E. R. Manning, D.S.O., M.C., is placed on the half-pay list, scale B, Dec. 14, 1929, to Mar. 31, 1930, inclusive.

Flt. Lt. A. Ferris is placed on the retired list (Nov. 28); Flt. Lt. E. S. C. Vaughan, M.C., is placed on the retired list on account of ill-health (Dec. 17).

Flg. Off. J. H. Parry is transferred to the Reserve, Class C. (Dec. 18); Flg. Off. B. C. Mason is transferred to the Reserve, Class C (Dec. 9). (Substituted for the notification in the *Gazette* of Dec. 10.) Plt. Off. on probation D. I. Carlyle relinquishes his S.S. comn. on account of ill-health (Dec. 18); Lt. C. B. Tidd, R.N., Flg. Off., R.A.F., ceases to be attached to the R.A.F., on return to Naval duty (Dec. 3).

ACCOUNTANT BRANCH.—Sq. Ldr. E. W. Gregory, M.C., continues on half-pay, scale A, during the period Nov. 5 to Dec. 17 inclusive; Sq. Ldr. E. W. Gregory, M.C., is placed on the retired list on account of ill-health (Dec. 18).

MEDICAL BRANCH.—W. J. Cotter, M.B., B.Ch., is granted a temp. comn. as a Flg. Off. with effect from and with seniority of Nov. 26; Flg. Off. B. A. Porritt, M.B., is transferred to the Reserve, Class D. (Nov. 27).

CHAPLAINS BRANCH.—The Rev. J. Black, O.B.E., M.A., is promoted to the relative rank of Wing Cdr. (Dec. 1).

RESERVE OF AIR FORCE OFFICERS.

GENERAL DUTIES BRANCH.—The following Plt. Offs. are promoted to the rank of Flg. Off.:—A. N. Spottiswoode (Sept. 27); G. R. M. Garratt (Dec. 14); G. Williams (Dec. 15). Flg. Off. L. W. Van Oppen is transferred from Class A to Class C (Nov. 15).

The following are transferred from Class C to Class A:—Flt. Lt. A. Haines (Dec. 17); Flg. Off. G. Rose (Oct. 28).

The following Flg. Offs. relinquish their comns. on completion of service:—F. L. Hudson (Aug. 29); H. Shaw (Dec. 7).

Plt. Off. E. F. Briscoe relinquishes his comn. on account of ill-health and is permitted to retain his rank (Dec. 18); Plt. Off. G. Leggatt resigns his comn. (Oct. 24).

Appointments.

Week ending December 21.

GENERAL DUTIES BRANCH.—Air Commodore A. M. Longmore, C.B., D.S.O., to H.Q., R.A.F., Cranwell, on appointment as Air Officer Commanding, 16/12.

Group Captain R. J. Bone, C.B.E., D.S.O., to Special Duty List, on appointment as Air Attaché, 2/12.

Squadron Leaders The Hon. R. A. Cochrane, A.F.C., to R.A.F. Staff College, Andover, 14/11. C. B. Dalison, A.F.C., to No. 3 F.T.S., Grantham, 9/12. J. W. B. Grigson, D.S.O., D.F.C., to R.A.F. Depot, Uxbridge, 14/11. H. J. Roach, A.F.C., to R.A.F. Depot, Uxbridge, 2/11. G. W. Bentley, D.F.C., to No. 203 Sqdn., 'Iraq, 7/12. A. McR. Moffatt, to R.A.F. Depot, Uxbridge, 1/12.

Flight Lieutenants E. Thornton, to No. 43 Sqdn., Tangmere, 9/11. E. C. Barlow, to C.F.S., Wittering, 12/12. C. B. R. Pelly, to H.Q., Fighting Area, Uxbridge, 9/11. D. L. Thomson, to No. 111 Sqdn., Hornchurch, 9/11. C. W. Attwood, to Wireless Station, Ismailia, Egypt, 6/12. J. B. H. Rogers, to No. 31 Sqdn., India, 20/11. R. E. Bain, to No. 1 (Indian Wing) Station, India, 14/11. R. S. Blucke, to Aircraft Depot, India, 20/11. H. F. Bradley, to No. 10 Sqdn., Upper Heyford, 6/12. J. J. Teasdale, to Air Ministry (D. of E.), 9/12. R. L. R. Atcherley, to No. 23 Sqdn., Kenley, 9/12. A. C. Sanderson, D.F.C., to No. 41 Sqdn., Northolt, 9/11. H. J. Gearing, to R.A.F. Depot, Uxbridge, 19/11. A. F. Scroggs, to A.A.E.E., Martlesham Heath, 26/11.

Flying Officers I. Hodgson, to No. 21 Group H.Q., West Drayton, 2/12. G. Lambourne, to H.Q., R.A.F., Mediterranean, 6/12. H. C. V. Jolleff, to No. 207 Sqdn., Bircham Newton, 9/12. A. G. Pickering, A.F.C., to Station H.Q., Hal Far, Malta, 1/12. D. M. Rees, M.B.E., to R.A.F. Depot, Uxbridge, 2/11. B. A. J. Crummy, to No. 58 Sqdn., Worthy Down, 2/11. F. Fazey, to R.A.F. Depot, Uxbridge, 2/11. W. E. Symonds, to Station H.Q., Manston, 4/12. F. W. Boggis, to R.A.F. Depot, Uxbridge, 2/11. C. J. Veevers, to R.A.F. Depot, Uxbridge, 9/11. D. J. R. Hylton, to R.A.F. Depot, Uxbridge, 9/11. G. Wood, to No. 100 Sqdn., Bicester, 26/11.

Pilot Officers H. L. McCulloch, to No. 30 Sqdn., 'Iraq, 15/11. R. M. Messiter, to No. 84 Sqdn., 'Iraq, 15/11.

MEDICAL BRANCH.—Squadron Leaders E. A. Lumley, M.C., M.B., to No. 3 F.T.S., Grantham, 10/1. W. G. L. Wambeek, to H.Q., A.D.G.B., Uxbridge, 20/12. D. G. Boddie, M.B., to R.A.F. Depot, Uxbridge, 2/11. C. P. Barber, to No. 2 F.T.S., Digby, 15/1. C. T. O'Neill, O.B.E., M.B., to Aircraft Depot, India, 9/11. J. T. T. Forbes, to R.A.F. General Hospital, 'Iraq, 9/11

Flight Lieutenants (Hon. Sq. Ldr.) J. W. H. Steil, M.B., to R.A.F. Base, Calshot, 8/1. G. J. Hanly, M.B., to R.A.F. Depot, Uxbridge, 9/11. C. G. J. Nicholls, M.B., to R.A.F. Depot, Uxbridge, 9/11. J. D'I. Rear, to R.A.F. Depot, Uxbridge, 2/11. P. H. Perkins, to R.A.F. Depot, Uxbridge, 2/11. M. J. O'Reilly (Dental), to R.A.F. Depot, Uxbridge, 2/11. J. Magner, M.B., to Aircraft Depot, India, 11/11.

STORES BRANCH.—Wing Commander E. J. Sayer, M.C., to R.A.F. Depot, Uxbridge, on transfer to Home Establishment, 14/11.

Flight Lieutenants R. Craig, to H.Q., R.A.F., Cranwell, 19/11. E. H. Eldridge, to H.Q., R.A.F., Cranwell, 2/11. H. T. H. Copeland, to Supply and Transport Services, 'Iraq, 6/12. L. N. Sargent, to No. 10 Group H.Q., Lee-on-Solent, 25/11.

Flying Officers F. C. C. B. Hichens, to No. 3 Stores Depot, Milton, 9/11. J. W. Mitchell, to No. 1 Stores Depot, Kidbrooke, 6/12. R. H. Clay, to R.A.F. Depot, Uxbridge, 18/12. W. A. D. Collingwood, to No. 501 Sqdn., Filton, 14/11.

ACCOUNTANT BRANCH.—Flight Lieutenant H. A. Murton, to Station H.Q., Upper Heyford, 26/11.

Flying Officers K. E. M. Holmes, to H.Q., A.D.G.B., Uxbridge, 2/11. G. Goodall, to No. 101 Sqdn., Andover, 12/12.

CHAPLAINS BRANCH.—The Rev. J. Lavin, to H.Q., 'Iraq Command, 29/11.

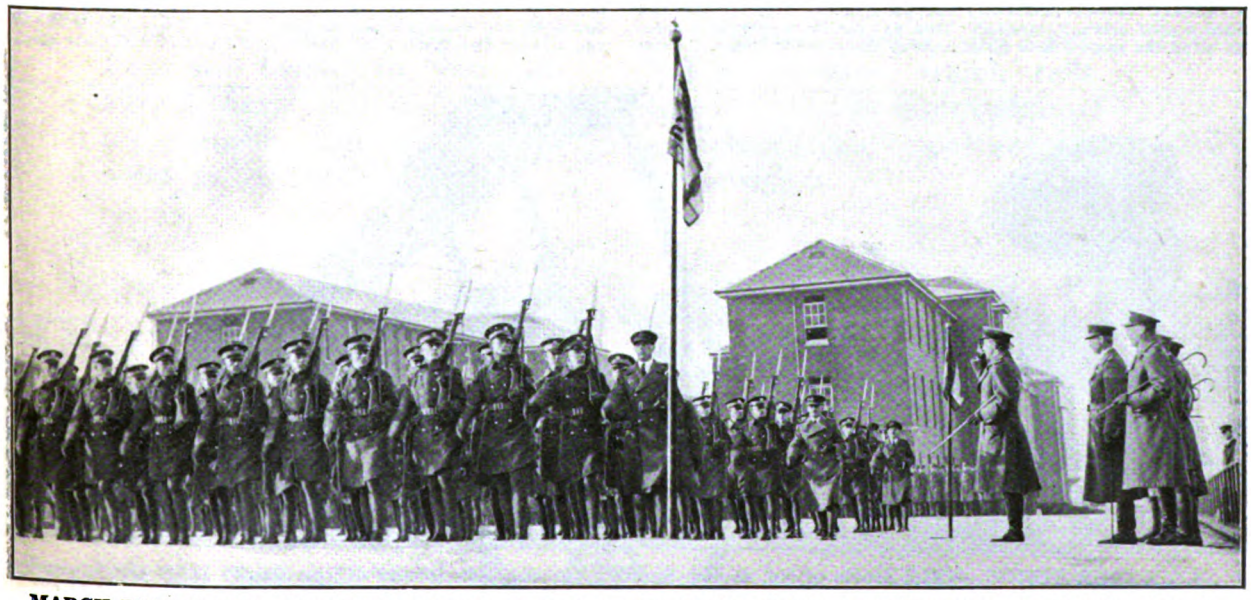
The School of Technical Training (Apprentices).

The Passing Out Inspection of the Aircraft Apprentices of No. 1 School of Technical Training, R.A.F., was held by Air Vice-Marshal A. E. Borton, C.B., C.M.G., D.S.O., Air Officer Commanding the Inland Area, on Dec. 17, at Halton.

In the course of his Report, the Commandant, Air Commodore I. M. Bonham-Carter, C.B., O.B.E., said that the Entry now passing out was the first to complete its course entirely under the system known as Wing Training. This was also the first occasion on which an advanced course for Corporals would not follow the passing-out of an Entry.

The Entry had reached a relatively high standard in each department and the results as a whole were an improvement on some previous ones.

The standard of drill and discipline had shown gradual improvement



MARCH DISCIPLINE.—Air Vice-Marshal A. E. Borton, C.B., C.M.G., D.S.O., Air Officer Commanding the Inland Area, R.A.F., at the Inspection, at Halton, on Dec. 17, of No. 1 School of Technical Training (Apprentices).

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and particularly in certain respects—in steadiness on parade—dress and appearance—cleanliness of barrack rooms, and upkeep and lay-out of kit. The inclination to infringe the rules about smoking had been too frequently indulged.

The Entry had been well up to the average in games and the re-organisation of games within the Wing had introduced more competition and interest to lesser lights. More grounds had been made available.

The health of the Entry had been average. A small outbreak of scarlet fever had occurred in the Autumn of 1928. The incidence of rheumatism in this Entry had compared favourably with the records for other Entries. In order to reduce the time lost from instruction owing to sickness a form of light duty had been introduced for the benefit of Apprentices suffering from minor injuries.

Difficulties in accommodation or establishment, and usually both, had interfered with the training of the fitters,—aero-engine. The method of engine instruction was now based on the Heuristic method, the principle of which was that a boy learned more from practical work by himself than from anything he saw done. The standard achieved in basic work was very high. Instruction in engine running faults had been given on small Austin engines and this was a very satisfactory method. A special course of practical work on magnetos had been introduced with entire success.

This was the last Entry of carpenter riggers to be trained at Halton. The carpenter riggers had attended the aerodrome course at the same time as the fitters making it possible for Flight routine to be carried out on the same lines as normal Squadron practice.

Two Apprentices had been selected from the Coppersmiths and Sheet Metal Workers to demonstrate sheet metal working at the Model Engineer Exhibition held in London.

In Theoretical Education the results of the passing out examination had given abundant evidence of steady, persevering work throughout the course on the part of a large number of boys.

The Engineering Drawing tasks had again proved their value from the practical standpoint. The task gave the aircraft apprentice a chance to tackle a job on his own and he had to work against time.

The passing out of the Entry would bring into Service life a large number of keen and competent mechanics who, if carefully fostered for a time amidst the somewhat different surroundings of productive work, would prove their worth. With the exception of less than twenty, the whole of the Entry (384) had volunteered for airmen pilots.

Of the Entry forty-four had been classified as Leading Aircraftmen; two hundred and fifteen as Aircraftmen, first class; sixty-four as Aircraftmen, second class; six had not been examined owing to sickness and one had failed.

The prize winners were:—*Grand Aggregate*:—561094 Dale, G. T. (F.A.E.).

Highest in Educational Subjects:—561094 Dale, G. T.

Best Fitter Aero Engine:—561345 Pattison, C.; *2nd Best Fitter Aero Engine*:—561249 Holmes, W. A. P.

Best Carpenter Rigger:—561386 Weeks, G. W.

Best Coppersmith and S. M. W'kr.:—561324 Oxford, A.

Cadetships:—561094 Dale, G. T.; 561206 Porter, E. F.; 561326 Needham, S. W.

Wakefield Scholarship:—561094 Dale, G. T.

The Electrical and Wireless School.

The passing-out Inspection of the Aircraft Apprentices of the Electrical and Wireless School, R.A.F., was held by Air Vice-Marshal T. I. Webb-Bowen, C.B., C.M.G., at Cranwell, on Dec. 17.

In the course of his Report the Commandant, Group Captain A. L. Godman, C.M.G., D.S.O., said that there were 244 Aircraft Apprentices under training at the Electrical and Wireless School (exclusive of the Entry then passing out). Of these 110 were being trained as Wireless Operator Mechanics and 134 as Electricians.

The discipline of the Entry had been very good. They had set a high standard. All had satisfactorily completed their drill and had fired "A" of the Musketry Course.

In Technical subjects this Entry had made steady progress and had attained a good average standard. This was the more creditable bearing in mind the considerable dislocation of the move to Cranwell from Flowerdown and the real discomfort of the latter Station during the cold weather last Spring.

In W/T operating the standard had been well above the average and the ability to handle traffic speedily and accurately had been most marked during their examinations in the W/T out-stations. The Commandant prophesied with confidence that all the Wireless Operator Mechanic Apprentices would prove to be competent Ground W/T operators.

The advent of the new workshop equipment in the form of power-driven lathes afforded an incentive to produce better work.

Among other benefits the move to Cranwell had given far greater facilities to the pupils for evening study and practice. This entry had made full use of these facilities and had reaped great benefit from them.

In educational subjects the Entry had not attained quite as good a standard as the entry of January, 1926. The small difference was probably due to the severe weather and the widespread minor sickness in the term immediately before the examination.

Individual members of the Entry had done exceptionally well. four of the Apprentices had scored more than 75% in their three years' work. Forty-four of the Apprentices had done well enough to be exempt from compulsorary educational tests until their promotion to Serjeant became a matter of moment.

The health of the Aircraft Apprentices had been very good. The Entry had reached a high standard of physical training. The increased facilities of a drill hall, a gymnasium, and a swimming bath at Cranwell would enable the Junior Entries to benefit by a more comprehensive physical training course.

In Rugby football fourteen Apprentices of the passing-out Entry had played for the Squadron first XV. The Squadron had entered its Association first XI in the local Leagues. A most satisfactory keenness in Boxing and Shooting had been shown.

Of the present entry, ten had passed out as Leading Aircraftmen, thirty-five as Aircraftmen first class, sixteen as Aircraftmen second class and there had been no failures.

Cadetships had been offered to 561306 AA. R. Monks, 571317 AA. A. Pyke, and 561178 AA. E. W. Harries.

The Winner of the Hyde-Thomson Memorial Prize was AA. A. Monks, who also won the prize offered by the Air Ministry for the Aircraft Apprentice who obtained the highest aggregate marks in all subjects.

The Air Ministry Prize for the Aircraft Apprentice to obtain the highest marks in Technical Subjects has been won by AA. A. Pyke.

The Air Ministry Prize for the Aircraft Apprentice to obtain the highest marks in Educational Subjects had been won by AA. J. E. Patterson.

The Long Distance Attempt.

The R.A.F. Fairey (Napier) Long Range Monoplane which left Cranwell on Dec. 17, piloted by Sq. Ldr. A. G. Jones-Williams, M.C., and Flt. Lt. H. N. Jenkins, O.B.E., D.F.C., D.S.M., crashed near Tunis on the night of Dec. 17. Both the pilots were killed.

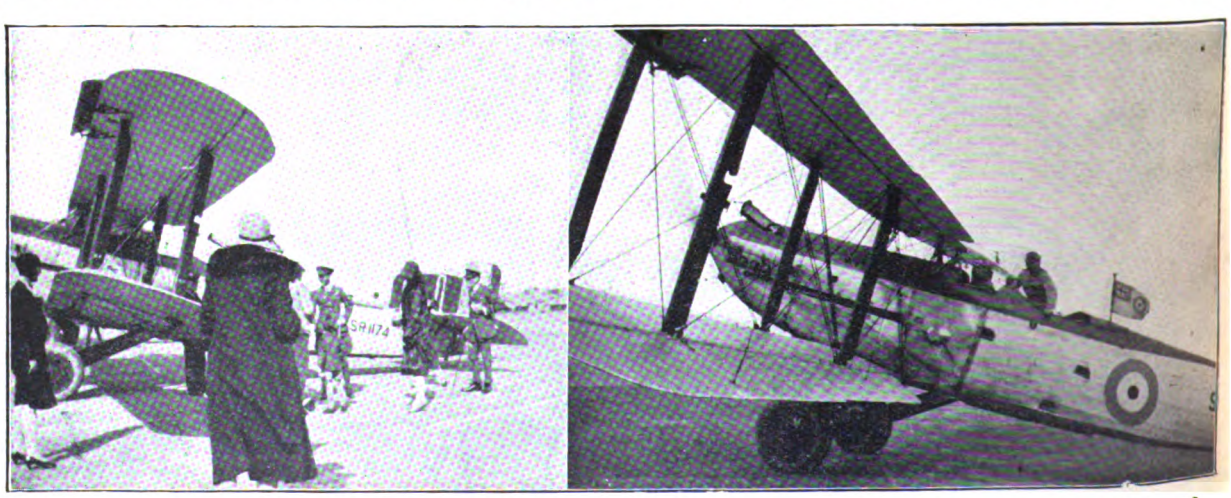
No authentic details have been received and although some of the messages refer to a storm the Air Ministry Meteorological Department have no record of any storm in that part of the World.

His Majesty the King has sent the following message to Lord Thomson, Secretary of State for Air:—

It is with much regret that I learnt of the disaster to the monoplane near Tunis resulting in the death of the two pilots, Squadron-Leader Jones-Williams and Flight-Lieutenant Jenkins, and I join the Royal Air Force in mourning the loss of two distinguished and gallant officers. Please convey to their families my sincere sympathy.

The Paris correspondent of *The Times*, in a message dated Dec. 19, states:—

According to a news agency message from Tunis, a preliminary examination carried out at Jebel-Zit [north-east of Zaghwan], where the Fairey monoplane was found, showed that the accident was probably due to a forced landing caused by engine failure. A clock found in the wreckage had stopped at 9.40 p.m. The bodies of the two airmen were taken this afternoon to Tunis in a military aeroplane.



PER ARDUA SURGO.—(The Motto of No. 45 (B) Sqdn.): On the left is one of the Fairey III.F (High-speed bomber) machines of No. 45 (Bomber) Squadron, R.A.F., at the end of the West African flight on Nov. 29. On the right is the Squadron Leader's machine just after landing with Sq. Ldr. Vincent and Flt. Lt. T. B. Prickman (navigator). Behind the machine is the R.A.F. standard flying at Helwan.

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THE 1930 PILOT

THE 1930 Pilot will be a bit more exacting than his predecessors. He will not want to be one of a long list waiting to put in flying time, he will expect to fly whenever or wherever he wants. The 1930 Pilot will demand comfortable club premises and good hangar accommodation. He will ask for efficient service and low insurance rates. It will not be enough to have these at one aerodrome, he will want them at several all over the Kingdom. Therefore the 1930 Pilot will belong to National Flying Services: only this organisation can give him what he requires.

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The Times.

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In the House of Commons on Dec. 19,—

Mr. Montague, Under-Secretary for Air, replying to Sir S. Hoare, Mr. Mander and Commander Southby, said that he was not yet in a position to add materially to the information already made public about the most regrettable disaster to the Fairey monoplane near Tunis. He added that the reports so far received from his Majesty's Consul-General in Tunis merely state that the machine crashed in the hills some 30 miles south of Tunis, the weather at the time being both cloudy and stormy, and that Squadron-Leader Jones-Williams and Flight-Lieutenant Jenkins were both killed. A military guard has been placed over the machine, and the Consul-General left at dawn this morning for the scene of the accident with a view to obtaining the fullest possible information and bringing the bodies of the dead officers to the military hospital in Tunis. The Air Ministry have already despatched a technical officer to Tunis, in order that the fullest expert inquiry practicable may be made on the spot. Pending receipt of his report no cause can be assigned to the accident.

I should like to add that the responsible French authorities have given the greatest possible assistance. I am sure the whole House will join with me in deploring the loss of the lives of two gallant officers of such outstanding promise and in conveying to their relatives an expression of the most profound sympathy.

The House signified its appreciation of the sentiments expressed.

The following telegram was despatched on Dec. 19 from the Government of the Union of South Africa:—

His Majesty's Government in the Union of South Africa has learned with the deepest regret that the R.A.F. Fairey monoplane in the non-stop flight from England to Cape Town has crashed and that both pilots have been killed.

The Union Government desires to convey to his Majesty's Government in the United Kingdom its deepest sympathy in this disaster and in the loss of the valuable lives of the gallant airmen.

Please also convey to the Chief of the Air Staff and to the relatives of the airmen the heartfelt condolences of the Chief of the General Staff, the Director of Air Services, and all ranks of the Union Defence Force.

The R.A.F. Display.

The sum of £14,145 12s., representing the net profits derived from the R.A.F. Display, 1929, has been allocated by the Air Council as follows:—

R.A.F. Memorial Fund, £9,000.

Officers' Association, £1,000.

R.A.F. Sports Board, £4,000.

Emergency Compassionate Fund of the Air Member for Personnel, £45 12s.

Hendon Urban District Council (for disbursement to local charities, £100.

Air Commodore B. C. H. Drew, C.M.G., C.B.E. (R.A.F., Retd.), has been appointed Secretary of the R.A.F. Display Committee with effect from Nov. 16, 1929, in place of Lieut.-Col. A. D. M. Browne, D.S.O., O.B.E.

Communications for the Display Committee should be addressed to the Secretary, R.A.F. Display Committee, R.A.F. Station, Hendon, N.W.9.

Boxing.

A boxing match between the Danish Amateurs and the Imperial Services at the Stadium Club on Dec. 12 resulted in a win for the Imperial Services by five events to three.

The R.A.F. Light Heavyweight, A. C. Munkley, beat Ebergard Hansen on points.

Inter-Services Squash Rackets.

The Army beat the R.A.F. in the Inter-Services Squash Rackets Tournament on Dec. 16 by five matches to nil. The results were:—

Capt. G. N. Scott-Chad beat Wing Cdr. F. L. Robinson by three games to none (9—4, 9—3, 9—0).

Capt. J. B. Hyde-Smith beat Flg. Off. F. G. Downing by three games to one (9—2, 9—3, 6—9, 9—4).

Capt. the Hon. B. M. O. S. Foljambe beat Flt. Lt. H. M. Mellor by three games to none (9—4, 9—3, 9—6)

Capt. T. H. Sweeny beat Air Cmdre. F. V. Holt by three games to none (9—2, 9—6, 9—2).

Lieut. W. M. S. Lillie beat Wing Cdr. A. G. Belfield by three games to none (9—1, 9—1, 9—3).

The match between the R.A.F. and the R.N. was played on Dec. 17 and resulted in a win for the R.A.F. by three matches to two.

The results were:—

Cdr. P. F. Glover, R.N., beat Wing Cdr. A. G. Belfield, R.A.F., by 3 games to 2 (7—9, 6—9, 9—7, 9—4).

Sub-Lt. G. S. Salt, R.N., beat Flg. Off. F. G. Downing, R.A.F., by 3 games to 0 (9—1, 9—3, 9—6).

Flt. Lt. H. M. Mellor, R.A.F., beat Lt.-Cdr. D. C. Hill, R.N., by 3 games to 0 (9—5, 10—9, 9—3).

Air Cmdre. F. V. Holt, R.A.F., beat Surg.-Cdr. K. A. I. Mackenzie, R.N., by 3 games to 2 (6—9, 9—5, 5—9, 9—5, 9—6).

Wing Cdr. F. L. Robinson, R.A.F., beat Lt.-Cdr. I. C. M. Sanderson, R.N., by 3 games to 1 (9—7, 3—9, 9—7, 10—8).

The Study of Japanese.

A six months' course in Japanese will begin at the School of Oriental Studies, London, during January, 1930. One or two officers from home commands will be selected to attend. They will be regarded as being on duty and will receive full pay and allowances during the course. If they qualify they will be eligible to be sent to Japan for a further course of study extending up to three years with a view to qualification as interpreters.

Officers desiring to attend should submit applications through the usual channels to reach the Air Ministry by Dec. 20, 1929. Officers not immediately available for the course, including officers serving abroad, may register their names with the Air Ministry for consideration for future courses. Volunteers should hold permanent commissions, be not over thirty years of age and be unmarried. If married they should have private means.

The Air Council attach importance to these posts being filled by officers of ability and promise.

Royal United Service Institution.

At the request of the Council of the Royal United Service Institution the attention of all Officers and Cadets of the R.A.F. is drawn to the facilities which the Institution offers for professional study and discussion.

Members are invited to forward papers on professional subjects of a non-confidential nature to the Editor of the *R.U.S.I. Journal*. Arrangements have been made for such papers as are accepted to be forwarded to the Air Ministry for permission for publication.

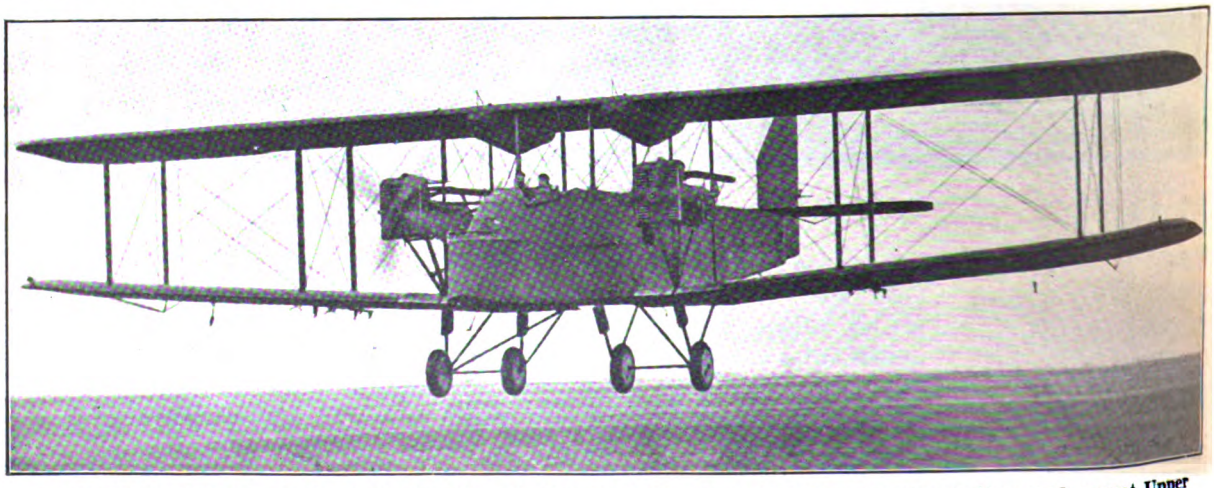
The Institution contains a fine professional library, reading and writing rooms, and an excellent museum.

The entrance fee is two guineas, and the annual subscription, which includes the use of the lending library and a copy of each issue of the *Journal*, is £1 5s. The fee for life membership is twenty guineas.

All Officers whose names appear in the current Air Force List can join without ballot by forwarding their entrance fee and subscription to the Secretary, R.U.S.I., Whitehall, S.W.1.

Air Ministry Land.

In the House of Commons on Dec. 16, in reply to a question by Major Pole, the Under-Secretary of State for Air said that the Air Ministry owned, in the British Isles, approximately, 25,000 acres, of which 16,000 were let to farming and grazing tenants, subject to R.A.F. uses. The names of the 73 stations concerned could be found in the Air Force List.



A NIGHT BOMBER.—A Hyderabad of No. 10 (Bomber) Squadron, R.A.F., returning to its aerodrome at Upper Heyford, Oxfordshire. No. 10 Squadron is commanded by Wing Cdr. A. T. Whitelock.—(*"Aeroplane" photograph.*)

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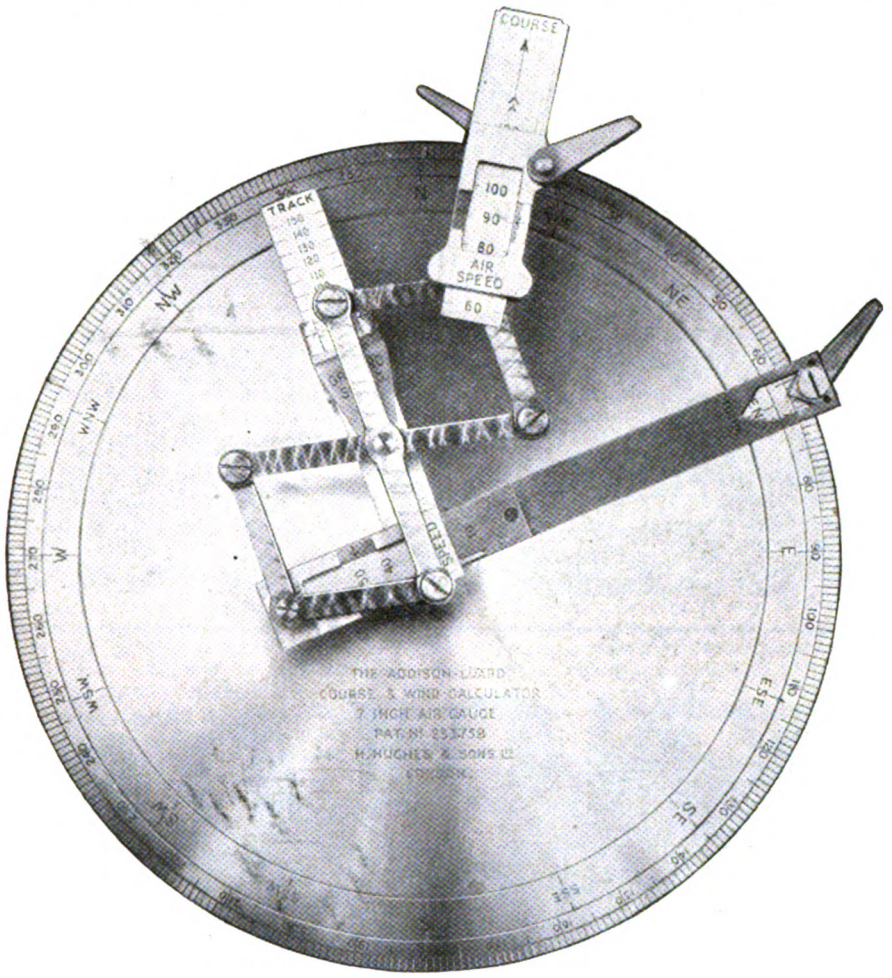

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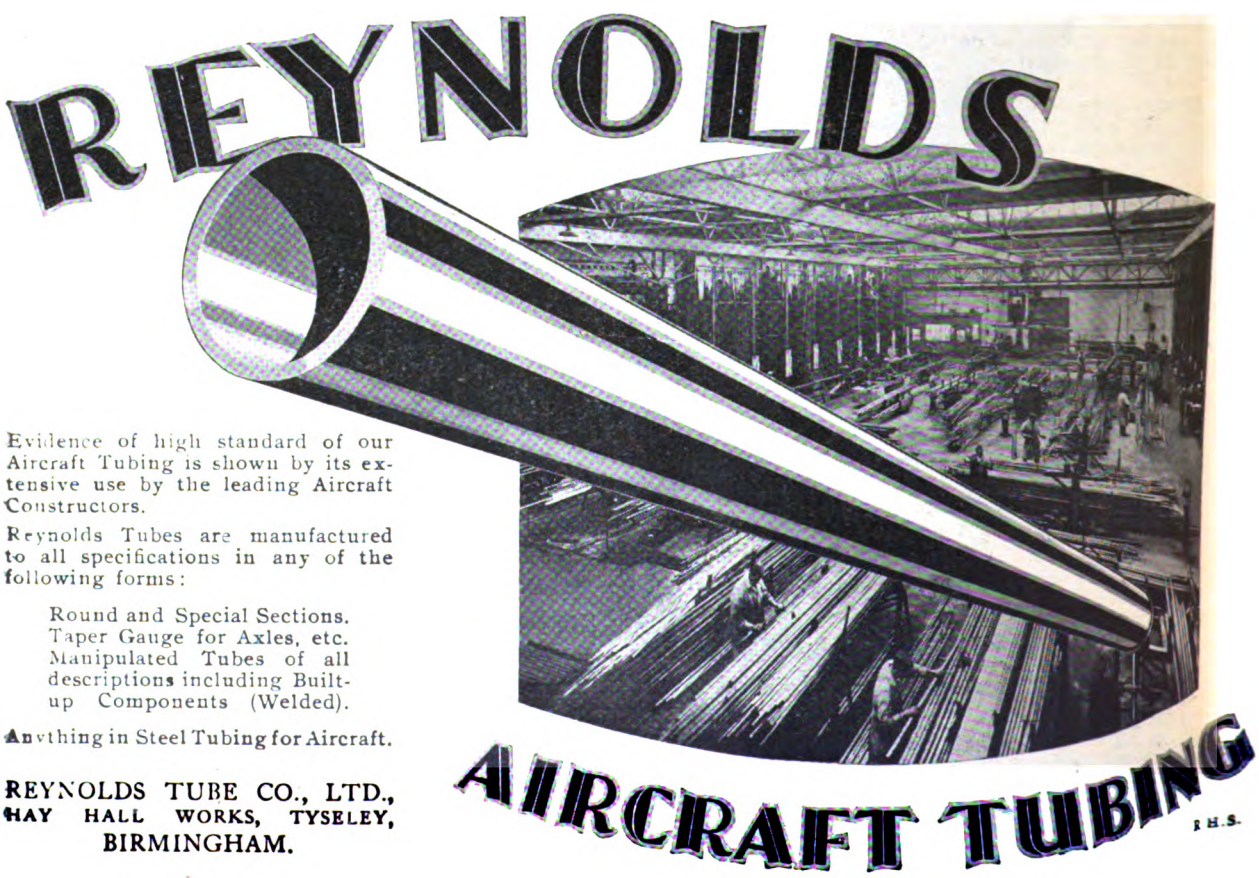

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AERONAUTICAL ENGINEERING
SUPPLEMENT TO "THE AEROPLANE"

RACING SEAPLANES AND THEIR INFLUENCE ON DESIGN.

By R. J. Mitchell, A.M.I.C.E., F.R.Ae.S.

Quite a lot of information and experience is gained in the development of racing aircraft which is of undoubted value to the designer in all branches of aeronautical engineering and in many ways this has had a pronounced influence on the design of both military and civil types of aircraft.

During the last ten years there has been an almost constant increase of speed in our racing types. To maintain this steady increase very definite progress has been essential year by year. It has been necessary to increase the aerodynamic efficiency, and the power-to-weight ratios of our machines, to reduce the consumption, and the frontal areas of our engines; to devise new methods of construction; and to develop the use of new materials. The results obtained in the form of speed have been a direct and absolute indication of our progress in aeronautical development.

Speed in the air must always be a measure of aerodynamic efficiency, which in turn must always be the most important consideration in all aircraft design. The special requirements of racing aircraft are very exacting. All the design requirements appear to be opposed to the production of speed. The most efficient racing machine satisfies these requirements with the smallest possible margin.

Under our present state of development the ideal racing machine must have only just sufficient excess propeller-thrust to overcome its resistance on taking-off, otherwise we are sacrificing propeller efficiency under top speed conditions.

Its floats must have only just sufficient reserve buoyancy to enable it to hydroplane, take-off and land reasonably safely, and to give it sufficient static stability. If these requirements are overdone we are sacrificing speed due to excess weight and excess air resistance of floats.

Tankage for petrol and oil and cooling surface for water and oil must be only just sufficient to feed and cool the engine, or further loss of speed will result.

The attainment of these happy results is sometimes assisted by the engine developing more horse-power than has been assumed in design conditions, or by the machine coming out over weight and thus working a little nearer to the limits than intended. But provided the final result is as indicated the means of attainment is of secondary consideration.

Working to very close limits demands a very accurate investigation of every detail and leads to more definite knowledge concerning the satisfaction of requirements than is obtained in the design of more conventional aircraft in which larger margins of safety can be allowed.

It will only be possible in this short article to touch very lightly on the interesting points which arise in the development of racing aircraft and the influence of some of them on the design of conventional types.

The taking-off characteristics of racing seaplanes form a very interesting subject.

Taking-off is becoming one of the most difficult requirements to satisfy. As we increase speeds this difficulty increases. This appears contrary to expectations, as one would expect at first thought that taking-off would become easier as we decrease our weight per horse-power, and that there would be a very large reserve on a machine with a horse-power loading of less than three pounds.

In Fig. 1 are given curves of propeller-thrust and of total resistance of machine for the S.6 seaplane, starting from rest and up to the top speed condition. It will be seen that there are very wide variations in the excess of thrust over resistance and at two points before take-off this is well under one hundred pounds.

One point is at the hump-resistance of the floats and the second point is just before take-off. This second point is not experienced with normal types of seaplanes as they usually have plenty of reserve thrust throughout their take-off if they have sufficient to get over the hump resistance.

There are two main causes for this second point of "stickiness." The first is due to the special characteristics of the propeller. Starting from rest the propeller is working at angles of attack considerably larger than the stalling-angles of the sections. Its thrust per horse-power is therefore extremely low. As forward speed is gained the angles of attack are reduced and the blades become less stalled thus working at a higher lift coefficient. This causes a reduction in the revs. per minute, and still further lowers the thrust. The stalling point of the blades occurs at about the take-off speed at which point the revs. and thrust are lowest. After this there is a very rapid increase in propeller efficiency.

The second cause is due to the high taking-off speed. The water resistance of the floats remains abnormally high right up to the point of take-off, when practically all the weight is taken on the wings. This is due to the very high frictional resistance at speeds of about one hundred miles per hour.

These taking-off characteristics seem to indicate that it will be necessary to use a variable pitch propeller before very much higher speeds are attained with racing aircraft, and that, as the speeds of service types increase, the variable pitch propeller will become correspondingly more important.

Very extensive progress has been made in engine design. During the past few years the weight-per-horse-power of our racing engines has been reduced by fifty per cent., and the frontal area per horse-power has been halved. A large proportion of this progress has been passed on to standard engines used in Service and civil craft.

It is quite safe to say that the engine used in this year's winning S.6 machine in the Schneider Trophy Contest would have taken at least three times as long to produce under normal processes of development had it not been for the spur of international competition. There is little doubt that this intensive engine development will have a very pronounced effect on our aircraft during the next few years.

Progress in seaplane float design during the last few years has been very largely due to the practical experience gained from the operation of our racing craft and to the intensive research work in wind channel and tank that has been found necessary to satisfy requirements. It is difficult actually to compare the efficiencies of various types of floats as they depend on a number of factors, such as water re-

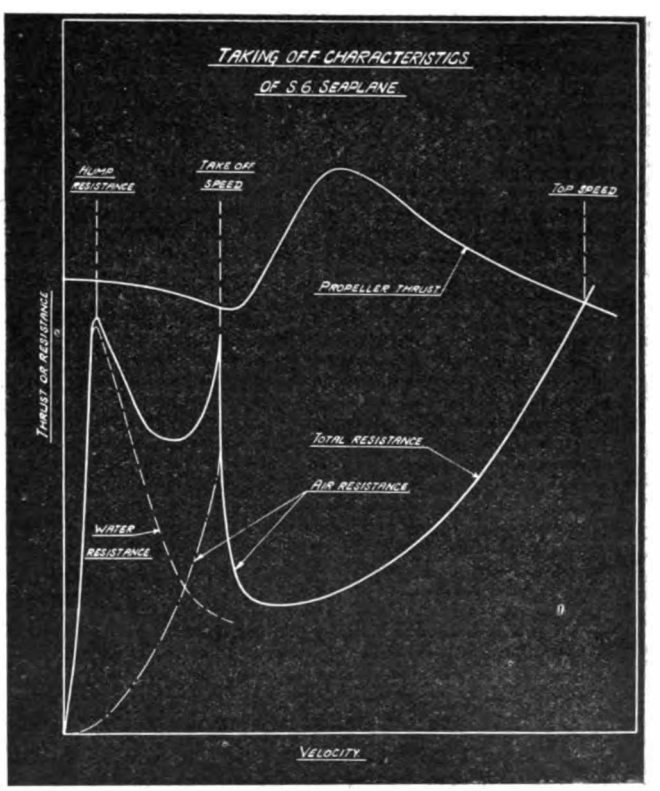

FIG. I.—Curves of propeller thrust and of the total resistance of the Supermarine S.6 seaplane.

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sistance, air resistance, seaworthiness and weight. The figures given in Table I, however, will serve to indicate that considerable progress has been made in float design.

TABLE I.

Comparative Weights and Air Resistance of Floats.

	Wt. per 1,000 lbs. wt. of aircraft.	Air resistance at 100 ft. a sec. per 1,000 lbs. wt. of aircraft.
S.4 (Wood)	108	3.08
(Metal)	115	3.08
S.5 (Metal)	110	2.72
S.6 (Metal)	95	2.42

It is interesting to note that a few years ago the flat-bottomed box-section type of float with a spring chassis was almost universally used. This type has now almost disappeared, and has given way to the well-known Vee-bottomed and round-top-sided type developed for our racing craft.

This modern type of float requires no shock-absorbing devices in its chassis, is more seaworthy, can be built lighter and has very greatly reduced air resistance.

Flying-boat hulls have shown similar improvement in seaworthiness, air resistance and weight.

The radiators developed in our racing craft for cooling water and oil have shown more progress than any other characteristic, and form a highly potential source of improvement in general aircraft design.

In Table II figures are given comparing our standard honeycomb radiators with the various other types of radiators which have been produced.

TABLE II.

Comparison of Radiator Efficiencies.

Figures for Standard Honeycomb 10 x 120 m.m. tubes taken as 100 in each case.

Constant speed taken in each case.	Honeycomb.		Wing Surface Type.			
	Standard Hexagonal 10 x 120 m.m.	Long Tube Hexagonal 10 x 360 m.m.	Externally Corrugated Brass.	Externally Flat Brass as "S.5."	Externally Flat Dural as "S.6." Without internal cooling.	Externally Flat Dural as "S.6." With 12% internal cooling.
Wt. of radiator per h.p. dissipated	100	179	300	410	75	67
Resistance per h.p. dissipated ..	100	76	15	0	0	0
H.P. dissipated per unit of cooling surface	100	58	50	66	81	92

These figures may require a little explanation. The first of the wing-surface type radiators described in the table as the externally-corrugated brass radiator is the type first used by the American racers. This type adds a considerable amount of resistance, owing to the external corrugation increasing the area of surface and thereby adding to the frictional drag. It is placed over the wing-covering of wood or metal and is about three times the weight of a corresponding honeycomb radiator.

The next development of wing-radiator is the type as used on the S.5 seaplane. This has a flat outer surface and therefore adds no direct resistance to the machine. This is still heavier, however, than the externally-corrugated type owing to the necessity for covering a larger area of wing. It also is placed on top of the wing-covering of wood or metal.

The next development is the type as used on the S.6 seaplane. This type is made from thin duralumin sheets formed into a double skin with a water-space of 1/16th of an inch between. This double skin is fixed to the spars and ribs of the wing and forms the wing covering. It is strong enough to stiffen the wing to resist torsional stresses.

The dual purpose of radiator and wing covering saves very considerable weight, and the added weight due to the radiator is very small. This type has the further advantage of placing the whole of its surface in contact with the cooling water; thus increasing its cooling efficiency per sq. ft. of surface.

A further development in this type of radiator is that of internal cooling,—which was used on the S.6 seaplane. Small air-intakes were placed at the wing-tips, opening in the direction of air flow, and allowing air to enter the wing. Exhaust ports were placed at the wing-roots, exhausting the air from inside the wing. A flow of air through the wing at a velocity of about thirty-five miles per hour was obtained in this way, and the inside surface of the radiator covering was used for cooling purposes in addition to its external surface.

This internal cooling was responsible for an increase of about 12 per cent. in the cooling capacity of the radiators. No loss of performance could be traced to this induced air flow inside the wing.

It is not outside the bounds of possibility that by [illegible] the air inside the wing at certain positions at the wing [illegible] an improvement in the wing characteristics might be [illegible] tained. Further investigation on this point might be carried out with advantage.

The last column in Table II gives the comparative figures for the S.6 type of radiator, allowing for the increase due to internal cooling.

These figures show that a water-cooled engine can be cooled without adding any air-resistance to the machine and by the addition of only seventy per cent. of the weight of a corresponding honeycomb type of radiator.

Our experiments on radiators indicate that with the development of evaporative cooling it will be possible to use metal-covered components of a machine such as wing floats and sections of fuselage, as steam-condensers, without the addition of any internal gear,—except to drain off the condensed water and return it to the engine. This would simplify cooling systems and greatly assist ease of maintenance, thereby making them more suitable for conventional types of civil aircraft.

The advantages to be gained by the "no resistance cooling system" are indicated if the figures given for radiators are applied to an engine nacelle as used on outboard-engined machines, using the horse-powers available from standard types of water-cooled and air-cooled engines. A comparison is shown in Table III.

TABLE III.

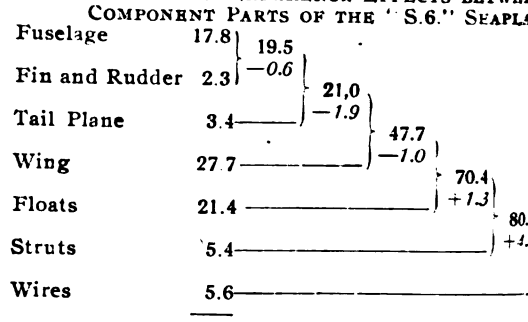
	Lbs. Resistance at 100 ft./sec. per engine h.p.
Air-cooled engine nacelle	.12
Do. with Townend ring ..	.068
Water-cooled engine nacelle with radiator to cool at 140 m.p.h.	.081
Water-cooled engine nacelle without added resistance for cooling	.03

The question of interference-effects between component parts of a machine has been thoroughly investigated in our search for methods of reducing resistance on our racers.

In Table IV figures are given for the interference effects between components of the S.6 seaplane. It is indicated that if suitable precautions are taken the added resistance due to interference can be limited to that caused by struts and bracing.

TABLE IV.

Percentage Interference Effects between the Component Parts of the "S.6." Seaplane.



Figures in italics are the added interference resistances due to the addition of the relative component.

Total resistance due to interference	16.4%
Resistance due to interference of struts and bracing	18.1%

Other points which can be mentioned on which our racers have supplied us with useful information are as follows:

The ventilation cooling, and heating of cockpits at high speeds.

The dissipation of heat from water and oil with various types of radiators and at high air speeds.

The effects of high centrifugal loading, as when turning, on the correct functioning of petrol systems.

The production of streamline-section bracing wires.

Problems of control at high speeds, and (last, but by no means least) the great value of close co-operation between engine and machine designers.

DIESEL ENGINE DEVELOPMENTS.

The Fairbanks-Morse Company, U.S.A., makers of marine Diesel engines, are reported to be developing a Diesel aero-engine in their works at Beloit, Wis.

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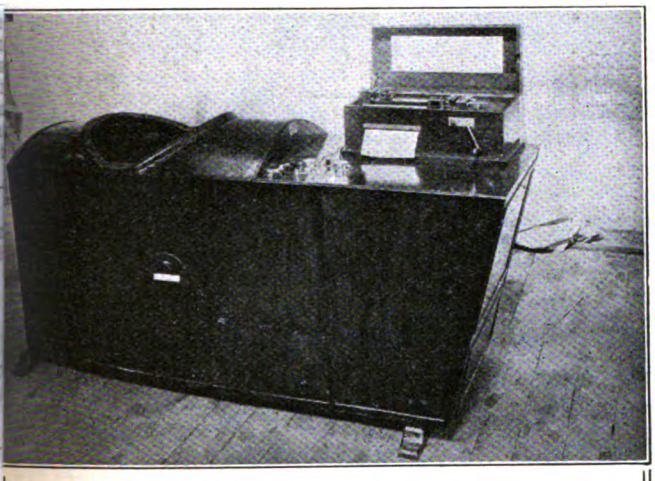

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THE CANTILEVER MONOPLANE AGAIN.

The apparent neglect by British aircraft firms of the cantilever monoplane has long been a source of surprise and also disappointment to the writer. Surprise because it is rather unlike our peculiar race not to copy and improve on the successful designs of other countries, and disappointment because the cantilever monoplane is, or can be made, such a very much more beautiful flying-machine than the existing strut-and-wire biplanes.

However, before expressing his views on this interesting subject, the writer would like to point out that, although he is what is known as a "Nark" (R.A.F. slang for a chap interested in the development of flying machines and their accessories), yet he must emphasise the fact that he is not a mathematical nark; and therefore his opinions can carry but little weight, as they are not backed up by formidable rows of dy/dx, etc.

But the opinions of even such a one may have the desired effect of causing the brainy ones to take thought and argue one with another and produce the dy/dx.

The cantilever monoplane has been, up to the present, almost the sole monopoly of the Germans, who seem to have concentrated on the type. Also, from all accounts, they seem to have no intention of reverting to the braced biplane type. Indeed the German (and Dutch exemplified by Mr. Antony Fokker) ideas seem to be spreading across the North sea and also across the Atlantic. For what is the Ford machine but a Fokker? And so is the Avro. And the doctrine of Professor Junkers has inspired many an American designer. Very beautiful machines they are too. Machines that look right usually are right.

The writer does not suggest for a moment that the British biplanes are inferior in any way either in performance or strength to the more beautiful foreign monoplanes. On the contrary, he believes that the home-produced machines are usually the superior. But he does believe that the line of future development lies rather more with the monoplane.

The German and Dutch engineers are no fools. Yet with few exceptions our firms are content to carry on in the old way with the strut and wire type.

The chief difficulty of the designer of the internally braced monoplane seems to be that of combining sufficient strength with a structure-weight low enough for the machine to be able to compare favourably with the braced type for payload and performance. And the chief difficulty in the strength problem is that of providing sufficient resistance to torsional vibration of the wing. This, of course, is of supreme importance in machines designed for high performance and extreme manœuvrability.

The writer is open to correction but he thinks that, so far, there is no really successful and proved cantilever monoplane fighter. Certainly no such type has been adopted by any Service yet. Even Mr. Fokker had to use "Torsion struts" and make his cantilever fighters into biplanes (although still cantilevers).

The problem of torsion becomes less acute when the machine is large, and not subjected to violent aerobatics, and so the monoplane is used for big machines.

Up to the present the most general method adopted for resisting the tendency of the wing to twist has been that of using stiff covering for the wing. This method is adopted by Fokker, Wibault and Rohrbach. The rigid skin of the wing stabilises the spars and also helps to take the bending loads. This type necessitates at least two spars and the "active part" of the wing structure is in the form of a rectangle in section.

Then there is the system of the multispar, interbraced structure, developed by Professor Junkers. This also apparently needs a fairly rigid skin to help counteract the torsional loads. Both these systems are well tried and successful but would appear to be very heavy.

About a year ago a very interesting development occurred. A large English cantilever monoplane of some 80 ft. span appeared and soon proceeded to prove its worth by doing a non-stop flight to India. Much to the amazement of the Continental designers the wing of this large and heavily-loaded Fairey monoplane was covered with ordinary fabric.

It was found that the machine had two ordinary wooden box-spars taking the load, with a system of steel pyramids between the spars to resist torsion. These pyramids had their bases on the bottom of the spars, and so provided an exceedingly ingenious and calculable torsion resister. This last point is important because it seems to be rather beyond the mathematical narks to calculate the torsion resistance of a skin covering.

Then a little later, there appeared the very interesting and promising design of Mr. Stieger of the Mono-Spar Wing Company. This wing uses one spar only and that spar is braced against torsion in a manner very similiar to that employed in the Fairey Monoplane. The difference was that the pyramids are made of wire and therefore double-opposed, with struts taking compression, and also the bases lie in the vertical instead of the horizontal plane.

But to the ordinary lay mind the two systems are almost the same. However, the Mono-spar people claim that by the use of one spar placed at the greatest depth, it is possible to build a more economical girder to resist the bending loads than by using two spars of lesser depth. This would appear (again to the lay mind) reasonable and true although perhaps a mathematician might be found who could disprove it. Also the Mono-spar would appear to be a simpler thing to construct and also possibly cheaper than two spars.

Unfortunately very little seems to be known about it and the writer does not know of a successful aeroplane which employs this principle. Being convinced of its soundness he wrote to Mr. Stieger and urged him to demonstrate the principle by making, not a huge stately weight-carrier, but a small cheap aerobatic machine. Obviously, if the principle will stand advanced aerobatics, it will also trundle passengers sedately through the sky. The writer even offered to test such a machine if made, but unfortunately got no answer to his letter.

However, it is possible that this principle is being tried out and may soon appear in concrete (or preferably alloy) form. The writer, with great diffidence, now ventures to offer a suggestion towards this interesting problem.

The suggestion is that a mono-spar type of construction be employed on account of its obvious weight-economy as a beam, and also because of its ease of manufacture. Then that this beam should be surrounded by a light-section tube which would take the torsion and drag loads.

This tube, tapering with the beam inside it, might be made in two halves, rivetted at top and bottom, would be suitably ridged to avoid buckling, and might also have tubes running through it in a horizontal plane to serve the double purpose of supporting the web of the beam and resisting the buckling tendency of the tube.

It would appear that such a structure might have distinct possibilities, particularly from the point of view of mass-production. Mr. Farren, in one of his very able papers states that, "in a structure such as the Junkers the torsional strength is probably not very different from that of a circular tube of the same cross-sectional area as that of the wing and of the same wall thickness."

The tapered-tube torsion-member is also discussed by Mr. Duncanson in a paper on cantilever wings. This article was most interesting to the writer as he had carried out a very rough experiment by constructing two model spars of steel, and reinforcing one against torsion by welding on a series of steel pyramids and the other by rivetting a conical tube around it. The weight of the spars and the torsion-resisting members were identical and, on test for torsion, the tube won easily.

After this appeared the article by Mr. Duncanson, who reached quite a favourable conclusion mathematically with the tapered tube. It has an added advantage that a part of it can be employed as a petrol tank, which would be a great saving of weight especially in a machine such as the Fairey.

In fact the tubular torsion-member with beam inside has the following advantages:—

1. As a beam it is deeper, therefore more economical than the two spar structure.
2. It is cheap and easy to make. The beam is large and simple and the tube could be easily and cheaply made. One could imagine a machine which could stamp out the separate halves.
3. The tubular member reinforces the beam instead of taking torsional loads only.
4. The tube takes drag-loads also. (This would appear good engineering to make one member serve three or more purposes.)
5. The tube would not be so subject to stretching as the wires of the tension pyramid (Stieger) system.
6. The tube or a part of it would serve as a petrol tank. This would save the weight of a petrol tank and its fittings and minimise fire risks.
7. A mono-spar wing is a suitable type to house a folding undercarriage, or anything else which might be disposed in the wing.
8. It is a simple, straightforward structure, devoid of bits and pieces, fittings, wiring, rigging and trueing, will maintain its truth without attention, and is easily calculable.

The writer hopes that before long the mathematical narks will be stimulated to discussion, but, all the same, he is convinced that it would be well worth trying out as it has so many practical points.

It would seem that the best way of settling the argument would be to construct model wings, all of identical weight, on the Junkers, Rohrbach, Fokker, Mono-spar, Fairey and tubular systems and test them. Perhaps some public-spirited constructor may do this. The cost should not be so very much.—H. V. R.

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THE DEVELOPMENT OF METALS FOR AIRCRAFT PURPOSES.

On Dec. 12 Dr. Rosenhain, who is a Fellow of the Royal Society and President of the Institute of Metals, gave a lecture before the Royal Aeronautical Society on the Development of Metals for Aircraft Purposes. Dr. Rosenhain has been Superintendent of the Metallurgical Department at the N.P.L. since 1906.

The object of the lecture was to survey on broad lines the general trend of development and to estimate the present direction and future tendencies of such developments. The lecturer confined himself to the three groups of materials which are especially interesting to the Aircraft Industry. These three groups are the various steels, the alumainium alloys, and the very light alloys such as those based on magnesium.

These materials were considered under the headings of strength-weight ratio, stiffness, resistance to fatigue, resistance to wear, resistance to corrosion, strength at high temperatures, and ease of working.

DR. ROSENHAIN, who spoke extempore and with few notes, opened by explaining that when he was asked a month ago to give the lecture and in it to forecast future metallurgical developments, he replied that such a forecast was not possible. All one could do was to follow present developments and see therefrom a general tendency.

He found it easier to discuss what had been done and was being done rather than what might be done. He was not going to give many figures, as this had been done in a number of previous lectures each specifically devoted to one subject.

The Aircraft Industry, he said, makes exacting demands on the metallurgist. He talked of materials rather from the point of view of the properties required than of the materials themselves.

Aircraft materials because of the high strength-weight ratio required need more precaution in their development and are more expensive than materials produced for commercial purposes. We have to take a great many precautions to-day on a basis which is by no means secure. Whenever you have insufficient knowledge you pay for it by excessive precautions and consequently excessive price.

The development of aircraft materials are at once a source of joy and a source of sorrow to the metallurgist. Joy because he is not bound by considerations of cost, and sorrow because of the exacting requirements he has to meet, continuously, uninterruptedly, and always reliably.

It is a great mistake to rely too much on strength as estimated from the tensile tests. Even the impact test, such as the Izod, is only a measure of the work done in producing rupture. If you take a piece of antimony and a piece of hardened steel and made an Izod test on each, in both cases you get zero result.

While talking of the alloy steels which have a very high strength-weight ratio, Dr. Rosenhain referred to specific tenacity, which he defined as the strength in tons per sq. in. divided by the specific gravity. In the case of an 80-ton steel this figure is 10. A figure of 11 or 12 can be got, but only at the expense of ductility.

The cause of strength in a steel is the manner in which the interior structure is arranged. This is affected and effected both by the addition of other metals and by heat-treatment.

Among the aluminium alloys, duralumin has been dominant for the last fifteen years. This does not mean however that there has been no improvement. New casting materials have been developed. The possibility of increasing the tensile strength to 39 or 40 tons per sq. in. has been demonstrated experimentally.

The lecturer said that he was particularly anxious not to discredit the very light alloys such as those of magnesium. But to compare an alloy which has an elongation of 2 or 3 per cent. with an alloy steel which has 30 or 40 per cent. is absurd. By cold working, which will sacrifice a certain amount of ductility, the specific tenacity of aluminium alloys can be raised considerably above any figure for the magnesium alloys.

The lecturer said he was of the opinion that a certain amount of ductility was essential in a material. Specific tenacity must be measured in conjunction with elongation. He then showed a slide on which this point was illustrated numerically, and showed the advantage duralumin possessed in view of its greater ductility.

Dr. Rosenhain then turned his attention to Beryllium, which is beginning to attract attention because of its high strength-weight ratio and apparent resistance to corrosion. At the moment this material is very expensive, as though it were for jewellery. But as Tungsten was once highly priced and is now comparatively cheap, so will Beryllium probably become cheaper until it was perhaps twice the price of tin [now £183 per ton].

Although the new metal as at present produced has no ductility, Dr. Rosenhain is convinced that this feature can be obtained. The strength-weight ratio promises to be two or three times better than the best of the alloys to which previous reference has been made.

As regards corrosion, the material has so far not been produced in sufficient quantity to make adequate tests, but a laboratory specimen has retained its polish for a considerable time. Some Beryllium steels may shortly be available.

The lecturer said that stiffness depends on the elastic modulus of a material which is generally measured as the load required to double the length of the test piece. The elastic modulus for steel is about 30 millions, about 11-12 millions for aluminium alloys, and six millions for magnesium alloys. Alloys differ but little from the pure metals in the possession of this quality. A 3 per cent. addition of Beryllium to Copper increased the elastic modulus of the latter by 60 per cent. after age hardening.

Talking about resistance to fatigue, Dr. Rosenhain said that vibration is not responsible for damage unless the oscillations are large enough to put serious stresses into the material. In steels the fatigue range has a pretty definite ratio to tensile strength. The fatigue range in ultra light alloys is very low and remains to be investigated.

McAdam has recently completed a lot of work in America which illustrates the effect upon the resistance of a material to fatigue. The lecturer showed on a slide a number of test pieces of steel which had been heat-treated to different strengths, all failed at the same greatly reduced level when subjected to the corrosive effect of ordinary tap-water. But rust-resisting steels were immune from this feature.

In this connection the condition of the surface of springs is of the greatest importance and the strength can be considerably increased by grinding the surface. The lecturer said he would rather rely on the poorest spring steel which had a ground surface than the finest which had been left with a rough surface.

Corrosion in aircraft where it is accelerated by wind pressure is very important. Rust-resisting steels solve the problem, but they lack a high enough strength-weight ratio. It may be possible to overcome this by coating high-alloy steels with a layer of rust-resisting steel.

Such a method has actually been tried out with duralumin where this material is so treated that a layer of pure aluminium is formed on each side of the sheet. This has the disadvantage that such a sheet is manipulated in various ways during fabrication which tends to make the coating of no advantage. In any case a surface coating is a counsel of despair.

The Germans have produced an aluminium antimony alloy which forms a protective coating when immersed in sea-water which prevents further corrosion.

Resistance to wear is specially important in aircraft engines which are run very nearly at maximum speed, which means that the bearing surfaces are heavily loaded.

Specially hard surfaces for resisting wear may be got by case-hardening or nitriding. This latter process results in a very hard surface but requires the use of a special aluminium steel. The machined part is exposed to ammonia vapour at 500 to 600 deg. Cent. for a considerable period. There is no distortion, as quenching is not needed.

Another method of hardening is the "Cloudburst" method of Mr. Herbert, in which the part to be hardened is subjected to a deluge of small steel balls. [This method is also used for hardness testing and was described in Mr. Johnson's paper read before the R.Ae.S. on Nov. 21 and reported in THE AEROPLANE of Nov. 27.—ED.]

Materials of extreme hardness are the tungsten carbide mixtures such as "Carballoy," which are especially used for the tips of machine-tools. A layer of such materials placed over steel parts will allow much greater bearing-pressures to be used.

Materials which have to resist heat must not burn or scale. Dr. Rosenhain said that he thought that insufficient recognition has been made of the great development by the Steel Industry at home and abroad of the heat-resisting steels.

If we take one of these heat-resisting steels and test it in the ordinary way we shall get a certain figure. If we take it up to dull red heat (700 deg. Cent.) and test it we shall get a figure not very much lower, but if we apply a very much smaller load at this temperature and leave it these steels will break after a certain time. An alloy has been produced at the N.P.L. which is a considerable improvement on existing steels of this calibre.

Dr. Rosenhain thinks that the development of such steels will be valuable aids to the production of an internal combustion turbine. At first one would construct such a turbine to utilise the exhaust gases. Then the turbine would be developed until the turbine produced all the power and the engine was only a combustion chamber.

The development of these new materials must obviously call for new methods of production and manipulation. The super-hard materials will require new cutting tools. The lecturer mentioned that he has seen toughened manganese steel being machined like mild steel with special cutting tools, the tips of which were made of the tungsten carbide mixture previously mentioned. In the United States special high-speed lathes with light cuts and feeds were being produced for use with these super-hard cutting tools.

With reference to the jointing of materials the lecturer mentioned the cadmium-zinc solders which can be used with the alloy steels and yet fuse at low enough temperature to avoid impairing the temper.

Welding is popular because of its speed, its convenience, and its weight-saving properties. But there is the trouble of the impossibility of knowing what happens inside each weld. There is also the trouble of *the welded material being in the cast and not the wrought state.*

Various methods are being tried out for the non-destructive testing of welds. There are magnetic and electrical methods, but the simplest is that now being tried in America. An ordinary medical stethoscope is used and the weld is tapped with a light hammer, any irregularity inside is easily detected by the difference in sound.

The application of heat to the weld considerably reduces the strength of the metal. In most cases the metal cooling down slowly tends to soften the metal at some distance from the weld. It is at this point that fracture occurs, and so people say that the weld is stronger than the material, which is not entirely correct. [See THE AEROPLANE any time for the past 14 years.—in spite of ridicule and opposition. This is the first time that a metallurgist of note has rubbed these simple truths into the lovers of welding.—C. G. G.]

The ideal is to heat-treat after welding, but this is obviously only possible with small parts. There is likely to be some progress in the welding of duralumin. Weldable alloys will probably be developed which will assume their best conditions on cooling.

Dr. Rosenhain closed his lecture by saying that he had endeavoured to give a picture of the position as it appeared to a metallurgist. He laid stress upon the value of investigation and scientific research which supplies the materials with which the non-scientific inventor may build his edifice. Dr. Rosenhain's final words were at once a plea for and justification of basic research.

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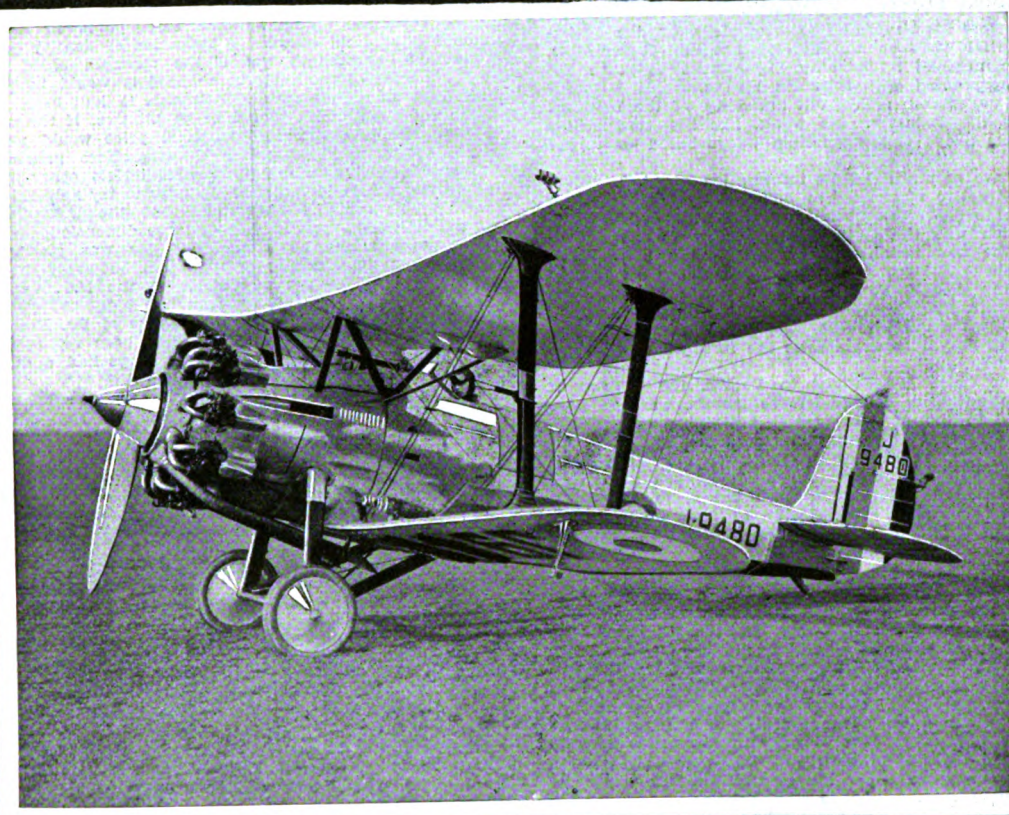

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The Discussion.

Colonel the Master of Sempill said, after some complimentary remarks, that most of those concerned with the development and production of the materials to which Dr. Rosenhain had referred were present, but he would first call on Mr. Pye, Deputy Director of Scientific Research at the Air Ministry, to open the discussion.

One mentioned in the last report of a lecture that speakers were so much more easily heard if they spoke from the dais. Mr. Pye set everybody a good example by doing this, it was only towards the end of the discussion that people stayed in their places to speak.

Mr. Pye expressed his gratitude for the paper, on which he congratulated the lecturer. He found his horizon had been considerably widened during the lecture. He agreed with the lecturer that all aeronautical progress depended on research.

He thought that most aeronautical improvements were due to improvements in material such as the development of 100-ton steel. He referred to the need of a Publicity Department to make the Industry generally acquainted with scientific results.

Research must be undertaken with a full knowledge of the technical difficulties borne by the Industry. He would like the comparative figures for aluminium alloys and magnesium alloys based on .1 per cent. proof stress.

He was glad to have so much definite information about Beryllium because such an attractive material was liable to produce misstatements. He referred to conversations he had had with Dr. Illing of Siemens-Halske, which was the German firm closely identified with the production of the new metal. Dr. Illing quoted a price about the price of gold (about £25 per lb.) for small quantities for laboratory work. Dr. Illing thought the price would never be less than the price of silver. Mr. Pye therefore thought that Beryllium would have its greatest field as a low per cent. alloying element. The addition of 1 per cent. of Beryllium would raise the strength of stainless steel to 85 tons per sq. in.

Dr. Atchieson, the Chief Metallurgist to Booths, the makers of Duralumin, and the authority on non-ferrous metals, was the next speaker. He referred to the need for better protection against corrosion. He said that there were no known stainless alloys of aluminium or magnesium. He would hate to think that anodic oxidation was the last word in surface protection. He did not think that the production of Alclad (a duralumin with the aluminium coating) would do much to simplify the difficulty, as from its nature it could only be used as sheet. It could not be supplied in extruded or tubular form or as drop forgings.

Referring to welding, he said he thought that the chief reason for its use was to avoid the troubles of rivetting. He referred to the advantages of using extruded sections of aluminium alloys. The use of such sections saved much rivetting. He thought that there was every likelihood of aluminium alloys getting stronger. He thought that wrought materials were far more important than cast.

Major Wylie said that a reason for the use of welding was to save work in the drawing office. This was specially so in America.

Mr. Sutton regretted that no advance copies of the paper were available, as it was difficult to join properly in discussion without this advantage. He had hoped to hear more of what were the desirable physical qualities in any material. He queried the usefulness of specific tenacity.

Referring to the development of high-speed steels resistant to corrosion, he said that rustless steel tubes and fittings were already in use on aircraft. Chrome-molybdenum steel and manganese steel tubes slightly cold-drawn had been found to age-harden and were therefore useful for welding. He would like to have the analyses of the steels the figures for which were shown for the strength at high temperature test. He asked whether the resistance of Beryllium to corrosion was not over-rated.

Wing Cdr. T. Cave-Browne-Cave, C.B.E., said that bearing materials were not mentioned and there was the likelihood of these having to be replaced. The high M.E.P.'s necessary in compression-ignition engines resulted in high bearing pressures. He suggested that the forming of a Department of Scientific Publicity might take the form of a grant to the R.Ae.S.

Captain Swan, of the R.A.E., Farnborough, referred to the difficulty of replacing highly stressed steel parts in internal combustion engines by light alloys. A reduction of density generally meant a reduction in strength, yet if the strength could be maintained and the weight of the parts be reduced it would be possible to run the engines at higher speed. Although it had been suggested that the cost of such alloys would be prohibitive, if the actual cost per h.p. were less, the increased material price would not matter.

Mr. Radcliffe, speaking for drawing-offices generally, said that there was a disinclination to use materials other than the well-tried variety. This lecture was an urge to try new things. Referring to welding he said he understood that the U.S. Government had built a heat-treatment chamber of large dimensions in which a complete fuselage might be normalised. He was glad to hear about the latest materials for new cutting tools, but every time the drawing office endeavoured to use new steels of the H.T. variety the workmen said such steels increased the cost.

Mr. S. L. Archbutt, a former colleague of Dr. Rosenhain, said he thought that the magnesium alloys had been rather roughly treated in the lecture. He thought that such alloys had a definite range of fatigue resistance.

Dr. Rosenhain, replying, said with reference to the Department of Scientific Publicity suggested by Mr. Pye and Wing Cdr. Cave-Browne-Cave, that commercial practice did lag far behind. Y-alloy was discovered in 1917 and it was only now (12 years after) that this material was coming into general use. Between 1906 and 1916 aluminium bronze was discovered by Prof. Carpenter and yet people in this country could never obtain any commercially. For years this material was used in various parts of Ford trucks and for other purposes.

He did not think that Industry as a whole was far-sighted,—all developments were forced on it by the basic research worker. He did not think that the desirable properties of any material could be expressed in a single figure of merit. Magnesium alloys had a definite range but he did not think this was any definite advantage. The discussion of bearing metals would lead one so far afield that he had not touched upon the subject at all. As bearing pressures went up so would white metals become unsuitable and would have to be replaced. Aluminium alloys could be used and were already being used in certain engines outside the aeronautical industry. Although the cost of the raw Beryllium material was not likely to decrease much, a process of manufacture had been developed in this country which was no more expensive than that used for aluminium.

THE SWINGS AND THE ROUNDABOUTS.

[*The Strength of Shafts in Vibration.* By J. Morris, B.A., A.F.R.Ae.S. 190 pages 9½ in. by 7½ in. Crosby Lockwood & Son. Supplied by The Aeroplane Book Department, Cannon House, Pilgrim Street, E.C.4. 30s., plus postage.]

Periodic vibration has proved to be the cause of unexpected failure for the engineer since the beginning of modern engineering.

The first experiences were those concerned with bridges failing when troops marched over them without breaking step. Later, when the mechanical engineer began his work, speeds, at which belts flapped and broke, at which ships shook from stem to stern with engine vibration, at which railway locomotives either broke their crankshafts or left the rails, at which aeroplane wing-flutter became destructive, at which expensive 6-cylinder motor car engines made the owner wish that he had been content with a single-cylinder engine, were always impressing on the mechanical engineer the fact that his universal panacea of making the working parts stronger, and incidentally heavier, was not so effective as it was customary to believe.

Periodic vibrations have been almost as potent a cause of deaths and ruined reputations as for instance the Boer War.

The Strength of Shafts in Vibration by J. Morris makes an exhaustive examination of the subject at "the present state of the art." The author points out the defects in the theories of Chree and Dunkerly which he used as the basis of R & M No. 551 (1918) and follows step by step to a more rational solution of the problems

The book is a purely mathematical examination of various general cases, followed by a more particular presentation of airscrew drive, geared, and direct drive, with various arrangements of cylinders. Many combinations of engines and airscrews for power plants with more than one engine are described.

There are a few practical examples worked out and there are tables of deflection coefficients.

The quotation: "It should be made quite clear that the method outlined above for obtaining the equivalent system is entirely empirical, and the only justification for its use is its reasonable agreement with observed results in the cases known to the author"—shows that the factor of personal judgment has not been eliminated from the equation.

This work will help the designers of all high-speed engines to keep the speeds at which periodic vibration occurs outside the range of revolutions over which the engine is intended to be used, whether aircraft, motor car, or marine.—L. H. F.

HYDRODYNAMICS.

[*Leçons sur l'Hydrodynamique,* par Henri Villat. Correspondant de l'Académie des Sciences, Professeur à la Faculté des Sciences de Paris. Published by Gauthier-Villars et Cie. 55, Quai des Grands-Augustins, Paris. 50 francs. To be got, to order, from The Aeroplane Book Dept., Cannon House, Pilgrim Street, E.C.4.]

Mathematical determination of the motion of a body through fluids is complex, and in a measure unsatisfactory. The mathematically perfect fluid is a material which Nature has not supplied for the use of man, and just so far as the perfect fluid is modified to approach to reality so does the difficulty of the mathematician increase.

The author has collected together the substance of lectures given by him at the Sorbonne in 1925 and 1926 when he held the "Chaire de Mécanique des Fluides."

The object of the work is expressed in the preface, which says that:—

Notre but a été d'exposer des théories dues, soit à divers auteurs, soit à nous-même, d'une façon aussi claire que possible pour un lecteur possédant les ressources mathématiques usuelles, mais non forcément renseigné à fond sur les questions spéciales.

The author accomplishes this object, giving the present position of Hydrodynamics as presented by the writings and lectures of MM. Cisotti, Thiry, Bénard-Karman, Toussaint, and Carafoli. He deals at length with the work of M. C. W. Oseen and his pupils, and shows that although the later methods of dealing with the problems of hydrodynamics approach more closely to observed facts, there is still a considerable discrepancy.

The book should be of interest to those who study the mathematics of fluid motion.—L. H. F.

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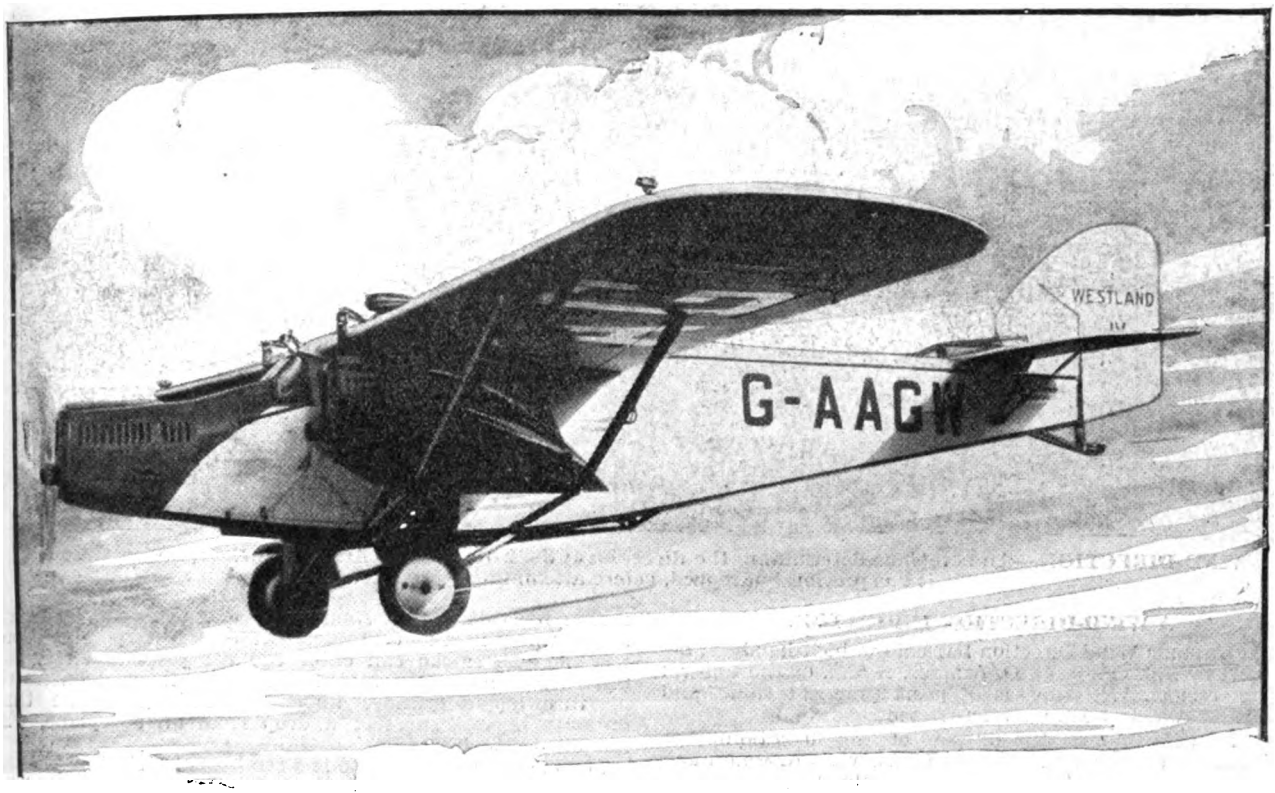

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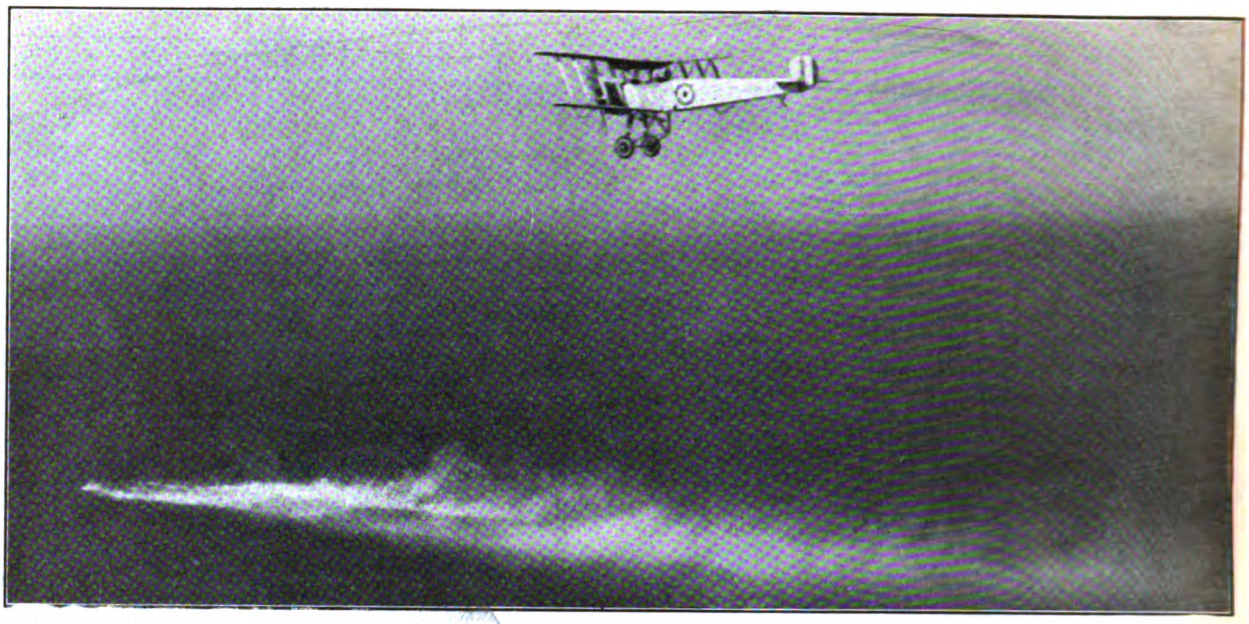


WIND DIRECTION.—An aeroplane determining the direction of the wind from an Armour smoke cylinder, which it has previously dropped, before attempting to land.

A WIND-DIRECTION INDICATOR.

The Armour Wind-Direction Indicator which has been developed by Flg. Off. J. G. D. Armour, R.A.F., of the Central Flying School, Wittering, is of great practical value, and should be widely adopted when it becomes known.

As its title implies, the purpose of the invention is to give instant and ample indication of the wind direction and approximate strength. Anyone with only very small experience of cross-country flying knows the difficulty of finding the exact direction of the wind in making a forced landing in fog or gathering darkness, or in taking refuge from the weather or to inquire one's whereabouts. The Armour indicator lessens the danger to a very large extent by giving the nature of the wind when other or natural signs are invisible.

The necessary apparatus is simple and compact. It consists of a magazine and a toggle-operated release control. The magazine normally holds six glass cylinders each containing a chemical compound which when in contact with air gives off thick white vapour like smoke. These cylinders when dropped from an aeroplane break and the resultant plume of vapour indicates the direction and strength of the wind on the ground just where the landing is to be made.

The contents of the cylinders are completely non-incendiary and they can be dropped without any harm on haystacks, standing corn or dry grass.

The magazine is a tinned-steel rectangular box, measuring 7½ in. long x 5 in. deep and 1½ in. wide. The top is a hinged lid, which, when closed, is hermetically sealed. The reason for this is that should any of the smoke cylinders break when in the container—an almost impossible contingency—no smoke can enter the cockpit and affect the pilot. As a matter of fact, Mr. Armour has demonstrated by throwing a cylinder about on the aerodrome that ordinary knocks, short of a drop from an aeroplane, will not break the cylinders.

The base of the magazine is a semi-tubular shutter pivoted at its ends and operated by a toothed pulley connected by Bowden control to the pilot's cockpit. The cylinders rest one upon the other above this shuuter when it is closed. To release a cylinder the toggle on the instrument board is pulled, which rotates the shutter through 180 degrees. This releases one cylinder only, as the next one is held in check by the rising edge of the shutter, ready to fall into place when the shutter is returned to position by a return spring.

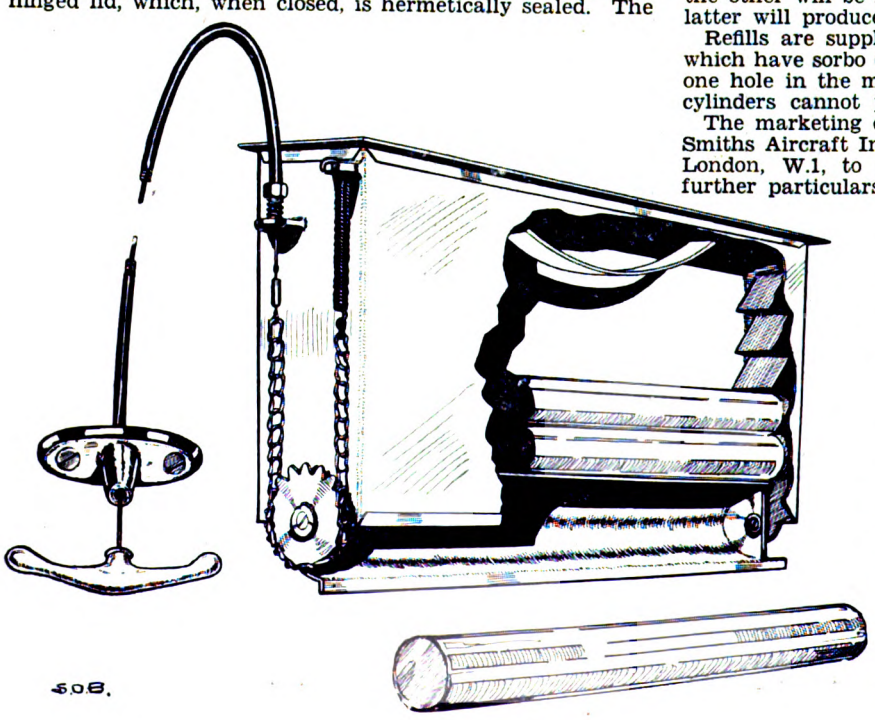
On the ends of the magazine are strips of cork, notched at intervals equal to the diameter of the cylinders to keep them in parallel should vibration tend to dislodge them, and a flat spring at the top of the container keeps the cylinders steady.

After considerable trial the best disposition for the magazine has been found—in the Moth—to be in the map-case, where it still leaves plenty of room for maps and is handy for reloading. A slot is then made through the floor through which the cylinders are discharged.

Two other indicators are being developed. One will be for the purpose of finding wind direction over water and the other will be for use over snow-covered country. This latter will produce coloured smoke.

Refills are supplied in half-dozens in circular containers, which have sorbo end packings and a sorbo diaphragm with one hole in the middle and five holes radially, so that the cylinders cannot possibly knock together.

The marketing of the apparatus has been taken over by Smiths Aircraft Instruments, of 185, Great Portland Street, London, W.1, to whom application should be made for further particulars.



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The components of the Armour Wind Director Indicator. The magazine is stowed low-down in the cockpit with an aperture in the floor and the release is located on the dashboard.

FOKKER AIRCRAFT IN BELGIUM.

The Société Anonyme Belge d'Exploitation de la Navigation Aérienne (Sabena) has adopted the Fokker FVII-3m monoplane (three Sabca-built 230 h.p. Titan engines) as the equipment for its air lines in Europe and the Belgian Congo to replace the Handley Page W8F three-engined biplanes which have been in use for several years.

The licence for the construction of this type was acquired by the *Société Anonyme Belges de Constructions Aéronautiques* (Sabca) from the Fokker company in January 1929 and a number have already been delivered to the Sabena company.

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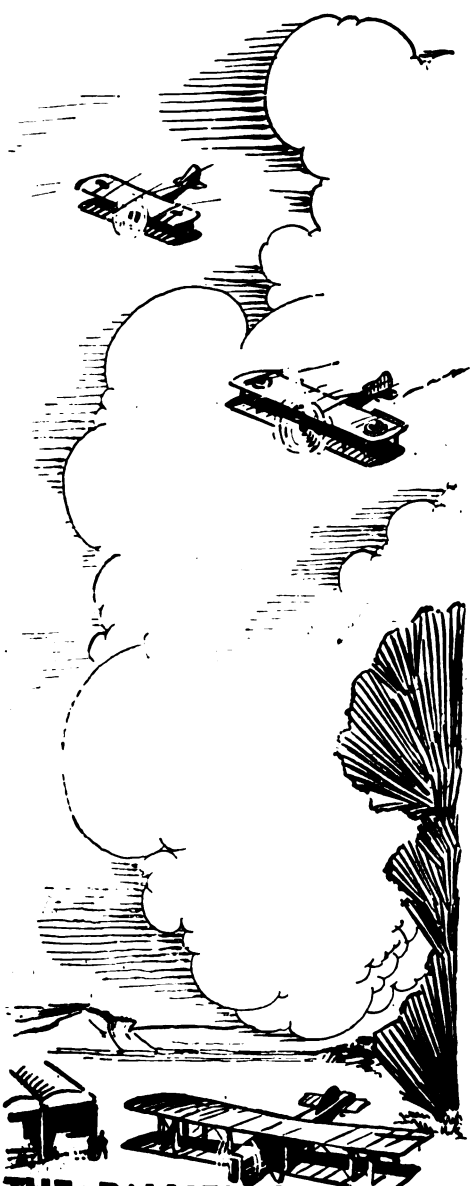

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THE LIGHT AEROPLANE
AND THE FLYING CLUBS.

A SPORTING EFFORT.

At 03.00 hrs. on Dec. 20 Mr. F. C. Chichester took off from Croydon in a Gipsy-Moth, G-AAKK, with the intention of flying to Australia. Although the De Havilland Company had an idea that he might try to fly to Australia, Mr. Chichester kept all his plans so quiet, and so avoided publicity, that the makers of the machine and engine did not even know what day he intended to start or whether he seriously contemplated flying to Australia.

This modesty naturally gives one confidence in his ability. For all the history of aviation teaches us that those aviators who talk most about what they are going to do achieve the least success.—Which applies equally well to other lines of business.

Mr. Chichester is a remarkable personality. He is a New Zealander by birth, and, at the age of 34 and unmarried, he is a director of five quite important companies in New Zealand, from which he seems to have amassed considerable wealth. He learned to fly at the Brooklands School of Flying three months ago and on qualifying for his A certificate, bought his own Gipsy-Moth.

Thereafter he went for a tour round Europe with complete success, and nobody ever heard anything about it. Altogether he has done about 200 hours' flying in three months.

In spite of having made no announcement about his intentions the fact that his particular Moth carries 59 gallons of petrol, which is enough for 10 or 11 hours' flying and a range of about 1,000 miles, seems to indicate that he is out to do the journey in long hops. The only thing that is known about his intentions is that he has made arrangements with the Shell Company for dumps of petrol and oil at certain specific places.

THE SINGAPORE FLYING CLUB.

The total flying time for October was 98 hrs. 30 mins. which is a record for the Club. This is very satisfactory when one considers that the weather was by no means perfect and that for many days only one machine was available. Most of the time was put in on five Sundays and holidays when the machines were only on the water for changing pilots and pupils and re-fuelling.

On Oct. 11 the engines in both serviceable machines "passed out," one in the air at 07.30 hrs. and the other at 18.00 hrs. Both engines had to be taken out and new ones put in. Both machines were flying again on the next day, one at 14.00 hrs. and the other at 17.00 hrs.,—evidence of the keenness and hard work of the ground staff in general and of the Ground Engineer, Mr. M. G. Harvey, in particular.

MORE MOTHS FOR CHINA.

The De Havilland Aircraft Co. Ltd. has received a further order for eight Gipsy-Moths for China. These are to be provided with interchangeable float and wheel undercarriages.

This brings the total number of Moths supplied to China up to 35, of which 31 have been supplied this year.

OVER THE COUNTER.

To be thoroughly up to date in their Christmas present trade the Army and Navy Co-operative Society, Ltd., wished to include a complete Gipsy-Moth in their Christmas display in their main premises in Victoria Street, S.W. Although the Society are not regular agents of the De Havilland Company, the firm loaned them a Gipsy-Moth "on sale or return."

Hardly had the Moth been delivered and placed in the showrooms than it caught the eye of Sir Hugh Clifford, G.C.M.G., G.B.E., Governor of the Straits Settlements and High Commissioner for the Malay States. Sir Hugh at once made himself a present of it, and also made arrangements with the De Havilland School of Flying for a course of flying instruction.

The Army and Navy Co-operative Society, Ltd., have been supplied with a second machine, also "on sale or return."

A TRIBUTE FROM THE STATES.

The following is an extract from a letter received by The Moth Aircraft Corporation, of Lowell, Mass., the American licensees for the D.H. Gipsy-Moth, from Skyways Incorporated, of East Boston, Mass.:—

We have just finished our first year of using Moths for instruction, and we were very agreeably surprised to find out how much we have accomplished in that time. We acquired our first Moth imported in April, and since then we have, as you know, taken four domestic (American-built) ships, the last two in September. Since April, we have "soloed" fifty-three students in Moths and have flown them eleven hundred and ninety-three hours.

We have at periods of extreme activity repeatedly flown these ships over eight hours in a day, which has been virtually impossible with any other equipment we have used heretofore.

During this time only one student has been hurt and his injury consisted of a swollen lip, obtained when he hit a fence, landing. The Moth, which landed on its back from a height of perhaps five feet, required only replacement of shock strut, prop, rudder and centre section struts. We feel that these facts should be of interest to those who think that the Moth because of its excellent performance must be too light to stand the strain of student flying.

"THE D.H. GAZETTE."

The Editor of *The D.H. Gazette* has received several inquiries as to whether facilities exist for the binding of Volume I, comprising Nos. 1—15 inclusive. Quotations have been obtained which show a wide divergence in price according to the number of sets to be bound.

It is requested therefore that those readers who retain complete sets and who would like to have them bound communicate with the Editor, c/o The De Havilland Aircraft Co. Ltd., Stag Lane Aerodrome, Edgware, Middlesex, who will get a quotation based on the number of replies received.

The Editor of *The D.H. Gazette* complains that a large quantity of the last issue has been returned to him owing to the addresses on the mailing list being out-of-date. If those people who have left their old addresses and are still interested to receive the *Gazette* will let the Editor have their new addresses he will be pleased to have the necessary alterations made to the mailing list.

GIPSY-ENGINED.—The Albatros L-82 two-seat light biplane which has a 90/100 h.p. D.H. Gipsy engine, welded steel tube fuselage and folding wings.

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TWO DECEMBER CAMEOS.

By Rodney Holt.

A glance at my wrist warns me that it is close upon five o'clock and, frowning, I attack the mass of papers on my desk with greater determination.

"George," I say to my assistant, "if Browns send in their new order whilst I am away, see that . . . . etc., etc."

The last documents are sorted. My junior and I have discussed every point that is likely to rise during the next fortnight. Trade, as a rule, is very quiet for a week or two after Christmas but I have told him that if anything important occurs he must wire immediately for me to return. I reach for my hat.

"Good-bye, sir," says George. "Hope you have a good time."

"It depends upon the weather," I reply. "A wet holiday in the country isn't too thrilling, you know."

An hour later—in the train—I am wondering whether I explained to George what to do if So-and-So write . . . . .

. . . . . .

Substitute "leave" for "holiday," 07.00 hrs. for 5.0 p.m. and 1917 for this present year of grace. One page of my diary, I see, contains the simple, almost prosaic entry, "Went on leave." And the memory of that long-past December morning comes back to me vividly as I read the words.

"Wake up, my lad. Early patrol for 'B' Flight."

I opened my eyes and regarded the speaker with extreme disfavour. He repeated the remark in a more urgent tone, tearing the blankets, at the same moment, from my recumbent form. Then I remembered . . . .

"Damn you," I said, "*and* your patrol! I'm going on *leave* to-day."

And I sat up in bed, dreamily contemplating this delightful fact. The menacing rumble of guns in the distance, which informed me that the war was proceeding with its usual vigour, appeared singularly unalarming to-day. The war, I reflected contentedly, did not interest me in the least—not for the next fourteen days, at any rate.

My companion was insinuating himself, with many grunts, into a Sidcot suit. "It would be very amusing," he observed, "if you went on patrol as usual and, with a Hun jammed nicely on your tail, realised suddenly that you ought to have gone home on leave!"

"Most laughable," I agreed politely.

Still chuckling at the idea, he ambled towards the door, pausing only to fire a final shot.

"Not that you're any use to the Flight," he assured me. "For the last week you've been too ruddy scared of breaking your neck and missing your leave!"

There was, unfortunately, a certain measure of truth in this taunt. My interest in aerial warfare during the past week had been, if anything, a little tepid,—for my great ambition had been to find myself alive on this, the seventh morning. And my young life had contained no sweeter moment than yesterday when, after my last show, I had switched off the engine, flung my helmet and gloves into a corner and proceeded to the Mess to drink my own surprisingly good health.

Presently, shaved, dressed and breakfasted, my bag deposited in the tender which was to take me to Boulogne, I strolled onto the aerodrome to see "B" Flight start.

Already the machines, looking like some queer gigantic beasts in the half light, had been wheeled from the hangars. A dank chill hung over the ground. The pilots were standing in a little depressed group by the hangar doors, polishing goggles and adjusting their helmets. They eyed my radiant going-on-leave apparel disapprovingly.

"What a pretty boy!" This was my room-mate and critic of my recent flying activities.

"I'm glad you think so," I returned. "I have taken special pains with my toilet this morning. I hope you boys will think of me—just about arriving in London—when you are coming back from your afternoon show. What about the long bar of the Troc.? And the Alhambra to-night? And," I added, feelingly, "not having to fly an aeroplane over the adjectival lines for two weeks?"

"Come on, chaps," growled the Flight Commander. "This bloke makes me feel sick with his yapping! He ought to stay and win the war with *us* instead of sneaking off!"

"Well, so long," and he wrung my hand warmly. "Sha'n't see you for some time. I'm off myself in a fortnight."

"I know," I said.—What I did not know then was that, within one short hour, the machine into which he was climbing would be lying, a blazing wreck, ten miles east of our lines.

The roar of six Hispanos now filled the air. The leader waved away the chocks, grinned a cheery farewell to me and opened the throttle. One by one "B" Flight took the air. A minute later they were heading in formation, for the lines. Yesterday one of those six Hispanos had *my* hand on its throttle,—and a fortnight hence—but never mind that now.

The machines were mere specks in the sky as I stepped into the waiting tender. The driver let in the clutch with a jerk . . . . Behind me lay the war, offensive patrols, Huns, "archie," fire and sudden death; and ahead lay—home, London, leave, *leave*, LEAVE . . . .

. . . . . .

"Hope you have a good time," says George.

"It depends upon the weather," I reply.

THE CHRONICLES OF R.100.

On Dec. 17 the R.100 went for her second flight and was in the air for about six hours. During the first flight of the airship from Howden to Cardington a certain lack of tautness in the fabric was noticed round the lower fin.

On this second trip special observations were made to secure data about this looseness. During this trip part of the fabric which seals the rudder hinge actually came adrift but was repaired in the air.

The time taken to moor the ship (32 minutes) was the fastest time yet recorded for this operation.

On Dec. 18 the airship was removed from the mooring mast to the second shed, where the tautness of the covering will be adjusted.

One imagines that the kennelling of these greyhounds of the air will allow everyone to spend a happy Christmas far from the cares and worries of the mast-head.

NEWSPAPER INACCURACIES.

Paragraphs, amounting in fact to quite important articles have appeared in Sunday newspapers recently making a great fuss because according to the stories, Herr Walter Kleffel, formerly a pilot in the German Flying Corps during the War 1914-18, having been invited to a gathering of R.N.A.S. and R.F.C. pilots in Manchester, refused the invitation and thereafter disappeared. According to some of these stories he was described as the navigator of the *Graf Zeppelin* in its trans-Atlantic voyages, and as a German War Ace, and as being the representative of the German Government here for the purpose of inspecting and watching the progress of R.100 and R.101, and a variety of other things which he is not and never has been.

As a matter of fact Herr Walter Kleffel is the aeronautical correspondent of the *B.Z. am Mittag*, or "Berlin Mid-day Times." He was a pilot during the War, and he is one of the best sportsmen one has met for a very long time.

He became a friend of everybody in the office of The Aeroplane several years ago when he paid his first visit to England to see the R.A.F. Pageant at Hendon. Since then he has been about this country quite a good deal, and everywhere he has been both popular and amusing. He is always full of enthusiasm, a very lively companion, and unlike most journalists, he knows what he is talking about.

He was a passenger in the *Graf Zeppelin* across the Atlantic and back. He has as many friends in the States as he has in England and he has a vast store of knowledge about aeronautical affairs in all countries. But he never has been a Zeppelin navigator and he is in no way a representative of the Government, beyond the fact that probably if he sees anything interesting he reports it to his Government just as if one were in a foreign country and saw something interesting, one would report it to the Air Ministry.

The last thing he would do would be to refuse on any grounds a chance of a friendly meeting with the men whom he may have fought during the War. The whole yarn as it appears in the papers is sheer nonsense. Either some Manchester humorist has been pulling the leg of the press or some incompetent journalist has got hold of the wrong end of the story, or the whole thing is a pure misunderstanding. Whatever may be the facts Herr Walter Kleffel is assured of as hearty a welcome as ever when he again visits England. When the story appeared he was in fact in Berlin and then heard for the first time that he had been invited to a party of which he had never heard.—C. G. G.

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COMMERCIAL AERONAUTICS.

THE DANGERS OF THE BLIND SPOT.

[This article, by a war-time pilot who has recently taken flying again, deserves the attention of all designers,—as ell as users. Personally one goes further than does the riter, and if one were a betting man one would lay good oney that within fifteen years (that is to say five years hus the usual delay of the English mind) single-engined ractor biplanes and high-wing monoplanes will be illegal, ecause of the danger to other air users, and tractor crews will have vanished from up-to-date design, because f their inefficiency and noise. Full visibility will then be requirement for an airworthiness certificate.—C. G. G.]

Unless designers of aircraft seriously consider the problem of the view which they give to the pilot of an aeroplane, both when in the air and on the ground, the number of major and minor accidents is going to increase alarmingly as flying becomes more popular.

Already at aerodromes where many aircraft are flying at the same time, the risk of collisions has become serious, and stringent rules have to be made about direction of circuits, and turning near the aerodrome. But as the number of aircraft increases, the only solution of the problem seems to be to give the pilot a better view.

A motor-car would be quite a difficult vehicle to drive if it had an opaque wind-screen and the driver had to put his head through the window of a side-screen to see where he was going. Yet this is the sort of thing a pilot has to do with nearly all types of aircraft.

Because an aeroplane moves in three dimensions a pilot really needs to be able to have a hundred per cent. view in all directions. This is obviously impossible, for the fuselage and wings (unless they be made of an invisible substance, such as the mythical "Plass") must obscure part of the view.

There are three general lay-outs at present used for standard aeroplanes. These are the narrow-chord biplane, the high-wing monoplane and the low-wing monoplane.

The narrow-chord biplane, the best-known example of which is the Moth, has, as its most ardent supporters will be the first to admit, certain blind spots. It is true that as one gets to know a Moth better and learns how and where to look out of it so the view seems to improve, just as one gets accustomed to driving a saloon car. Nevertheless there are bad blind spots that can only be got rid of by radical alteration of design.

The first of these is caused by the engine in the nose. This, one is told, has been immensely improved by fitting an inverted Gipsy engine, thus allowing the fuselage to follow its natural lines to the nose. This particular blind spot is chiefly objectionable when taking off, alighting, taxying, and to a certain extent when flying across country by landmarks in bad weather.

The second is caused by the upper wing and prevents one from seeing upwards and ahead in quite a large area. It is in this obstruction that, in one's own opinion, the chief danger of collision lies.

The lower wing certainly hides an even bigger portion of the view than does the upper, but with a narrow fuselage one can see pretty well what is going on below, and the onus of seeing where he or she is going should be on the pilot of a lower machine who should have a clear view forward and above. [Which is very little consolation when one has been hit at 500 ft. or so, by someone who has a bad blind spot.—C. G. G.]

The view obscured by the fuselage and tail below and behind is immaterial in these days of peace when hardly anyone even knows the meaning of the letters E.A.

The high-wing monoplane is very little better than the biplane in most cases and in some cases it is much worse, because of the bigger chord and span. In the other examples, such as the Hawk Moth and the Desoutter, the pilot sits just behind the leading edge of the plane. Thus one gets a good view upward and forward, both in the air and on the ground.

The view immediately upward and behind, which is very desirable when gliding in to land, and is essential before taking off, is practically nil.

It is true that the Hawk Moth has a glass top to the cabin but this is liable to be obscured by oil. In the Desoutter the passenger can see out behind and above through windows, but passengers are not always carried or reliable.

Another disadvantage of the high-wing monoplane is that in turning in to land and in side-slipping the wing that is down obscures the landing area.

The low-wing monoplane on the whole seems to be the best solution of the problem, particularly if it is fitted with an inverted engine such as the Gipsy. Here the pilot has a wonderful view forward and upward and can see behind him when about to take off or when gliding in to alight.

If every machine in the air were a low-wing monoplane it would be difficult for one of the pilots of two machines not to see the other, whereas in the biplane or the high-wing monoplane the pilots of either type could each be in both their own and the other pilots' blind spot at the same time.

The only objections to the low-wing monoplane which one has so far heard are (1) that its construction is heavier than that of the biplane or the high-wing monoplane, both of which can be braced whereas the low-wing job must be a cantilever, and (ii) that it is difficult to make it fold.

Some of the new types of wing such as the Stieger-Haig Monospar system will, one is assured, sweep away these difficulties and it would be interesting to hear any arguments to the contrary.

One realises that the low-wing monoplane can only be immune from collision in the air or on the ground when all machines are of that type. And it is of course unreasonable to expect the hundreds of biplanes and high-wing monoplanes to disappear at once. But for the safety of the air, and, therefore, for its prosperity, this state of affairs is bound to come sooner or later.

When one gets to bigger craft such as Argosies or the big flying-boats, the pilot can be placed right in the nose of the machine, yards ahead of the wings, where he gets a good view anyway, but for the smaller types the low-wing monoplane appears to be the Only Way.—G. D.

THE SPOONER CELEBRATIONS.

The Royal Aeronautical Society states that the dinner to Mr. Stanley Spooner, to celebrate the twenty-first anniversary of the foundation of *Flight*, will be held on Jan. 3 at the Savoy. Tickets will cost about 16s. each, exclusive of wines. All those who wish to attend are asked to communicate at once with the Secretary, The Royal Aeronautical Society, 7, Albemarle Street, W.1.

OVERCOMING OBSTACLES.

The following letter will, one hopes, be some encouragement to the weaker brethren:—

Sir,—May I congratulate you on the leading article in this week's AEROPLANE "On Getting Over Obstacles"?

I thoroughly agree with your contention that officials at the Air Ministry are now fixing arbitrary limits for Civil Passenger Aircraft without the determining factor being the use to which the particular aircraft is to be put. If the aircraft cannot come up to these arbitrary limits it is to be denied the necessary certificate of airworthiness to allow it to operate in this country or to be exported. And as you say, no customer abroad will buy a British machine without its certificate of airworthiness.

I have discussed this matter with one or two officials in the Air Ministry quite recently, and I believe that the arbitrary limits are based on some agreement arrived at by some International Convention which doubtless emanates from Geneva, the place apparently which is to rule the World in the future and to dictate to us, to our national detriment, the terms on which we are to conduct business. These terms usually put us at a disadvantage compared with our competitors in trade, who are also the gentlemen who sit round the table and out-vote us at regular intervals.

I sincerely hope that the Department of Civil Aviation will read, mark, learn and inwardly digest your leading article. This is a matter which I trust will be raised by some member of the House of Commons when the Air Estimates come up for discussion. Failing everyone else your inadequate and humble servant will try to take on the job with, I trust, your co-operation.

(Signed) HAROLD BALFOUR.

AMERICAN AIRCRAFT IN CHINA.

The Chance Vought Corporation recently received a rush order from the presently-effective Chinese Government for twelve Vought Corsairs. These are two-seat fighter reconnaissance biplanes (Pratt and Whitney Wasp engines).

This order includes armament and ammunition. The total value is about $1,000,000 (£200,000). Six machines have already been shipped to China.

Similar machines have already been supplied by the same firm to the Mexican, Cuban and Argentine Governments.

The only British aircraft so far sold to the *de facto* Government of China are some Avro Avians, supplied by Mr. Vaughan Fowler, of the Far East Aviation Co. Ltd. of Hong Kong,—at any rate since the various Vickers machines sold just after the War 1914-18, before the Chinese Revolution. The Americans have sold several cabin-monoplanes lately, besides other war machines.

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AN AIRSHIP CHANGE.

The Airship Development Co. Ltd., of 39, Victoria Street, S.W.1, desire the fact to be known that Mr. Weir MacColl, who has been a Director of the firm and pilot of their little advertising ship at Cramlington, has resigned his position and is no longer associated with the firm.

The pilot of the A.D.1 "Blimp" is now Mr. Beckford Ball, who recently qualified for an Air Ministry "B" licence as an airship pilot. Incidentally, he seems to be the first pilot to hold a licence of this kind.

The Airship Development Co. state that their ship is now ready for commercial use for aerial advertising and photography, and for the training of airship pilots and personnel.

AMERICAN AIRCRAFT IN SOUTH AFRICA.

On Jan. 1 1930 the Travel Air Manufacturing Co. of Wichita, Kansas, will open a distributing agency in Cape Town.

Mr. Newman Wadlow, a Travel Air test pilot, has left New York for South Africa with two Travel Air aircraft, one a six-seat cabin monoplane and the other a three-seat open biplane. These machines will be demonstrated throughout the Union of South Africa.

GETTING IN TOUCH WITH THE USER.

The officials of the Black & Decker Manufacturing Co. of Towson, Maryland, U.S.A.—makers of machine tools, &c.—have visited a group of aircraft manufacturers in Wichita, Kansas, with a view to examining the requirements of the Aircraft Industry in high-speed electric tools.

Mr. Black, President of the company, has bought a six-seat Travel Air monoplane for the company's use.

The British Aircraft Industry will soon find this enterprising firm getting in touch with them likewise.

WHERE CHAMPIONS ARE MADE.

News has been received that the Canadian Factory of Champion Sparking Plug Company, of 83, Pall Mall, S.W.1, which is entirely devoted to the manufacture of sparking plugs for the British Isles, Canada, Australia, South Africa, New Zealand and India, has been doubled in size.

This has been brought about by the increasing demand for a sparking plug of high efficiency such as is made by this Company. Some idea of this demand may be gathered by the fact that the output of this factory in conjunction with the two American factories, is in excess of 1,000,000 plugs per week, and the annual production is something like 75 million.

The factory employs all British Labour and uses British material (with the exception of the Sillimanite bisque which is unobtainable in British territory).

The slogan adopted by this Company of "Champions choose CHAMPIONS" has justified itself this year, for this plug has come out top in the Grand Prix of Monza (Italy), the Ulster Tourist Trophy, the Irish International Grand Prix and the Grand Prix of Spain.

These plugs were also fitted to the Italian Macchi 52 *bis*, which finished second in the Schneider Trophy contest last September.—

L. W. N.

AS OTHERS SEE US.

A subscriber writes:—

I enclose on behalf of myself and a fellow-admirer of your works a year's subscription to THE AEROPLANE.

At the same time we would like to offer you the thanks of two dabblers in air for a great deal of pleasure and instruction which that paper has already afforded us, and our best wishes for an ever increasing public.

PERSONAL NOTICES.

DEATHS.

JENKINS.—On Dec. 17, near Tunis, in an attempt to break the World's Long Distance Record for aeroplanes, Flt. Lt. N. H. Jenkins, O.B.E., D.F.C., D.S.M., R.A.F.

Norman Hugh Jenkins was born at Southampton in 1895. He served as a rating in the Royal Naval Air Service at Eastchurch from March, 1915, until July, 1917. During this period he was awarded the Distinguished Service Medal for services on patrol duty and submarine searching in Home Waters.

In July, 1917, he was appointed temporary Sub-Lieutenant (Observer), R.N.A.S., on probation, which appointment was confirmed in November, 1917, and he was posted to No. 202 Naval Squadron at Dunkirk. In April, 1918, he was promoted Lieutenant (Observer). In June, 1918, he was wounded in action. In April, 1919, he was posted to No. 110 Squadron. In the King's Birthday Honours of 1919 he was awarded the Distinguished Flying Cross in recognition of distinguished services during the War.

In October, 1919, he was appointed to a Short Service commission in the R.A.F. as an Observer Officer and was posted to No. 24 Squadron. In June, 1922, he was promoted to Flight Lieutenant and in September, 1922, he was posted to No. 84 (Bombing) Squadron at Shaibah, 'Iraq. In August, 1923, he was given a permanent commission in the R.A.F. He was awarded the O.B.E. in June, 1925, and in November, 1925, he was posted to No. 30 Squadron, Hinaidi, 'Iraq.

In November, 1926, he was restored to the Home Establishment and posted to No. 15 Squadron, part of the Aeroplane Experimental Establishment at Martlesham Heath. In July, 1927, he was transferred to No. 22 Squadron at Martlesham Heath.

In April, 1929, he was second pilot of the Fairey Long Range Monoplane when it flew from Cranwell to Karachi, non-stop in 50 hours, 48 minutes.

Flight Lieutenant Jenkins' death is a severe loss to the Service in which he was so distinguished and courageous a pilot and so efficient an officer.—C. M. MCA.

JONES-WILLIAMS.—On Dec. 17, near Tunis, in an attempt to break the World's Long Distance Record for aeroplanes, Sq. Ldr. A. G. Jones-Williams, M.C., No. 23 (Fighter) Squadron, R.A.F.

Arthur Gordon Jones-Williams was born in Vernon, British Columbia, in 1898, and was educated at Haileybury and the R.M.C., Sandhurst. He entered The Welch Regiment in August 1916 and was seconded to the Royal Flying Corps in January 1917. He was posted to No. 29 Squadron in France and was appointed Flight Commander in May 1917.

In July 1917 he was awarded the Military Cross for conspicuous gallantry and devotion to duty. In September 1917 he was awarded a bar to the Military Cross for conspicuous gallantry. After a period of duty at home he was posted to No. 65 Squadron in France. After the Armistice he was appointed to a permanent commission in the R.A.F. with the rank of Flight Lieutenant.

In 1919 he was posted to the Flying Wing at Cranwell, and in 1922 he was appointed to Headquarters, 'Iraq, as personal assistant to the Air Officer Commanding,—this entailed being chief pilot to Sir John Salmond, with whom he flew over practically the whole of 'Iraq.

In July 1924 he was posted to No. 8 (Bombing) Squadron as second-in-command. He was restored to the Home Establishment in December 1915 and after a spell of leave was posted to No. 100 (Bombing) Squadron.

In 1927 he accompanied Sir Philip Sassoon on a tour of the American Air Stations. He also flew Sir Philip Sassoon to Venice for the Schneider Trophy Competition of 1927.

In January 1928 he was promoted to Squadron Leader and appointed to command No. 23 (Fighter) Squadron at Kenley.

In April 1929 he was pilot of the Fairey Long Range Monoplane when it flew from Cranwell to Karachi non-stop in 50 hours, 48 minutes. Only the continuous head winds and bad weather during the latter part of the flight prevented a new World's Record being made on that occasion.

Squadron Leader Jones-Williams was a very gallant officer, a fine squadron-commander and a skilful pilot. His cheery disposition endeared him to all ranks with whom he served as well as to a host of friends.—C. M. MCA.

WILLIAMS.—On Dec. 15, in Canada, as the result of an aeroplane accident, Robert Cyril Williams, sixth son of Mr. and Mrs. M. Scott Williams, Woolland House, Blandford, aged 30.

DE CRESPIGNY.—On Dec. 14, at Peshawar Hospital, Robert Vivian Champion, beloved elder son of Sq. Ldr. H. V. and Mrs. Champion de Crespigny, aged two years.

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